AERIALLY DEPOSITED LEAD SURVEY
U.S. 101/PALO COMADO CANYON ROAD INTERCHANGE PROJECT
CITY OF AGOURA HILLS, CALIFORNIA
GDC PROJECT NUMBER LA1143

PREPARED FOR

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November 7, 2013

Parsons
Road & Highway Division
2201 Dupont Drive, Suite 200
Irvine, California 92612

Attention: Mr. Thomas Sardo

Subject: Aerially Deposited Lead Study
U.S. 101/Palo Comado Canyon Road Interchange Project
City of Agoura Hills, California,
Group Delta Project No. LA1143

Dear Mr. Sardo,

Group Delta Consultants, Inc. (Group Delta) is pleased to submit to Parsons this report on the results of an Aerially Deposity Lead Study for the U.S. 101/Palo Comado Canyon Road Interchange Project in Agoura Hills, California (Site) (Figure 1).

This project includes the widening of the Palo Comado Canyon Road Overcrossing with a median turn lane, sidewalks, and modification of the ramps. The purpose of the Aerially Deposited Lead Study is to evaluate the lead content of unpaved soil along the U.S. 101 on-ramp and off-ramp at Palo Comado Canyon Road and to assess the requirements for management of this soil. The Aerially Deposited Lead Study included the submission of a Work Plan and approval of the Work Plan by Caltrans, the collection of soil samples, laboratory analysis, data evaluation, statistical analysis of the analytical results, and preparation of this report.

Should you have any questions regarding this report, please feel free to call us at 949-450-2100.

Yours Sincerely,
GROUP DELTA CONSULTANTS, INC.

REGISTERED PROFESSIONAL ENGINEER
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1.0 INTRODUCTION

1.1 Project Description

This report has been prepared to summarize the procedures and results of an aerially deposited lead (ADL) survey conducted for the U.S. 101/Palo Comado Canyon Road Interchange Project. The California Department of Transportation (Caltrans) in association with the City of Agoura Hills is proposing to construct this project. The project understanding is based on the Request for Proposal (RFP) sent by Parsons. Based on the RFP, Group Delta understands that this project includes the widening of the Palo Comado Canyon Road overcrossing with a median turn lane, sidewalks, and modification of the northbound ramps in order to improve traffic circulation, safety, and bicycle/pedestrian access (Figure 1).

The U.S. 101/Palo Comado Canyon Road overcrossing structure was built in 1963. It provides one 12-foot lane and a 4-foot shoulder in each direction. A 5-foot sidewalk is provided on the west side of the overcrossing. The interchange is configured with tight diamond ramps on the northbound side and hook ramps on the southbound side located on the southwest quadrant of the interchange.

Proposed project construction may involve disturbance of near surface soils along the existing freeway on-ramp and off-ramp that have the potential to contain ADL. Therefore, GDC performed soil testing for ADL in unpaved areas along the northbound ramps where future soil disturbance is anticipated.

1.2 Project Objective and Scope of Work

The ADL testing followed the procedures presented in the ADL Work Plan reviewed and approved by Caltrans, named "Work Plan, Aerially Deposited Lead Study, U.S. 101/Palo Comado Canyon Road Interchange Project, City of Agoura Hills, California", dated September 18, 2013. This Work Plan was developed in accordance with Caltrans Aerially Deposited Lead Guidance, dated June 2007.

The objective of the investigation is to evaluate soil for the presence of ADL due to the historical use of leaded fuels by freeway and other roadway traffic. The information obtained from the limited soil sampling and laboratory testing is intended to inform Caltrans of potential health and safety issues for workers at the site during the project construction or landscaping activities, to assess the potential for reuse of the soil, to assist Caltrans in separating non-hazardous soil from potentially hazardous soil, and reduce disposal costs.

The Project included testing of soil for ADL within the zone of potential soil excavation in unpaved portions of the existing Caltrans Right-of-Way (ROW) along the northbound U.S. 101 off-ramp and on-ramp at Palo Comado Canyon Road. The Project also included

performing statistical analyses with the data collected during this investigation using the 95% upper confidence limit (UCL) on the mean by using ProUCL computer software.

The reuse of California non-Resource Recovery and Conservation Act (non-RCRA) hazardous soil on the project is permitted under a Variance issued to Caltrans by the Department of Toxic Substances Control (DTSC) if the soil meets chemical criteria specified by the Variance and is reused in a manner consistent with the Variance. The Variance allows reuse of non-RCRA hazardous soil beneath either one foot of clean soil or beneath an asphalt/concrete cover depending on the disposition of the soil. The soil will be classified in accordance with Caltrans soil classification presented in Table A below:

Table A - Caltrans Soil Classification

AERIALLY DEPOSITED LEAD SOIL MANAGEMENT			
SOLUBLE LEAD (mg/l)	**TOTAL LEAD (mg/kg)**	**SOIL TYPE**	**HANDLING**
CALIFORNIA TESTING			
STLC <5.0	TTLC <1000	X	**Non-hazardous Waste.** Notify and require Lead Compliance Plan for worker safety.
	1000 – 1411 and DI WET < 1.5 mg/l	Y1	**Hazardous Waste. Variance applies** – cover with minimum 1 foot of clean soil.*
	1411 – 3397 and DI WET < 150 mg/l	Y2	**Hazardous Waste. Variance applies** – cover with pavement structure. *
	1000 – 3397 but Surplus	Z2	**Hazardous Waste** - Surplus. Dispose at Class 1 disposal site.
	> 3397 or 1000 – 3397 & DI WET > 150 mg/l	Z2	**Hazardous Waste** – not reusable under Variance. Dispose at Class 1 disposal site.
STLC >5.0	TTLC < 1411 and DI WET < 1.5 mg/l	Y1	**Hazardous Waste. Variance applies** – cover with minimum of 1 foot of clean soil.*
	1411 – 3397 and DI WET < 150 mg/l	Y2	**Hazardous Waste. Variance applies** – cover with pavement structure.*
	< 3397 and DI WET < 150 mg/l but Surplus	Z2	**Hazardous Waste** - Surplus. Dispose at Class 1 disposal site.
	> 3397 or DI WET > 150 mg/l	Z2	**Hazardous Waste** – not reusable under Variance. Dispose at Class 1 disposal site.
FEDERAL TESTING			
TCLP > 5.0 mg/l	N/A	Z3	**RCRA Hazardous Waste** Dispose at Class 1 disposal site as a RCRA waste regardless of TTLC and STLC results.

*Note: For hazardous waste levels of lead - if pH is less than 5.5 soil must be placed under a pavement structure. If pH is less than 5.0 variance can not be used and the soil must be disposed as Z-2 material.

DTSC - California Department of Toxic Substances Control
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
RCRA - Resource Conservation and Recovery Act
STLC - soluble threshold limit concentration
TCLP - toxicity characteristic leaching procedure
TTLC - total threshold limit concentration
WET - waste extraction test
WET-DI - waste extraction test using deionized water as leaching agent

2.0 FIELD INVESTIGATION

Group Delta tested unpaved soil assumed to be disturbed during future construction activities. The soil disturbance zone is estimated to be shallow in the zone where ADL would typically be encountered. Construction activities may include soil excavation and re-compaction for shoulder pavement construction and for reconstruction of portions of the off-ramp and on-ramp.

The field investigation consisted of performing 15 hand auger borings, borings B-1 to B-15, down to 2.5 feet (ft) below ground surface (bgs) for testing of ADL. Boring locations are presented on Figures 2A and 2B.

2.1 Pre-Field Activities

2.1.1 Project Approvals

Group Delta prepared and submitted a Work Plan including a Health and Safety Plan titled "Work Plan, Aerially Deposited Lead Study, U.S. 101/Palo Comado Canyon Road Interchange Project, City of Agoura Hills, California", dated September 18, 2013. The Plan addressed potential hazards on the project, emergency procedures and contacts, and provided directions to the nearest hospital. The Work Plan was approved by Caltrans on September 20, 2013.

A Caltrans Encroachment Permit application was prepared by the City of Agoura Hills and submitted to Caltrans on June 13, 2013. The Encroachment Permit (713-NSV-1297) was approved on July 2, 2013. Prior to the start of work, Caltrans was notified in accordance with the conditions of the Encroachment Permit.

2.1.2 Utility Clearance

Prior to conducting the Site investigation, an initial Site reconnaissance was conducted with Caltrans Encroachment Permit Inspector Mr. Elias Fayad to ensure accessibility and safety of sampling locations. The locations of the borings were marked in the field with paint and the Underground Service Alert of Southern California was notified of the field work more than 48 hours prior to start to confirm an absence of subsurface utilities at the investigation locations.

2.2 Soil Sampling

Soil sampling was performed on September 26, 2013 within the zone of potential future soil disturbance in unpaved areas along the northbound U.S. 101 off-ramp and on-ramp at Palo Comado Canyon Road. The ADL boring locations are presented in Figures 2A and 2B.

Fifteen borings were spaced at regular intervals along either side of the ramps. The soil samples were collected at 0-0.5 ft, 1.0-1.5 ft, and 2.0-2.5 ft sampling intervals.

A total of 50 samples were collected during the field investigation. Within the 50 samples, Group Delta collected five soil Quality Assurance/Quality Control (QA/QC) field duplicate samples and one equipment rinseate water sample.

2.2.1 Field Sampling Equipment

The following equipment was used during field sampling activities:

1. A hand-held 3-inch diameter stainless steel auger;
2. 4-ounce sealed glass jars with Teflon lined lids for collection of soil samples and a 750 milliliter amber glass jar for collection of a rinseate water sample (to be provided by the analytical laboratory);
3. Three 5-gallon buckets;
4. Tap water;
5. Deionized water;
6. Trisodium phosphate;
7. Plastic sheeting, or linen cloth, for placement of the clean hand auger;
8. A box cooler for storage and transport of the collected samples, and;
9. Self-adhesive jar labels and chain-of-custody sheets.

2.2.2 Sampling Procedures

Presented below is the procedure followed in the field:

1. Initiate a boring with a hand-held 3-inch diameter stainless steel auger;
2. Advance the boring to the first sampling depth;
3. Transfer the sample from the hand-auger directly into two sealable 4-ounce glass jars;
4. Place a self-adhesive label on each jar marked with the boring number, sample depth, and time and date of sample collection;
5. Place sample jars on ice in a cooler box;
6. Repeat the procedure for remaining sample depths;
7. Clean and the rinse hand auger after each sample is collected by washing the hand auger with a solution of Trisodium Phosphate followed by tap water and deionized water rinses;
8. Collect five duplicate samples from five boring locations as QA/QC field duplicate samples; assign the same tests for the original and the duplicate sample;
9. After field sampling equipment (i.e., auger) decontamination was completed, rinse the equipment with deionized water and collect the rinseate/equipment blank for laboratory analysis, and;
10. Backfill the borings with soil cuttings.

A chain-of-custody sheet recording all collected samples and assigned analyses was filled out before the samples were transported on ice to American Environmental Testing Laboratory in Burbank. The laboratory is certified by the California Department of Health Services an Environmental Laboratory Accreditation Program (ELAP) laboratory. The chain-of-custody sheet is included in Appendix A.

3.0 RESULTS

3.1 Laboratory Analyses

ADL testing was performed in general accordance with the DTSC Variance that consists of several steps based on the results of the analysis:

- All surface samples collected were analyzed for total lead using the Environmental Protection Agency (EPA) Test Method 6010B;
- All soil samples with total lead concentrations greater or equal to 50 milligrams per kilogram (mg/kg) were analyzed for comparison to the Soluble Threshold Limit Concentration (STLC) for lead using the Waste Extraction Test (WET) with citric acid extraction, and EPA Test Method 7000 for leachable lead;
- All samples with results greater than or equal to 5 milligrams per liter (mg/L) of extractable lead using the WET (citric acid) were analyzed using the WET with de-ionized water extraction (WET-DI) and EPA Test Method 7000 series for DI extractable lead, and;
- All samples with results greater than or equal to 1000 mg/kg of total lead, or greater than or equal to 5 mg/l of extractable lead using the WET (citric acid) were analyzed using the EPA Toxic Characteristic Leaching Procedure (TCLP) and EPA Test Method 7000 for leachable lead.

3.2 ADL Analytical Results

The results of this investigation are described in the following subsections. The analytical results for total and soluble lead analyses, as well as pH, are summarized in Table 1, and the sampling locations with corresponding data are shown in Figures 2A and 2B. Laboratory analytical reports and the chain-of-custody record are included in Appendix A.

3.2.1 Total Lead

A total of 50 soil samples were analyzed for total lead. These samples were collected at 15 locations with sample depths at 0-0.5 ft, 1.0-1.5 ft, and 2.0-2.5 ft bgs. Lead was detected in all but one sample. The maximum total lead concentration was 381 mg/kg. The minimum detected total lead concentration was 2.58 mg/kg (“J” flagged) (Table 1). "J" indicates the analyte was detected; however, the analyte concentration is an estimated value which is between the method detection limit (MDL) and the practical quantitation limit (PQL). Lead was detected in twelve of 50 samples at concentrations in excess of 50 mg/kg.

An equipment decontamination rinseate water sample was also collected and analyzed for total lead, it did not contain a reportable concentration of lead.

3.2.2. Soluble Threshold Limit Concentration (WET-Citrate)

Twelve of the 50 samples contained total lead at concentrations greater than 50 mg/kg. The twelve samples were analyzed for soluble lead with a citric acid extract using the WET analysis. The maximum detected concentration was 15.5 mg/L and the minimum was 2.38 mg/L.

Six samples collected from six borings exceeded the STLC of 5 mg/L. Soil represented by these samples meets the criteria for hazardous waste in California or non-RCRA hazardous waste. These samples were collected from the 0-0.5 ft. and 1-1.5 ft. depth intervals.

Ten additional samples with detected total lead concentrations below 50 mg/kg also underwent WET analysis. The results were used to provide supplemental WET data for samples with lower concentrations of lead for use in statistical analysis. The analytical results for these samples are available in Table 1.

3.2.3 Toxicity Characteristic Leaching Procedure (TCLP)

All tested samples that contained soluble lead (via the WET) at a concentration greater than or equal to 5.0 mg/L were analyzed for soluble lead using the TCLP Method. The maximum reported concentration was 0.410 mg/L. The minimum detected concentration was 0.0876 mg/L ("J" flagged). The TCLP threshold was not exceeded; therefore soil represented by these samples would not meet the criteria for Federal RCRA hazardous waste.

3.2.4 Soluble Lead (WET-DI)

All samples that contained soluble lead (via the WET) at concentrations greater than or equal to 5.0 mg/L were analyzed for soluble lead by WET using deionized water in order to determine if the soil can be reused under the DTSC Variance. None of the samples analyzed were reported to contain lead at concentrations exceeding the laboratory PQL of 0.05 mg/L. Under the DTSC Variance, additional reuse restrictions (i.e., placement under pavement) apply to non-RCRA hazardous soil with WET-DI results greater than 1.5 mg/L and soil with WET-DI results greater than 150 mg/L may not be reused; these restrictions do not apply to the project.

3.2.5 pH

Ten samples were analyzed for pH. The values ranged from 8.07 to 6.19. The importance of pH is based upon the DTSC Variance. Additional reuse restrictions (i.e., placement under pavement) apply to non-RCRA hazardous soil with pH less than 5.5 and soil with pH less than 5.0 may not be reused; these restrictions do not apply to the project.

4.0 STATISTICAL EVALUATION

The following subsections describe the statistical methods utilized to evaluate the ADL data set for the site.

4.1 Statistical Evaluation Methods

The analytical results were evaluated statistically to recommend the appropriate method of on-site reuse or off-site disposal of excavated soil during project construction activities. Prior to calculations, concentrations below the laboratory reporting limit were assigned values equal to the reporting limit. Statistical calculations were made using the software program ProUCL (version 5.0). Analysis using this program has been the preference of DTSC for evaluating contaminant statistics and for input for project risk assessment. The outputs for the ProUCL calculations are presented in Appendix B.

All samples contained less than 1000 mg/kg total lead, or less than the TTLC threshold, so the statistical evaluation using ProUCL v5.0 focused upon STLC values. Soil containing hazardous levels of lead, greater than the STLC, were limited to samples collected at the surface-0.5 ft and 1.0-1.5 ft depth intervals and the analysis focused upon these intervals. The data set was first evaluated by dividing the project into two sides:

1. West of Palo Comado Canyon Road (West Side) including Borings B-1 through B-7, and;
2. East of Palo Comado Canyon Road (East Side) including Borings B-8 through B-15.

These sides are shown on Figure 2A (West Side) and Figure 2B (East Side).

Based on data distribution and statistical results, the project was further segmented to evaluate and characterize two segments per side. Samples collected from each side of the project site (i.e., West and East Side) were segmented into ramp samples and freeway-level samples. Hazardous levels of lead were only detected in samples collected from freeway-level borings, providing further justification for dividing the project into the selected segments. The Project was divided into four segments as follows:

1. West Side freeway-level (Borings B-1 and B-2)
2. West Side on-ramp (Borings B-3 through B-7)
3. East Side off-ramp (Borings B-8 through B-11)
4. East Side freeway-level (Borings B-12 through B-15)

Statistical analyses were completed with the data collected during this investigation using the 95% upper confidence limit (UCL) on the mean in consideration of side or segment of the project, depth interval, and concentrations of soluble lead.

4.2 95% Upper Confidence Limit Analysis

4.2.1 West Side - Samples B-1 through B-7

The 95% UCLs of the mean for use on the project are presented as results from the ProUCL analyses. It should be noted that the results for the individual depth intervals is influenced by the limited number of samples within each interval. A Normal distribution applied to a Student's-t UCL was recommended by ProUCL for use on this project based upon an analysis of the inputted analytical data.

All results display the UCL reported as the 95% Student's-t UCL. The results are as follows:

TABLE B
95% UCL of Mean for Soluble Lead
West Side

SAMPLE	DEPTH	SOLUBLE LEAD	COMMENTS
West Side (B-1 through B-7)	Surface – 0.5 ft	3.781 mg/L	
	1.0-1.5 ft	3.576 mg/L	
	2.0-2.5 ft	<5 mg/L	WET not conducted
	Surface – 1.5 ft	2.643 mg/L	
West Side Freeway-Level (B-1 and B-2)	Surface – 0.5 ft	7.905 mg/L	> STLC / hazardous
	1.0-1.5 ft	7.69 mg/L	> STLC / hazardous
	2.0-2.5 ft	<5 mg/L	WET not conducted
	Surface – 1.5 ft	7.059 mg/L	> STLC / hazardous
West Side On-Ramp (B-3 through B-7)	Surface – 0.5 ft	1.839 mg/L	
	1.0-1.5 ft	0.622 mg/L	
	2.0-2.5 ft	<5 mg/L	WET not conducted
	Surface – 1.5 ft	1.182 mg/L	

mg/L - milligrams per Liter
STLC - soluble threshold limit concentration
WET - waste extraction test

All of the above UCL evaluations for soluble lead showed concentrations less than 5.0 mg/L with the exception of samples from ground surface to 1.5 ft bgs collected at freeway-level (Borings B-1 and B-2). Samples that contain <5.0 mg/L can be classified as soil type "X" based on the Caltrans soil classifications provided in Table A. Soil type "X" is classified as non-hazardous waste. Soil from ground surface to 1.5 ft at freeway level represented by borings B-1 and B-2 yielded results >5.0 mg/L which classifies the soil as type "Y1." "Y1" soils are classified as hazardous waste, but may be reused under the Variance.

4.2.2 East side - Samples B-8 through B-15

The 95% UCLs of the mean for use on the project are presented as results from the ProUCL analyses. It should be noted that the results for the individual depth intervals is influenced by the limited number of samples within each interval. A Normal distribution applied to a Student's-t UCL was recommended by ProUCL for use on this project based upon an analysis of the inputted analytical data.

All results display the UCL reported as the 95% Student's-t UCL. The results are as follows:

TABLE C
95% UCL of Mean for Soluble Lead
East Side

SAMPLE	DEPTH	SOLUBLE LEAD	COMMENTS
East Side (B-8 through B-15)	Surface – 0.5 ft	6.763 mg/L	>STLC / hazardous
	1.0-1.5 ft	6.796 mg/L	>STLC / hazardous
	2.0-2.5 ft	<5 mg/L	WET not conducted
	Surface – 1.5 ft	5.288 mg/L	>STLC / hazardous
East Side Off-Ramp (B-8 through B-11)	Surface – 0.5 ft	<5 mg/L	WET not conducted
	1.0-1.5 ft	<5 mg/L	WET not conducted
	2.0-2.5 ft	<5 mg/L	WET not conducted
	Surface – 1.5 ft	<5 mg/L	WET not conducted
East Side Freeway-Level (B-12 through B-15)	Surface – 0.5 ft	9.023 mg/L	>STLC / hazardous
	1.0-1.5 ft	13.76 mg/L	>STLC / hazardous
	2.0-2.5 ft	<5 mg/L	WET not conducted
	Surface – 1.5 ft	9.474 mg/L	>STLC / hazardous

mg/L - milligrams per Liter
STLC - soluble threshold limit concentration
WET - waste extraction test

The above UCL evaluations for samples collected to 1.5 ft bgs, including the combined East Side data and the free-way level segment, showed soluble lead concentrations >5.0 mg/L, classifying the soil as type "Y1." "Y1" soils are classified as hazardous waste, but may be reused under the Variance. By evaluating samples from the off-ramp segment only, including borings B-8 through B-11 from the ground surface to 1.5 ft, the soil can be classified as type "X" or non-hazardous waste.

5.0 CONCLUSIONS

Based on the analytical results and statistical analyses, conclusions and recommendations for the Project are summarized below.

5.1 Summary

Utilizing the laboratory results and calculated UCLs the following scenarios were evaluated for soil on both the West Side and East Side.

West Side (Borings B-1 through B-7)

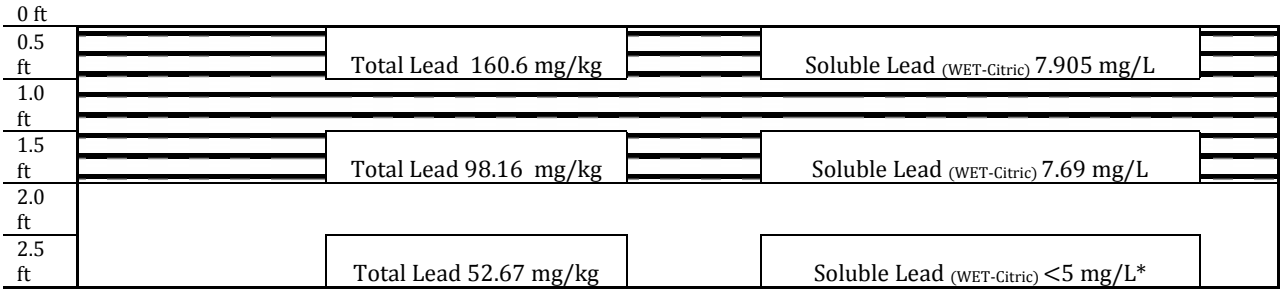
Scenario I: In Scenario I, the West Side is analyzed as a whole, ignoring the distribution of lead concentrations. Soil on the West Side is statistically classified as non-hazardous. This scenario may not be appropriate as two distinct segments in terms of both lead concentrations and location/elevation have been identified.

Scenario II: The West Side is divided into two segments: freeway-level (represented by Borings B-1 and B-2) and the on-ramp (represented by Borings B-3 through B-7). Soil to a depth of 1.5 ft bgs represented by freeway-level elevation borings was statistically classified as California non-RCRA hazardous or soil type "Y1". All other soil is statistically classified as type "X" or non-hazardous.

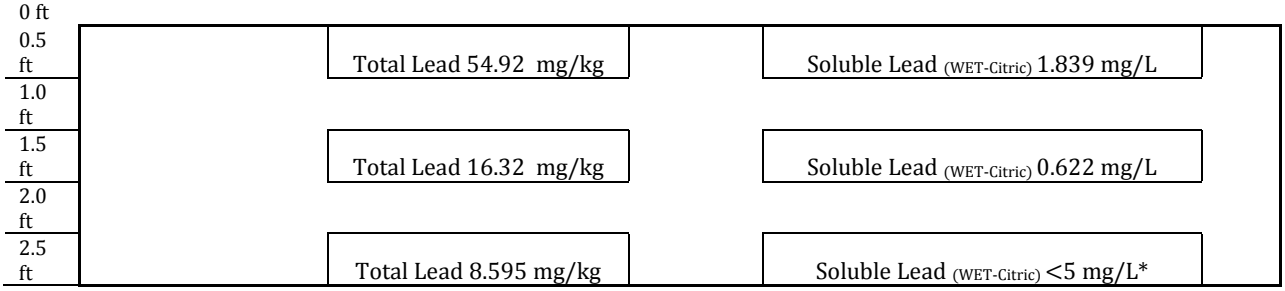
A block diagram representing Scenario II is provided on the following page.

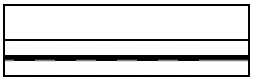
Block Diagram for Recommended Soil Classification on Caltrans Right-of Way
West Side
(95% UCL Calculated by Pro-UCL)

Freeway-Level: B-1 and B-2



On-Ramp: B-3 through B-7





Non-Hazardous waste
Hazardous Waste (Reuse Condition: Cover with minimum 1 foot clean soil)

UCL - Upper Confidence Limit
WET Citric - Soluble Lead using the Waste Extraction Test with citric acid
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
* - Not analyzed with WET

East Side (B-8 through B-15)

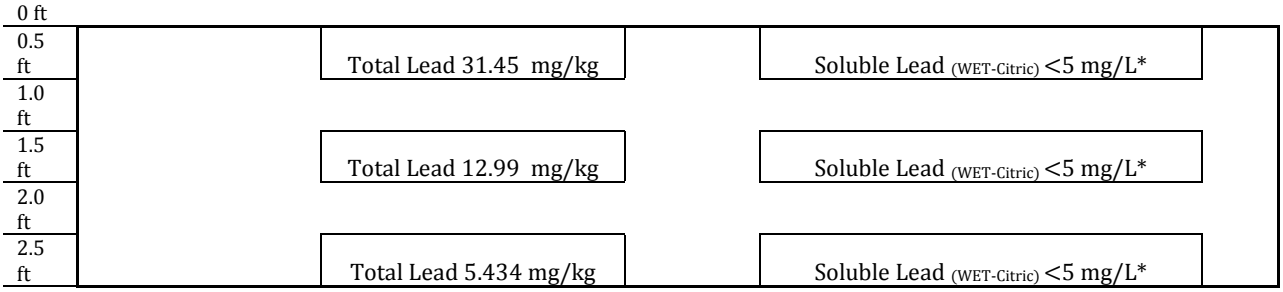
Scenario I: In Scenario I, the East Side is analyzed as a whole, ignoring the distribution of lead concentrations. Soil on the East Side down to 1.5 ft bgs is statistically classified as California non-RCRA hazardous waste and soil type "Y1". This scenario may not be appropriate as two distinct segments in terms of both lead concentrations and location/elevation have been identified.

Scenario II: The east side is divided into two segments: the off-ramp (represented by Borings B-8 through B-11) and freeway-level (represented by Borings B-12 through B-15). Soil to a depth of 1.5 ft bgs represented by freeway-level borings was statistically classified as California non-RCRA hazardous or soil type "Y1". All other soil is statistically classified as type "X" or non-hazardous.

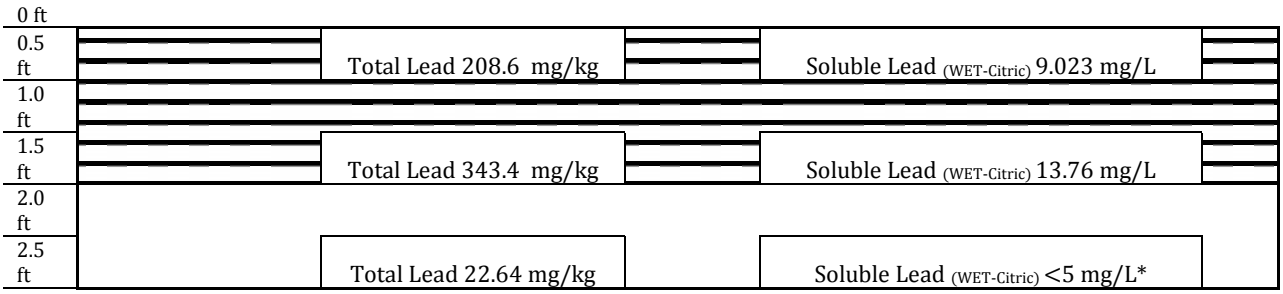
A block diagram representing Scenario II is provided on the following page.

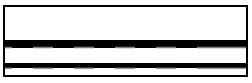
Block Diagram for Recommended Soil Classification on Caltrans Right-of Way
East Side
(95% UCL Calculated by Pro-UCL)

Off-Ramp: B-8 through B-11



Freeway-Level: B-12 through B-15





Non-Hazardous waste
Hazardous Waste (Reuse Condition: Cover with minimum 1 foot clean soil)

UCL – Upper Confidence Limit
WET Citric - Soluble Lead using the Waste Extraction Test with citric acid
mg/kg – milligrams per kilogram
mg/L – milligrams per liter
* – Not analyzed with WET

5.2 Conclusions

Two soil classifications under the DTSC Variance, "X" and "Y1", were identified on both the East and West Sides of the Project. Soil type "X" has been identified along the sloped on-ramp and off-ramp above freeway-level elevations. "Y1" soils identified on the Project at freeway elevations extend from ground surface to the 1.5 ft sampling depth interval. Below this interval, the soil is non-hazardous or type "X."

Soil type "X" contains total lead less than 1000 mg/kg (TTLC) and soluble lead less than 5.0 mg/L (STLC) and is deemed non-hazardous waste if disposed offsite. The soil may be reused as necessary on the Project.

Soil type "Y1" contains soluble lead greater than 5.0 mg/L (STLC) and is deemed California non-RCRA hazardous waste if disposed offsite. Soil type "Y1" contains total lead less than 1411 mg/kg, soluble lead using WET-DI less than 1.5 mg/L, and pH greater than 5.5 per the DTSC Variance. Under the DTSC Variance type "Y1" soil may be reused on a project provided it is covered with a minimum of 1 ft of clean soil.

All soil at the site is suitable for on-site reuse with respect to total and soluble lead concentrations provided the conditions of the DTSC Variance are adhered to. A Caltrans approved Lead Compliance Plan for worker safety must be developed for the management of all soil on the Site and appropriate Caltrans and DTSC notifications must be made prior to excavation and reuse activities.

6.0 HEALTH EFFECTS OF LEAD

Concentrations of lead in soil at the site represent a potential threat to the health of site workers performing earthwork activities. Lead in its elemental form is a heavy, ductile, soft, gray metal. The permissible exposure limit (PEL) for lead is 0.05 milligrams per cubic meter (mg/m^3) in air based on an eight-hour time-weighted average (TWA). The Immediately Dangerous to Life and Health (IDLH) exposure limit is 100 mg/m^3 as established by the National Institute of Occupational Safety and Health (NIOSH).

Exposure may produce several symptoms including weakness, eye irritation, facial pallor, pale eyes, lassitude, insomnia, anemia, tremors, malnutrition, constipation, paralysis of the wrists and ankles, abdominal pain, colic, nephropathy, encephalopathy, gingival lead line, hypertension, anorexia, and weight loss. Target organs are the central nervous system, kidneys, eyes, blood, gingival tissue, and the gastrointestinal tract. Because of the potential hazard from exposure to lead-contaminated soil, a Health and Safety Plan (HSP) and Lead Compliance Plan for site work should be prepared by a Certified Industrial Hygienist (CIH). In addition, all site workers (earthwork) should have completed a training program meeting the requirements of 29 CFR/910.120 and 8 CCR 1532.1. The plan developed by the CIH should include a hazard analysis, dust control measures, air monitoring, signage, work practices, emergency response plans, personal protective equipment, decontamination, and documentation.

7.0 REFERENCES

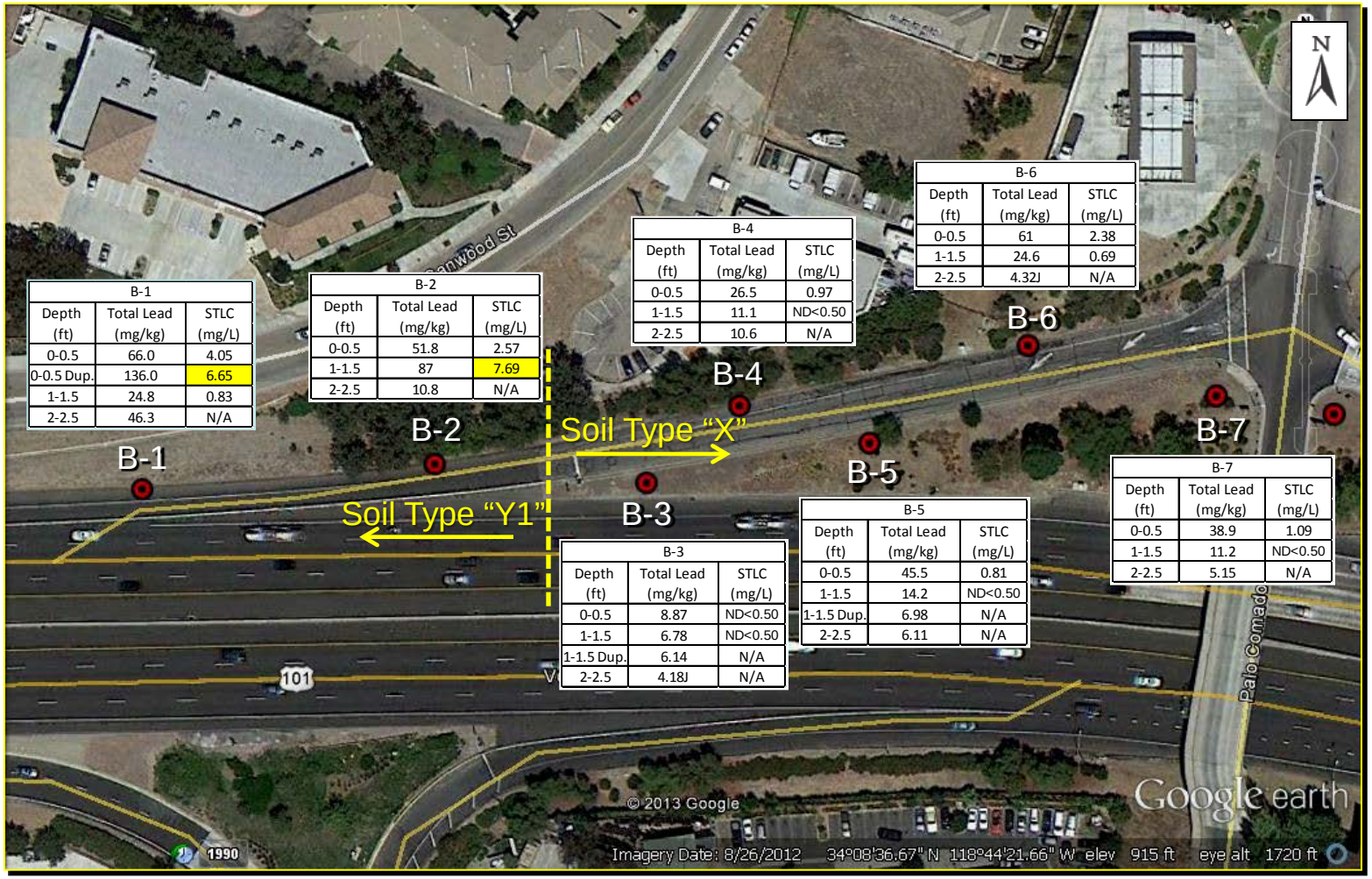
Caltrans, "Caltrans Aerially Deposited Lead Guidance", dated June 2007.

Department of Toxic Substances Control, "Variance No. V09HQSCD006 issued to State of California Department of Transportation", dated June 30, 2009.

Group Delta Consultants, "Work Plan for Aerially Deposited Lead Study, U.S. 101/Palo Comado Canyon Road Interchange Project, City of Agoura Hills, California, Group Delta Project No. LA-1143", dated September 13, 2013, prepared for PARSONS, Road and Highway Division.

FIGURES

GROUP DELTA CONSULTANTS	**GROUP DELTA CONSULTANTS, INC.** ENGINEERS AND GEOLOGISTS	**FIGURE NUMBER.** 1
	PROJECT NAME:. **U.S. 101/Palo Comado Canyon Road Interchange Project**	**PROJECT NUMBER** **LA1143**
	SITE VICINITY & PROJECT LOCATION MAP	



Legend

ADL Sampling Location

Note: Highlighted values exceed California Soluble Threshold Limit Criteria for hazardous waste (5 mg/L)

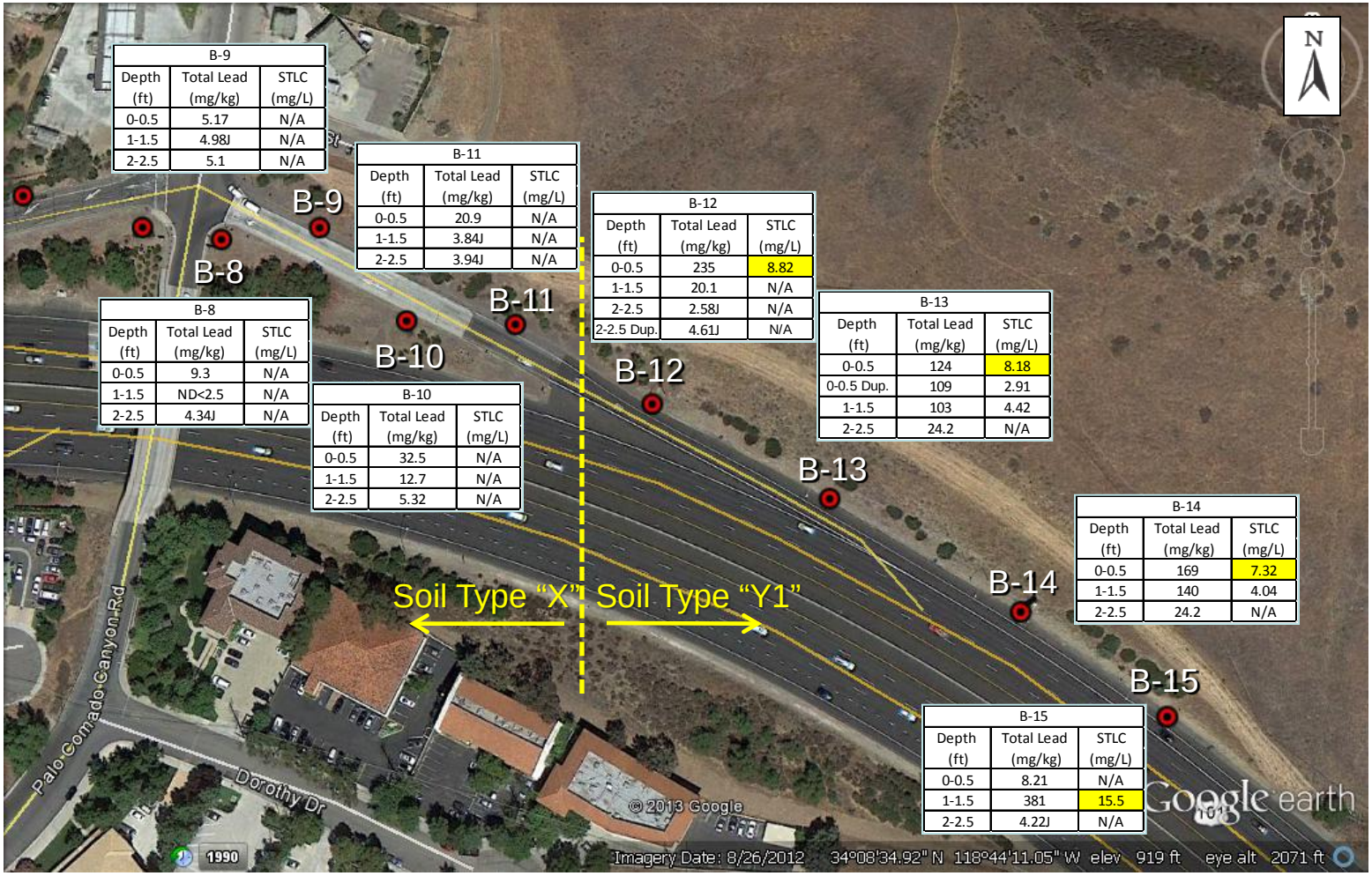
GROUP DELTA CONSULTANTS

GDC Project No. LA1143

U.S. 101/Palo Comado Canyon Road Interchange Project
Agoura Hills, California

ADL Sample Location Plan - West Side

Figure 2A



Legend

ADL Sampling Location

Note: Highlighted values exceed California Soluble Threshold Limit Criteria for hazardous waste (5 mg/L)

GROUP DELTA CONSULTANTS

GDC Project No. LA1143

U.S. 101/Palo Comado Canyon Road Interchange Project
Agoura Hills, California

ADL Sample Location Plan - East Side

Figure 2B

TABLES

TABLE 1
Summary of ADL Laboratory Test Results
U.S. 101 / Palo Comado Canyon Road Interchange Project
Group Delta Consultants Project Number LA1143

Sample Location	Sampling Depth (feet)		Duplicate Samples	Total Lead	STLC WET	TLCP	STLC WET-DI	pH
	From	To						
	feet			mg/kg	mg/L			
B-1	0.00	0.50		66.0	4.05	NM	NM	8.05
	0.00	0.50	Duplicate	136	6.65	0.148	ND<0.05	7.82
	1.00	1.50		24.80	0.834J	NM	NM	NM
	2.00	2.50		46.3	NM	NM	NM	NM
B-2	0.00	0.50		51.8	2.57	NM	NM	NM
	1.00	1.50		87.0	7.69	0.149	ND<0.05	NM
	2.00	2.50		10.8	NM	NM	NM	NM
B-3	0.00	0.50		8.87	ND<0.50	NM	NM	NM
	1.00	1.50		6.78	ND<0.50	NM	NM	7.96
	1.00	1.50	Duplicate	6.14	NM	NM	NM	8.07
	2.00	2.50		4.18J	NM	NM	NM	NM
B-4	0.00	0.50		26.5	0.972J	NM	NM	NM
	1.00	1.50		11.1	ND<0.50	NM	NM	NM
	2.00	2.50		10.6	NM	NM	NM	NM
B-5	0.00	0.50		45.5	0.812J	NM	NM	NM
	1.00	1.50		14.2	ND<0.50	NM	NM	7.46
	1.00	1.50	Duplicate	6.98	NM	NM	NM	7.56
	2.00	2.50		6.11	NM	NM	NM	NM
B-6	0.00	0.50		61.0	2.38	NM	NM	NM
	1.00	1.50		24.6	0.694J	NM	NM	NM
	2.00	2.50		4.32J	NM	NM	NM	NM
B-7	0.00	0.50		38.9	1.09	NM	NM	NM
	1.00	1.50		11.2	ND<0.50	NM	NM	NM
	2.00	2.50		5.15	NM	NM	NM	NM
B-8	0.00	0.50		9.30	NM	NM	NM	NM
	1.00	1.50		ND<2.5	NM	NM	NM	NM
	2.00	2.50		4.34J	NM	NM	NM	NM
B-9	0.00	0.50		5.17	NM	NM	NM	NM
	1.00	1.50		4.98J	NM	NM	NM	NM
	2.00	2.50		5.10	NM	NM	NM	NM
B-10	0.00	0.50		32.5	NM	NM	NM	NM
	1.00	1.50		12.7	NM	NM	NM	NM
	2.00	2.50		5.32	NM	NM	NM	NM
B-11	0.00	0.50		20.9	NM	NM	NM	NM
	1.00	1.50		3.84J	NM	NM	NM	NM
	2.00	2.50		3.94J	NM	NM	NM	NM
B-12	0.00	0.50		235	8.82	0.0876J	ND<0.05	NM
	1.00	1.50		20.1	NM	NM	NM	NM
	2.00	2.50		2.58J	NM	NM	NM	7.07
	2.00	2.50	Duplicate	4.61J	NM	NM	NM	6.19
B-13	0.00	0.50		124	8.18	ND<0.05	ND<0.05	6.60
	0.00	0.50	Duplicate	109	2.91	NM	NM	6.59
	1.00	1.50		103	4.42	NM	NM	NM
	2.00	2.50		24.2	NM	0.0894J	NM	NM
B-14	0.00	0.50		169	7.32	NM	ND<0.05	NM
	1.00	1.50		140	4.04	NM	NM	NM
	2.00	2.50		24.2	NM	NM	NM	NM
B-15	0.00	0.50		8.21	NM	NM	NM	NM
	1.00	1.50		381	15.5	0.410	ND<0.05	NM
	2.00	2.50		4.22J	NM	NM	NM	NM
Rinseate	N/A	N/A		ND<0.05	N/A	NM	NM	7.61

Notes:

STLC	Soluble Threshold Limit Concentration
WET	Waste Extraction Test
TCLP	Toxicity Characteristic Leaching Procedure
WET-DI	WET using DI water
J	Analyte was detected, however the concentration is an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL)
pH	Measure of the acidity or basicity of an aqueous solution
ND	Not detected
NM	Not measured

APPENDIX A
Laboratory Analytical Reports

American Environmental Testing Laboratory Inc.
2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
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Ordered By

Group Delta Consultants
32 Mauchly Suite B
Irvine, CA 92618-

Telephone: (949)450-2100
Attention: Jack Packwood

Number of Pages	**22**
Date Received	**10/02/2013**
Date Reported	**10/04/2013**

Job Number	Order Date	Client
70833	10/02/2013	GROUP

Project ID: LA-1143-2
Project Name: Palo Comado
Site: Chesebro Road/ US 101

Enclosed please find results of analyses of 29 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street, Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
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CHAIN OF CUSTODY RECORD

No 61551

AETL JOB No. 70833

Page 1 of 4

COMPANY: Group Delta Consultants
PROJECT MANAGER:
COMPANY ADDRESS: 32 Mauchly Suite B, Irvine CA 92618
PHONE: 949-450-2100
FAX:
PROJECT NAME: Palo Comado
PROJECT #: LA-1143-2
SITE NAME AND ADDRESS: Chesebro Rd/US. 101
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.
1	B-1-0.5a	70833.01	9-26-13	2:00	Soil	4oz Glass Jar	none
2	B-1-0.5b	70833.02		2:00			
3	B-1-1	70833.03		2:07			
4	B-1-2	70833.04		2:12			
5	B-2-0.5	70833.05		1:45			
6	B-2-1	70833.06		1:52			
7	B-2-2	70833.07		1:56			
8	B-3-0.5	70833.08		1:30			
9	B-3-1a	70833.09		1:36			
10	B-3-1b	70833.10		1:37			
11	B-3-2	70833.11		1:41			
12	B-4-0.5	70833.12		1:10			
13	B-4-1	70833.13		1:15			
14	B-4-2	70833.14		1:20			
15							

ANALYSIS REQUESTED

Lead 6010B	pH 9045C	STLC Pb	STLC-02 Pb	TCLP Pb					
/		X							
/	/	X	*	*					
/									
/									
/		X							
/		X	*	*					
/									
/									
/									
/	/								
/									
/									
/									
/									

TEST INSTRUCTIONS & COMMENTS

X – Added 10/4 2 DAYS TAT
* – Added 10/8 2 DAYS TAT

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	14	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y / N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

TURN AROUND TIME

☐ NORMAL ☒ RUSH ☐ SAME DAY ☐ NEXT DAY ☒ 2 DAYS ☐ 3 DAYS

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature:
Printed Name: Kevin Garcia	Printed Name:	Printed Name:
Date: 10-2-13 Time: 3:40	Date: Time:	Date: Time:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name: Leah Conde
Date: Time:	Date: Time:	Date: 10/02/13 Time: 1540

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

American Environmental Testing Laboratory Inc.

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CHAIN OF CUSTODY RECORD

№ 83148

AETL JOB No. 70833

COMPANY: Group Delta Consultants
PROJECT MANAGER:
COMPANY ADDRESS: 32 Mauchly, Suite B, Irvine, CA 92618
PHONE: 949-450-2100
FAX:
PROJECT NAME: Palo Comado
PROJECT #: LA-1143-2
SITE NAME AND ADDRESS: Chesebro Rd | US 101
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	Lead 6010B	pH 9045C	STLC Pb	ANALYSIS REQUESTED	TEST INSTRUCTIONS & COMMENTS
1	B-5-0.5	70833.15	9-26-13	12:54		4oz Glass jar	None	/				
2	B-5-1a	70833.16		12:58				/				
3	B-5-1b	70833.17		12:59				/	/			
4	B-5-2	70823.18		1:04				/				
5	B-6-0.5	70833.19		12:40				/		X		
6	B-6-1	70833.20		12:45				/				
7	B-6-2	70833.21		12:50				/				
8	B-7-0.5	70833.22		12:20				/				
9	B-7-1	70833.23		12:26				/				
10	B-7-2	70833.24		12:34				/				
11	B-8-0.5	70833.25		9:45				/				
12	B-8-1	70833.26		9:52				/				
13	B-8-2	70833.27		10:00				/				
14	B-9-0.5	70833.28		10:09				/				
15	B-9-1	70833.29		10:14				/				

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y / N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

TURN AROUND TIME

☐ NORMAL ☒ RUSH
☐ SAME DAY
☐ NEXT DAY
☒ 2 DAYS
☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature:
Printed Name: Kevin Garcia	Printed Name:	Printed Name:
Date: 10-2-13 Time: 3:40	Date: Time:	Date: Time:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name: Jean Glaude
Date: Time:	Date: Time:	Date: 10/02/13 Time: 1540

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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Ordered By

Group Delta Consultants
32 Mauchly Suite B
Irvine, CA 92618-

Telephone: (949)450-2100
Attention: Jack Packwood

Project ID: LA-1143-2
Date Received 10/02/2013
Date Reported 10/04/2013

Job Number	Order Date	Client
70833	10/02/2013	GROUP

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 29 samples with the following specification on 10/02/2013.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
70833.01	B-1-0.5a	09/26/2013	Soil	1
	Method ^ Submethod	*Req Date*	*Priority*	*TAT*	*Units*
	(6010B-STLC) ^ STLC-PB	10/04/2013	3	Rush	mg/L
	(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg
	9045C	10/04/2013	3	Rush	pH unit
70833.02	B-1-0.5b	09/26/2013	Soil	1
	Method ^ Submethod	*Req Date*	*Priority*	*TAT*	*Units*
	(6010/7000TCLP) ^ PB	10/04/2013	3	Rush	mg/L
	(6010B-STLC) ^ STLC-DI-PB	10/04/2013	3	Rush	mg/L
	(6010B-STLC) ^ STLC-PB	10/04/2013	3	Rush	mg/L
	(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg
	9045C	10/04/2013	3	Rush	pH unit
70833.03	B-1-1	09/26/2013	Soil	1
70833.04	B-1-2	09/26/2013	Soil	1
70833.07	B-2-2	09/26/2013	Soil	1
70833.08	B-3-0.5	09/26/2013	Soil	1
70833.11	B-3-2	09/26/2013	Soil	1
70833.12	B-4-0.5	09/26/2013	Soil	1
70833.13	B-4-1	09/26/2013	Soil	1
70833.14	B-4-2	09/26/2013	Soil	1
70833.15	B-5-0.5	09/26/2013	Soil	1
70833.18	B-5-2	09/26/2013	Soil	1
70833.20	B-6-1	09/26/2013	Soil	1
70833.21	B-6-2	09/26/2013	Soil	1
70833.22	B-7-0.5	09/26/2013	Soil	1

Continued

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Irvine, CA 92618-

Telephone: (949)450-2100
Attention: Jack Packwood

Project ID: LA-1143-2
Date Received 10/02/2013
Date Reported 10/04/2013

Job Number	Order Date	Client
70833	10/02/2013	GROUP

CERTIFICATE OF ANALYSIS

CASE NARRATIVE

70833.23	B-7-1	09/26/2013	Soil	1
70833.24	B-7-2	09/26/2013	Soil	1
70833.25	B-8-0.5	09/26/2013	Soil	1
70833.26	B-8-1	09/26/2013	Soil	1
70833.27	B-8-2	09/26/2013	Soil	1
70833.28	B-9-0.5	09/26/2013	Soil	1
70833.29	B-9-1	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg

70833.05	B-2-0.5	09/26/2013	Soil	1
70833.19	B-6-0.5	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B-STLC) ^ STLC-PB	10/04/2013	3	Rush	mg/L
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg

70833.06	B-2-1	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010/7000TCLP) ^ PB	10/04/2013	3	Rush	mg/L
(6010B-STLC) ^ STLC-DI-PB	10/04/2013	3	Rush	mg/L
(6010B-STLC) ^ STLC-PB	10/04/2013	3	Rush	mg/L
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg

70833.09	B-3-1a	09/26/2013	Soil	1
70833.10	B-3-1b	09/26/2013	Soil	1
70833.16	B-5-1a	09/26/2013	Soil	1
70833.17	B-5-1b	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg
9045C	10/04/2013	3	Rush	pH unit

Continued

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Ordered By

Group Delta Consultants 32 Mauchly Suite B Irvine, CA 92618-	Project ID: LA-1143-2 Date Received 10/02/2013 Date Reported 10/04/2013
Telephone: (949)450-2100 Attention: Jack Packwood	

Job Number	Order Date	Client
70833	10/02/2013	GROUP

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

The samples were analyzed as specified on the enclosed chain of custody. Analytical non-conformances have been noted on the report.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.
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ANALYTICAL RESULTS

Ordered By

Group Delta Consultants
32 Mauchly
Suite B
Irvine, CA 92618-

Telephone: (949)450-2100
Attn: Jack Packwood

Site

Chesebro Road/ US 101

Page: **2**

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C3

Our Lab I.D.			Method Blank	70833.01	70833.02	70833.03	70833.04
Client Sample I.D.				B-1-0.5a	B-1-0.5b	B-1-1	B-1-2
Date Sampled				09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/03/2013	10/03/2013	10/03/2013	10/03/2013	10/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	ND	66.0	136	24.8	46.3

American Environmental Testing Laboratory Inc.
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ANALYTICAL RESULTS

Ordered By

Group Delta Consultants
32 Mauchly
Suite B
Irvine, CA 92618-

Telephone: (949)450-2100
Attn: Jack Packwood
Page: 3

Site

Chesebro Road/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C3

Our Lab I.D.			70833.05	70833.06	70833.07	70833.08	70833.09
Client Sample I.D.			B-2-0.5	B-2-1	B-2-2	B-3-0.5	B-3-1a
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/03/2013	10/03/2013	10/03/2013	10/03/2013	10/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	51.8	87.0	10.8	8.87	6.78

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Chesebro Road/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C3

Our Lab I.D.			70833.10	70833.11	70833.12	70833.13	70833.14
Client Sample I.D.			B-3-1b	B-3-2	B-4-0.5	B-4-1	B-4-2
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/03/2013	10/03/2013	10/03/2013	10/03/2013	10/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	6.14	4.18J	26.5	11.1	10.6

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C3

Our Lab I.D.			70833.15	70833.16	70833.17	70833.18	70833.19
Client Sample I.D.			B-5-0.5	B-5-1a	B-5-1b	B-5-2	B-6-0.5
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/03/2013	10/03/2013	10/03/2013	10/03/2013	10/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	45.5	14.2	6.98	6.11	61.0

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C3

Our Lab I.D.			70833.20				
Client Sample I.D.			B-6-1				
Date Sampled			09/26/2013				
Date Prepared			10/03/2013				
Preparation Method			3050B				
Date Analyzed			10/04/2013				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Lead	2.5	5.0	24.6				

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C4

Our Lab I.D.			Method Blank	70833.21	70833.22	70833.23	70833.24
Client Sample I.D.				B-6-2	B-7-0.5	B-7-1	B-7-2
Date Sampled				09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/03/2013	10/03/2013	10/03/2013	10/03/2013	10/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	ND	4.32J	38.9	11.2	5.15

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C4

Our Lab I.D.			70833.25	70833.26	70833.27	70833.28	70833.29
Client Sample I.D.			B-8-0.5	B-8-1	B-8-2	B-9-0.5	B-9-1
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/03/2013	10/03/2013	10/03/2013	10/03/2013	10/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	9.30	ND	4.34J	5.17	4.98J

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100413-1

Our Lab I.D.			70833.01				
Client Sample I.D.			B-1-0.5a				
Date Sampled			09/26/2013				
Date Prepared			10/04/2013				
Preparation Method			9045C				
Date Analyzed			10/04/2013				
Matrix			Soil				
Units			pH unit				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
pH	1.00	1.00	8.05				

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100313-1

Our Lab I.D.			70833.10				
Client Sample I.D.			B-3-1b				
Date Sampled			09/26/2013				
Date Prepared			10/03/2013				
Preparation Method			9045C				
Date Analyzed			10/03/2013				
Matrix			Soil				
Units			pH unit				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
pH	1.00	1.00	8.07				

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100413-1

Our Lab I.D.			70833.16	70833.17			
Client Sample I.D.			B-5-1a	B-5-1b			
Date Sampled			09/26/2013	09/26/2013			
Date Prepared			10/04/2013	10/04/2013			
Preparation Method			9045C	9045C			
Date Analyzed			10/04/2013	10/04/2013			
Matrix			Soil	Soil			
Units			pH unit	pH unit			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
pH	1.00	1.00	7.46	7.56			

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1004132C12

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			10/04/2013				
Preparation Method			TITLE 22				
Date Analyzed			10/07/2013				
Matrix			Soil				
Units			mg/L				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Lead (STLC)	0.05	0.10	ND				

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1004132C12

Our Lab I.D.			70833.01	70833.02	70833.05	70833.06	70833.19
Client Sample I.D.			B-1-0.5a	B-1-0.5b	B-2-0.5	B-2-1	B-6-0.5
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Preparation Method			TITLE 22	TITLE 22	TITLE 22	TITLE 22	TITLE 22
Date Analyzed			10/07/2013	10/07/2013	10/07/2013	10/07/2013	10/07/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/L	mg/L	mg/L	mg/L	mg/L
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead (STLC)	0.50	1.00	4.05	6.65	2.57	7.69	2.38

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B-STLC), DI Soluble Threshold Limit Concentration (DI-STLC) for Lead

QC Batch No: 1008132C4

Our Lab I.D.			Method Blank	70833.02	70833.06		
Client Sample I.D.				B-1-0.5b	B-2-1		
Date Sampled				09/26/2013	09/26/2013		
Date Prepared			10/08/2013	10/08/2013	10/08/2013		
Preparation Method			TITLE 22	TITLE 22	TITLE 22		
Date Analyzed			10/10/2013	10/10/2013	10/10/2013		
Matrix			Soil	Soil	Soil		
Units			mg/L	mg/L	mg/L		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Lead (STLC-DI)	0.05	0.10	ND	ND	ND		

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010/7000TCLP), Toxicity Characteristic Leaching Procedure (TCLP,EPA 1311)

QC Batch No: 1008132C3

Our Lab I.D.			Method Blank	70833.02	70833.06		
Client Sample I.D.				B-1-0.5b	B-2-1		
Date Sampled				09/26/2013	09/26/2013		
Date Prepared			10/08/2013	10/08/2013	10/08/2013		
Preparation Method			1311	1311	1311		
Date Analyzed			10/09/2013	10/09/2013	10/09/2013		
Matrix			Soil	Soil	Soil		
Units			mg/L	mg/L	mg/L		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Lead (TCLP)	0.05	0.10	ND	0.148	0.149		

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010/7000TCLP), Toxicity Characteristic Leaching Procedure (TCLP,EPA 1311)

QC Batch No: 1008132C3; Dup or Spiked Sample: 70833.02; LCS: Clean Sand; LCS Prepared: 10/08/2013; LCS Analyzed: 10/09/2013; Units: mg/L

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
Lead (TCLP)	0.148	0.081	58.5	<20	1.00	0.970	97.2	80-120		

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B-STLC), DI Soluble Threshold Limit Concentration (DI-STLC) for Lead

QC Batch No: 1008132C4; Dup or Spiked Sample: 70833.02; LCS: Clean Sand; LCS Prepared: 10/08/2013; LCS Analyzed: 10/10/2013; Units: mg/L

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
Lead (STLC-DI)	ND	ND	<1	<20	1.00	0.900	90.0	80-120		

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1004132C12; Dup or Spiked Sample: 70833.01; LCS: Clean Sand; LCS Prepared: 10/04/2013; LCS Analyzed: 10/07/2013; Units: mg/L

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
Lead (STLC)	4.05	4.28	5.5	<20	1.00	0.880	87.8	80-120		

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C3; Dup or Spiked Sample: 70833.01; LCS: Clean Sand; QC Prepared: 10/03/2013; QC Analyzed: 10/04/2013; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Lead	66.0	50.0	78.6 M	25.2	50.0	84.4 M	36.8	37.4	75-125	<15

QC Batch No: 1003132C3; Dup or Spiked Sample: 70833.01; LCS: Clean Sand; QC Prepared: 10/03/2013; QC Analyzed: 10/04/2013; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Lead	50.0	48.2	96.4	50.0	47.4	94.8	1.67	75-125	<15	

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C4; Dup or Spiked Sample: 70833.21; LCS: Clean Sand; QC Prepared: 10/03/2013; QC Analyzed: 10/04/2013; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Lead	4.32	50.0	43.4	78.2	50.0	44.1	79.6	1.77	75-125	<15

QC Batch No: 1003132C4; Dup or Spiked Sample: 70833.21; LCS: Clean Sand; QC Prepared: 10/03/2013; QC Analyzed: 10/04/2013; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Lead	50.0	47.8	95.6	50.0	47.6	95.2	<1	75-125	<15	

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100313-1; Dup or Spiked Sample: 70833.02; LCS: Clean Sand; LCS Prepared: 10/03/2013; LCS Analyzed: 10/03/2013; Units: pH unit

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
pH	7.82	7.85	<1	<15	7.00	7.00	100	80-120		

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QUALITY CONTROL RESULTS

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32 Mauchly
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Telephone: (949)450-2100
Attn: Jack Packwood

Site

Chesebro Road/ US 101

Page: **22**

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70833	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100413-1; Dup or Spiked Sample: 70842.01; LCS: Clean Sand; LCS Prepared: 10/04/2013; LCS Analyzed: 10/04/2013; Units: pH unit

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
pH	7.29	7.25	<1	<15	7.00	7.00	100	80-120		

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

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Irvine, CA 92618-

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Attention: Jack Packwood

Number of Pages	**27**
Date Received	**10/02/2013**
Date Reported	**10/04/2013**

Job Number	Order Date	Client
70834	10/02/2013	GROUP

Project ID: LA-1143-2
Project Name: Palo Comado
Site: Chesebro Rd/ US 101

Enclosed please find results of analyses of 1 water and 21 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.

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CHAIN OF CUSTODY RECORD

№ 83149

AETL JOB No. 70834

COMPANY: Group Delta Consultants
PROJECT MANAGER:
COMPANY ADDRESS: 32 Mauchly, Suite B, Irvine, CA 92618
PHONE: 949-450-2100
FAX:
PROJECT NAME: Palo Comado
PROJECT #: LA-1143-2
SITE NAME AND ADDRESS: Chesebro Rd / US 101
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	Lead 6010B	pH 9045C	STLC Pb	STLC-DI Pb	TCLP Pb
1	B-9-2	70834.01	9-26-13	10:20	Soil	402 Glass Jar	None	/				
2	B-10-0.5	70834.02		10:25				/				
3	B-10-1	70834.03		10:32				/				
4	B-10-2	70834.04		10:40				/				
5	B-11-0.5	70834.05		10:50				/				
6	B-11-1	70834.06		10:55				/				
7	B-11-2	70834.07		11:00				/				
8	B-12-0.5	70834.08		11:05				/		X	*	*
9	B-12-1	70834.09		11:10				/				
10	B-12-2a	70834.10		11:19				/				
11	B-12-2b	70834.11		11:20				/	/			
12	B-13-0.5a	70834.12		11:30				/		X	*	*
13	B-13-0.5b	70834.13		11:31				/	/	X		
14	B-13-1	70834.14		11:40				/		X		
15	B-13-2	70834.15		11:45				/				

ANALYSIS REQUESTED

TEST INSTRUCTIONS & COMMENTS

X - Added 10/4 2 DAYS TAT
* - Added 10/8 2 DAYS TAT

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y / N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

TURN AROUND TIME

☐ NORMAL ☒ RUSH ☐ SAME DAY ☐ NEXT DAY ☒ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY ☐ PDF ☐ GEOTRACKER (GLOBAL ID) ☐ OTHER (PLEASE SPECIFY)

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature:
Printed Name: Kevin Garcia	Printed Name:	Printed Name:
Date: 10-2-13 Time: 3:40	Date: Time:	Date: Time:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name: Leon Glandon
Date: Time:	Date: Time:	Date: 10/02/13 Time: 1540

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

№ 83150

AETL JOB No. 70834

COMPANY: Group Delta Consultants
PROJECT MANAGER:
COMPANY ADDRESS: 32 Mauchly, Suite B
PHONE: 949-450-2100
FAX:
PROJECT NAME: Palo Comado
PROJECT #: LA-1143-2
SITE NAME AND ADDRESS: Chesebro Rd / U.S. 101
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	Lead 6010 B	pH 9045 C	STLC Pb	STLC-DI Pb	TCLP Pb	TEST INSTRUCTIONS & COMMENTS
1	B-14-0.5	70834.16	9-26-13	11:50		4oz. Glass jar	None	✓		X	*	*	
2	B-14-1	70834-17		11:54				✓		X			
3	B-14-2	70834-18		11:59				✓					
4	B-15-0.5	70834-19		12:05				✓					
5	B-15-1	70834-20		12:10				✓		X	*	*	
6	B-15-2	70834-21	↓	12:15			↓	✓					
7	Rinse	70834-22	9-26-13	2:30		Amber Jar	none	✓					
8													
9													
10													
11													
12													
13													
14													
15													

ANALYSIS REQUESTED

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	7	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y / N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

TURN AROUND TIME

☐ NORMAL ☒ RUSH
☐ SAME DAY
☐ NEXT DAY
☒ 2 DAYS
☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature:
Printed Name: Kevin Garcia	Printed Name:	Printed Name:
Date: 10-2-13 Time: 3:40	Date: Time:	Date: Time:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name: Sean Vander
Date: Time:	Date: Time:	Date: 10/02/13 Time: 1540

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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Telephone: (949)450-2100
Attention: Jack Packwood

Project ID: LA-1143-2
Date Received 10/02/2013
Date Reported 10/04/2013

Job Number	Order Date	Client
70834	10/02/2013	GROUP

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 22 samples with the following specification on 10/02/2013.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
70834.22	Rinse	09/26/2013	Aqueous	1

Method ^ Submethod	Req Date	Priority	TAT	Units
6010B.LEAD	10/04/2013	3	Rush	mg/L
9040B	10/04/2013	3	Rush	pH unit

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
70834.01	B-9-2	09/26/2013	Soil	1
70834.02	B-10-0.5	09/26/2013	Soil	1
70834.03	B-10-1	09/26/2013	Soil	1
70834.04	B-10-2	09/26/2013	Soil	1
70834.05	B-11-0.5	09/26/2013	Soil	1
70834.06	B-11-1	09/26/2013	Soil	1
70834.07	B-11-2	09/26/2013	Soil	1
70834.09	B-12-1	09/26/2013	Soil	1
70834.15	B-13-2	09/26/2013	Soil	1
70834.18	B-14-2	09/26/2013	Soil	1
70834.19	B-15-0.5	09/26/2013	Soil	1
70834.21	B-15-2	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg

70834.08	B-12-0.5	09/26/2013	Soil	1
70834.16	B-14-0.5	09/26/2013	Soil	1
70834.20	B-15-1	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010/7000TCLP) ^ PB	10/04/2013	3	Rush	mg/L
(6010B-STLC) ^ STLC-DI-PB	10/04/2013	3	Rush	mg/L
(6010B-STLC) ^ STLC-PB	10/04/2013	3	Rush	mg/L

Continued

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Project ID: LA-1143-2
Date Received 10/02/2013
Date Reported 10/04/2013

Job Number	Order Date	Client
70834	10/02/2013	GROUP

CERTIFICATE OF ANALYSIS

CASE NARRATIVE

70834.20	B-15-1	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg

70834.10	B-12-2a	09/26/2013	Soil	1
70834.11	B-12-2b	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg
9045C	10/04/2013	3	Rush	pH unit

70834.12	B-13-0.5a	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010/7000TCLP) ^ PB	10/04/2013	3	Rush	mg/L
(6010B-STLC) ^ STLC-DI-PB	10/04/2013	3	Rush	mg/L
(6010B-STLC) ^ STLC-PB	10/04/2013	3	Rush	mg/L
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg
9045C	10/04/2013	3	Rush	pH unit

70834.13	B-13-0.5b	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B-STLC) ^ STLC-PB	10/04/2013	3	Rush	mg/L
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg
9045C	10/04/2013	3	Rush	pH unit

70834.14	B-13-1	09/26/2013	Soil	1
70834.17	B-14-1	09/26/2013	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010B-STLC) ^ STLC-PB	10/04/2013	3	Rush	mg/L
(6010B.LEAD)	10/04/2013	3	Rush	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody.
No analytical non-conformances were encountered.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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ANALYTICAL RESULTS

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Page: **2**

Site

Chesebro Rd/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C5

Our Lab I.D.			Method Blank	70834.01	70834.02	70834.03	70834.04
Client Sample I.D.				B-9-2	B-10-0.5	B-10-1	B-10-2
Date Sampled				09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/03/2013	10/03/2013	10/03/2013	10/03/2013	10/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	ND	5.10	32.5	12.7	5.32

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ANALYTICAL RESULTS

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Site

Chesebro Rd/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C5

Our Lab I.D.			70834.05	70834.06	70834.07	70834.08	70834.09
Client Sample I.D.			B-11-0.5	B-11-1	B-11-2	B-12-0.5	B-12-1
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/03/2013	10/03/2013	10/03/2013	10/03/2013	10/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	20.9	3.84J	3.94J	235	20.1

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Site

Chesebro Rd/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C5

Our Lab I.D.			70834.10	70834.11	70834.12	70834.13	70834.14
Client Sample I.D.			B-12-2a	B-12-2b	B-13-0.5a	B-13-0.5b	B-13-1
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/03/2013	11/03/2013	11/03/2013	11/03/2013	11/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	2.58J	4.61J	124	109	103

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ANALYTICAL RESULTS

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Site

Chesebro Rd/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C5

Our Lab I.D.			70834.15	70834.16	70834.17	70834.18	70834.19
Client Sample I.D.			B-13-2	B-14-0.5	B-14-1	B-14-2	B-15-0.5
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			11/03/2013	11/03/2013	11/03/2013	11/03/2013	11/03/2013
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead	2.5	5.0	24.2	169	140	24.2	8.21

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Attn: Jack Packwood
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Site

Chesebro Rd/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C5

Our Lab I.D.			70834.20				
Client Sample I.D.			B-15-1				
Date Sampled			09/26/2013				
Date Prepared			11/03/2013				
Preparation Method			3050B				
Date Analyzed			10/04/2013				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Lead	2.5	5.0	381				

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ANALYTICAL RESULTS

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Telephone: (949)450-2100
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Site

Chesebro Rd/ US 101

Page: **7**

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C4

Our Lab I.D.			Method Blank	**70834.21**			
Client Sample I.D.				B-15-2			
Date Sampled				09/26/2013			
Date Prepared			10/03/2013	10/03/2013			
Preparation Method			3050B	3050B			
Date Analyzed			10/04/2013	10/04/2013			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Lead	2.5	5.0	ND	4.22J			

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Chesebro Rd/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1004132C12

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			10/04/2013				
Preparation Method			TITLE 22				
Date Analyzed			10/07/2013				
Matrix			Soil				
Units			mg/L				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Lead (STLC)	0.05	0.10	ND				

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Chesebro Rd/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1004132C12

Our Lab I.D.			70834.08	70834.12	70834.13	70834.14	70834.16
Client Sample I.D.			B-12-0.5	B-13-0.5a	B-13-0.5b	B-13-1	B-14-0.5
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/04/2013	10/04/2013	10/04/2013	10/04/2013	10/04/2013
Preparation Method			TITLE 22	TITLE 22	TITLE 22	TITLE 22	TITLE 22
Date Analyzed			10/07/2013	10/07/2013	10/07/2013	10/07/2013	10/07/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/L	mg/L	mg/L	mg/L	mg/L
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead (STLC)	0.50	1.00	8.82	8.18	2.91	4.42	7.32

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Chesebro Rd/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1004132C12

Our Lab I.D.			70834.17	70834.20			
Client Sample I.D.			B-14-1	B-15-1			
Date Sampled			09/26/2013	09/26/2013			
Date Prepared			10/04/2013	10/04/2013			
Preparation Method			TITLE 22	TITLE 22			
Date Analyzed			10/07/2013	10/07/2013			
Matrix			Soil	Soil			
Units			mg/L	mg/L			
Dilution Factor			10	10			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Lead (STLC)	0.50	1.00	4.04	15.5			

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B-STLC), DI Soluble Threshold Limit Concentration (DI-STLC) for Lead

QC Batch No: 1008132C4

Our Lab I.D.			Method Blank	70834.08	70834.12	70834.16	70834.20
Client Sample I.D.				B-12-0.5	B-13-0.5a	B-14-0.5	B-15-1
Date Sampled				09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013
Preparation Method			TITLE 22	TITLE 22	TITLE 22	TITLE 22	TITLE 22
Date Analyzed			10/10/2013	10/10/2013	10/10/2013	10/10/2013	10/10/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/L	mg/L	mg/L	mg/L	mg/L
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead (STLC-DI)	0.05	0.10	ND	ND	ND	ND	ND

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010/7000TCLP), Toxicity Characteristic Leaching Procedure (TCLP,EPA 1311)

QC Batch No: 1008132C3

Our Lab I.D.			Method Blank	70834.08	70834.12	70834.16	70834.20
Client Sample I.D.				B-12-0.5	B-13-0.5a	B-14-0.5	B-15-1
Date Sampled				09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013
Preparation Method			1311	1311	1311	1311	1311
Date Analyzed			10/09/2013	10/09/2013	10/09/2013	10/09/2013	10/09/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/L	mg/L	mg/L	mg/L	mg/L
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead (TCLP)	0.05	0.10	ND	0.0876J	ND	0.0894J	0.410

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100413-1

Our Lab I.D.			70834.10				
Client Sample I.D.			B-12-2a				
Date Sampled			09/26/2013				
Date Prepared			10/04/2013				
Preparation Method			9045C				
Date Analyzed			10/04/2013				
Matrix			Soil				
Units			pH unit				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
pH	1.00	1.00	7.07				

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100313-1

Our Lab I.D.			70834.11				
Client Sample I.D.			B-12-2b				
Date Sampled			09/26/2013				
Date Prepared			10/03/2013				
Preparation Method			9045C				
Date Analyzed			10/03/2013				
Matrix			Soil				
Units			pH unit				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
pH	1.00	1.00	6.19				

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100413-1

Our Lab I.D.			70834.12				
Client Sample I.D.			B-13-0.5a				
Date Sampled			09/26/2013				
Date Prepared			10/04/2013				
Preparation Method			9045C				
Date Analyzed			10/04/2013				
Matrix			Soil				
Units			pH unit				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
pH	1.00	1.00	6.60				

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100313-1

Our Lab I.D.			70834.13				
Client Sample I.D.			B-13-0.5b				
Date Sampled			09/26/2013				
Date Prepared			10/03/2013				
Preparation Method			9045C				
Date Analyzed			10/03/2013				
Matrix			Soil				
Units			pH unit				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
pH	1.00	1.00	6.59				

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 6010B.LEAD, Lead, ICP

QC Batch No: 1003132C1

Our Lab I.D.			Method Blank	**70834.22**			
Client Sample I.D.				Rinse			
Date Sampled				09/26/2013			
Date Prepared			10/03/2013	10/03/2013			
Preparation Method			3005A	3005A			
Date Analyzed			10/03/2013	10/03/2013			
Matrix			Aqueous	Aqueous			
Units			mg/L	mg/L			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Lead	0.05	0.10	ND	ND			

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 9040B, pH Electrometric Measurement

QC Batch No: 100213-1

Our Lab I.D.			70834.22				
Client Sample I.D.			Rinse				
Date Sampled			09/26/2013				
Date Prepared			10/02/2013				
Preparation Method			9040B				
Date Analyzed			10/02/2013				
Matrix			Aqueous				
Units			pH unit				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
pH	0.01	0.01	7.61				

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 6010B.LEAD, Lead, ICP

QC Batch No: 1003132C1; Dup or Spiked Sample: 70834.22; LCS: Clean Water; QC Prepared: 10/03/2013; QC Analyzed: 10/03/2013; Units: mg/L

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Lead	0.00	1.00	0.910	91.4	1.00	0.920	92.0	<1	75-125	<15

QC Batch No: 1003132C1; Dup or Spiked Sample: 70834.22; LCS: Clean Water; QC Prepared: 10/03/2013; QC Analyzed: 10/03/2013; Units: mg/L

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Lead	1.00	0.870	87.0	75-125						

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 9040B, pH Electrometric Measurement

QC Batch No: 100213-1; Dup or Spiked Sample: 70824.01; LCS: Clean Water; LCS Prepared: 10/02/2013; LCS Analyzed: 10/02/2013; Units: pH unit

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
pH	1.80	1.76	2.2	<15	7.00	7.00	100	80-120		

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010/7000TCLP), Toxicity Characteristic Leaching Procedure (TCLP,EPA 1311)

QC Batch No: 1008132C3; Dup or Spiked Sample: 70833.02; LCS: Clean Sand; LCS Prepared: 10/08/2013; LCS Analyzed: 10/09/2013; Units: mg/L

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
Lead (TCLP)	0.148	0.087	51.9	<20	1.00	0.972	97.2	80-120		

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B-STLC), DI Soluble Threshold Limit Concentration (DI-STLC) for Lead

QC Batch No: 1008132C4; Dup or Spiked Sample: 70833.02; LCS: Clean Sand; LCS Prepared: 10/08/2013; LCS Analyzed: 10/10/2013; Units: mg/L

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
Lead (STLC-DI)	ND	ND	<1	<20	1.00	0.900	90.0	80-120		

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1004132C12; Dup or Spiked Sample: 70833.01; LCS: Clean Sand; LCS Prepared: 10/04/2013; LCS Analyzed: 10/07/2013; Units: mg/L

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
Lead (STLC)	4.05	4.28	5.5	<20	1.00	0.880	87.8	80-120		

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C4; Dup or Spiked Sample: 70833.21; LCS: Clean Sand; QC Prepared: 10/03/2013; QC Analyzed: 10/04/2013; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Lead	4.32	50.0	43.4	78.2	50.0	44.1	79.6	1.77	75-125	<15

QC Batch No: 1003132C4; Dup or Spiked Sample: 70833.21; LCS: Clean Sand; QC Prepared: 10/03/2013; QC Analyzed: 10/04/2013; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Lead	50.0	47.8	95.6	50.0	47.6	95.2	<1	75-125	<15	

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: (6010B.LEAD), Lead, ICP

QC Batch No: 1003132C5; Dup or Spiked Sample: 70834.11; LCS: Clean Sand; QC Prepared: 11/03/2013; QC Analyzed: 10/04/2013; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Lead	4.61	50.0	43.3	77.4	50.0	43.1	77.0	<1	75-125	<15

QC Batch No: 1003132C5; Dup or Spiked Sample: 70834.11; LCS: Clean Sand; QC Prepared: 11/03/2013; QC Analyzed: 10/04/2013; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Lead	50.0	44.1	88.2	50.0	43.6	87.2	1.1	75-125	<15	

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Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100313-1; Dup or Spiked Sample: 70833.02; LCS: Clean Sand; LCS Prepared: 10/03/2013; LCS Analyzed: 10/03/2013; Units: pH unit

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
pH	7.82	7.85	<1	<15	7.00	7.00	100	80-120		

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QUALITY CONTROL RESULTS

Ordered By

Group Delta Consultants
32 Mauchly
Suite B
Irvine, CA 92618-

Telephone: (949)450-2100
Attn: Jack Packwood

Site

Chesebro Rd/ US 101

Page: **27**

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70834	10/02/2013	GROUP

Method: 9045C, Soil and Waste pH

QC Batch No: 100413-1; Dup or Spiked Sample: 70842.01; LCS: Clean Sand; LCS Prepared: 10/04/2013; LCS Analyzed: 10/04/2013; Units: pH unit

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
pH	7.29	7.25	<1	<15	7.00	7.00	100	80-120		

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

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Ordered By

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Irvine, CA 92618-

Telephone: (949)450-2100
Attention: Jack Packwood

Number of Pages	**5**
Date Received	**10/02/2013**
Date Reported	**10/14/2013**

Job Number	Order Date	Client
70937	10/10/2013	GROUP

Project ID: LA-1143-2
Project Name: Palo Comado
Site: Chesebro Road/ US 101

Enclosed please find results of analyses of 10 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.

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CHAIN OF CUSTODY RECORD

70937
AETL JOB No. ~~70833~~

Nº 61551

COMPANY: Group Delta Consultants
PROJECT MANAGER:
COMPANY ADDRESS: 32 Mauchly Suite B, Irvine CA 92618
PHONE: 949-450-2100
FAX:
PROJECT NAME: Palo Comado
PROJECT #: LA-1143-2
SITE NAME AND ADDRESS: Cheseboro Rd / US-101
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.
1	B-1-0.5a	70833.01	9-26-13	~~2~~:00	Soil	4oz Glass Jar	None
2	B-1-0.5b	70833.02		2:00			
3	B-1-1	~~70833.03~~		2:07			
4	B-1-2	70833.04		2:12			
5	B-2-0.5	70833.05		1:45			
6	B-2-1	70833.06		1:52			
7	B-2-2	70833.07		1:56			
8	B-3-0.5	~~70833.08~~		1:30			
9	B-3-1a	~~70833.09~~		1:36			
10	B-3-1b	70833.10		1:37			
11	B-3-2	70833.11		1:41			
12	B-4-0.5	~~70833.12~~		1:10			
13	B-4-1	~~70833.13~~		1:15			
14	B-4-2	70833.14		1:20			
15							

ANALYSIS REQUESTED

	Lead 6010B	pH 9045C	STLC Pb	STLC-02 Pb	TCLP Pb		STLC Pb			
1	/		X							
2	/	/	X	*	*					
3	/						⊛			
4	/									
5	/		X							
6	/		X	*	*					
7	/									
8	/						⊛			
9	/						⊛			
10	/	/								
11	/									
12	/						⊛			
13	/						⊛			
14	/									
15										

TEST INSTRUCTIONS & COMMENTS

X - Added 10/4 2 DAYS TAT
* - Added 10/8 2 DAYS TAT
⊛ - Added 10/10 2 DAYS TAT

70937.01
70937.02
70937.03
70937.04
70937.05

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	14	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y / N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

TURN AROUND TIME

☐ NORMAL ☒ RUSH ☐ SAME DAY ☐ NEXT DAY ☒ 2 DAYS ☐ 3 DAYS

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature:
Printed Name: Kevin Garcia	Printed Name:	Printed Name:
Date: 10-2-13 Time: 2:40	Date: Time:	Date: Time:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name: Ryan Claude
Date: Time:	Date: Time:	Date: 10/02/13 Time: 1540

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

70937
70833

Nº 83148

AETL JOB No.

COMPANY: Group Delta Consultants
PROJECT MANAGER:
COMPANY ADDRESS: 32 Mauchly, Suite B, Irvine, CA 92618
PHONE: 949-450-2100
FAX:
PROJECT NAME: Palo Comado
PROJECT #: LA-1143-2
SITE NAME AND ADDRESS: Chesebro Rd / US 101
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	Lead 6010B	pH 9045C	STLC Pb		STLC Pb						TEST INSTRUCTIONS & COMMENTS
1	B-5-0.5	~~70833.15~~	9-26-13	12:54		4oz Glass jar	None	✓				⊛						70937.06
2	B-5-1a	~~70833.16~~		12:58				✓				⊛						70937.07
3	B-5-1b	70833.17		12:59				✓	✓									
4	B-5-2	70833.18		1:04				✓										
5	B-6-0.5	70833.19		12:40				✓		X								
6	B-6-1	~~70833.20~~		12:45				✓				⊛						70937.08
7	B-6-2	70833.21		12:50				✓										
8	B-7-0.5	~~70833.22~~		12:20				✓				⊛						70937.09
9	B-7-1	~~70833.23~~		12:26				✓				⊛						70937.10
10	B-7-2	70833.24		12:34				✓										
11	B-8-0.5	70833.25		9:45				✓										
12	B-8-1	70833.26		9:52				✓										
13	B-8-2	70833.27		10:00				✓										
14	B-9-0.5	70833.28		10:09				✓										
15	B-9-1	70833.29		10:14				✓										

ANALYSIS REQUESTED

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y / N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

TURN AROUND TIME

☐ NORMAL ☒ RUSH
☐ SAME DAY
☐ NEXT DAY
☒ 2 DAYS
☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☐ PDF
☐ GEOTRACKER (GLOBAL ID) _____
☐ OTHER (PLEASE SPECIFY) _____

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature:
Printed Name: Kevin Garcia	Printed Name:	Printed Name:
Date: 10-2-13 Time: 3:40	Date: Time:	Date: Time:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: AETL 3.**
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name: Diego Canales
Date: Time:	Date: Time:	Date: 10/02/13 Time: 1540

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

JIM LIN

From: Jack Packwood [jackp@groupdelta.com]
Sent: Thursday, October 10, 2013 1:33 PM
To: 'JIM LIN'
Subject: RE: Summary Table results of analysis of samples from project "Chesebro Road / US 101, Palo Comado, CA"

Hi Jim,

We need additional citric STLCs run for our statistical analysis:

B-1-1
B-3-.5
B-3-1
B-4-.5
B-4-1
B-5-.5
B-5-1
B-6-1
B-7-.5
B-7-1

You can begin these immediately.

Thanks,
Jack Packwood

From: JIM LIN [mailto:jiml@aetlab.com]
Sent: Tuesday, October 08, 2013 12:54 PM
To: Jack Packwood (Group Delta)
Cc: Kevin Garcia (Group Delta)
Subject: Summary Table results of analysis of samples from project "Chesebro Road / US 101, Palo Comado, CA"

Dear Jack & Kevin,

Herewith please find Summary Table results of analysis of samples from project ID LA-1143-2 "Chesebro Road / US 101, Palo Comado, CA"

AETL Job No: 70833 & 70834 (STLC-DI & TCLP Lead in process for a two days TAT)

Thank you.

Should you have additional question, please feel free to contact us.

Jim Lin
Operations Manager
AETL
818-845-8200

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Ordered By

Group Delta Consultants 32 Mauchly Suite B Irvine, CA 92618-	Project ID: LA-1143-2 Date Received 10/02/2013 Date Reported 10/14/2013

Telephone: (949)450-2100
Attention: Jack Packwood

Job Number	Order Date	Client
70937	10/10/2013	GROUP

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 10 samples with the following specification on 10/10/2013.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
70937.01	B-1-1	09/26/2013	Soil	1
70937.02	B-3-0.5	09/26/2013	Soil	1
70937.03	B-3-1a	09/26/2013	Soil	1
70937.04	B-4-0.5	09/26/2013	Soil	1
70937.05	B-4-1	09/26/2013	Soil	1
70937.06	B-5-0.5	09/26/2013	Soil	1
70937.07	B-5-1a	09/26/2013	Soil	1
70937.08	B-6-1	09/26/2013	Soil	1
70937.09	B-7-0.5	09/26/2013	Soil	1
70937.10	B-7-1	09/26/2013	Soil	1

Method ^ Submethod	*Req Date*	*Priority*	*TAT*	*Units*
(6010B-STLC) ^ STLC-PB	10/14/2013	3	Rush	mg/L

The samples were analyzed as specified on the enclosed chain of custody.
No analytical non-conformances were encountered.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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ANALYTICAL RESULTS

Ordered By

Group Delta Consultants
32 Mauchly
Suite B
Irvine, CA 92618-

Telephone: (949)450-2100
Attn: Jack Packwood
Page: **2**

Site

Chesebro Road/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70937	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1010132C1

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			10/10/2013				
Preparation Method			TITLE 22				
Date Analyzed			10/14/2013				
Matrix			Soil				
Units			mg/L				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Lead (STLC)	0.05	0.10	ND				

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ANALYTICAL RESULTS

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Telephone: (949)450-2100
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Page: 3

Site

Chesebro Road/ US 101

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70937	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1010132C1

Our Lab I.D.			70937.01	70937.02	70937.03	70937.04	70937.05
Client Sample I.D.			B-1-1	B-3-0.5	B-3-1a	B-4-0.5	B-4-1
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/10/2013	10/10/2013	10/10/2013	10/10/2013	10/10/2013
Preparation Method			TITLE 22	TITLE 22	TITLE 22	TITLE 22	TITLE 22
Date Analyzed			10/14/2013	10/14/2013	10/14/2013	10/14/2013	10/14/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/L	mg/L	mg/L	mg/L	mg/L
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead (STLC)	0.50	1.00	0.834J	ND	ND	0.972J	ND

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ANALYTICAL RESULTS

Ordered By

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32 Mauchly
Suite B
Irvine, CA 92618-

Telephone: (949)450-2100
Attn: Jack Packwood

Site

Chesebro Road/ US 101

Page: **4**

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70937	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1010132C1

Our Lab I.D.			70937.06	70937.07	70937.08	70937.09	70937.10
Client Sample I.D.			B-5-0.5	B-5-1a	B-6-1	B-7-0.5	B-7-1
Date Sampled			09/26/2013	09/26/2013	09/26/2013	09/26/2013	09/26/2013
Date Prepared			10/10/2013	10/10/2013	10/10/2013	10/10/2013	10/10/2013
Preparation Method			TITLE 22	TITLE 22	TITLE 22	TITLE 22	TITLE 22
Date Analyzed			10/14/2013	10/14/2013	10/14/2013	10/14/2013	10/14/2013
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/L	mg/L	mg/L	mg/L	mg/L
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Lead (STLC)	0.50	1.00	0.812J	ND	0.694J	1.09	ND

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QUALITY CONTROL RESULTS

Ordered By

Group Delta Consultants
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Suite B
Irvine, CA 92618-

Telephone: (949)450-2100
Attn: Jack Packwood

Site

Chesebro Road/ US 101

Page: **5**

Project ID: LA-1143-2
Project Name: Palo Comado

AETL Job Number	Submitted	Client
70937	10/02/2013	GROUP

Method: (6010B-STLC), Soluble Threshold Limit Concentration (STLC)

QC Batch No: 1010132C1; Dup or Spiked Sample: 70937.01; LCS: Clean Sand; LCS Prepared: 10/10/2013; LCS Analyzed: 10/14/2013; Units: mg/L

Analytes	SM Result	SM DUP Result	RPD %	SM RPD % Limit	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit		
Lead (STLC)	0.834	0.760	9.3	<20	50.0	45.4	90.8	80-120		

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

APPENDIX B
Statistical Analysis of Lead Results

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:38:48 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

West 0.0-0.5

General Statistics

Total Number of Observations	8	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	0.5	Mean	2.378
Maximum	6.65	Median	1.735
SD	2.094	SD of logged Data	0.883
Coefficient of Variation	0.881	Skewness	1.395

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.846	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.231	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.313	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.781	95% Adjusted-CLT UCL (Chen-1995)	3.986
		95% Modified-t UCL (Johnson-1978)	3.842

Suggested UCL to Use

95% Student's-t UCL	3.781

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:41:53 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

West 1.0-1.5

General Statistics

Total Number of Observations	7	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	0.5	Mean	1.603
Maximum	7.69	Median	0.5
SD	2.687	SD of logged Data	1.001
Coefficient of Variation	1.677	Skewness	2.633

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.49	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.803	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.47	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.335	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	3.576	95% Adjusted-CLT UCL (Chen-1995)	4.353
		95% Modified-t UCL (Johnson-1978)	3.745

Suggested UCL to Use

Data do not follow a Discernible Distribution, May want to try Nonparametric UCLs

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:43:30 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

West 0.0-1.5

General Statistics

Total Number of Observations	14	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.5	Mean	1.685
Maximum	7.69	Median	0.823
SD	2.024	SD of logged Data	0.89
Coefficient of Variation	1.201	Skewness	2.376

Normal GOF Test

Shapiro Wilk Test Statistic	0.652	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.874	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.33	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.237	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	2.643	95% Adjusted-CLT UCL (Chen-1995)	2.942
		95% Modified-t UCL (Johnson-1978)	2.701

Suggested UCL to Use

Data appear Approximate Lognormal, May want to try Lognormal Distribution

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:49:55 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-1 and B-2 0.0-0.5 ft

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	51.8	Mean	84.6
Maximum	136	Median	66
SD	45.08	SD of logged Data	0.502
Coefficient of Variation	0.533	Skewness	1.541

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.872	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.327	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.512	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	160.6	95% Adjusted-CLT UCL (Chen-1995)	152.1
		95% Modified-t UCL (Johnson-1978)	164.5

Suggested UCL to Use

95% Student's-t UCL	160.6		

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:22:42 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-1 / B-2 0.0-0.5 ft

General Statistics

Total Number of Observations	3	Number of Distinct Observations	3
		Number of Missing Observations	0
Minimum	2.57	Mean	4.423
Maximum	6.65	Median	4.05
SD	2.065	SD of logged Data	0.476
Coefficient of Variation	0.467	Skewness	0.787

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.975	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.238	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.512	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	7.905	95% Adjusted-CLT UCL (Chen-1995)	6.964
		95% Modified-t UCL (Johnson-1978)	7.996

Suggested UCL to Use

95% Student's-t UCL	7.905		

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:50:18 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-1 and B-2 1.0-1.5 ft

General Statistics

Total Number of Observations	4	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	24.8	Mean	55.9
Maximum	87	Median	55.9
SD	35.91	SD of logged Data	0.725
Coefficient of Variation	0.642	Skewness	3.142E-16

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.731	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.307	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.443	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	98.16	95% Adjusted-CLT UCL (Chen-1995)	85.43
		95% Modified-t UCL (Johnson-1978)	98.16

Suggested UCL to Use

95% Student's-t UCL	98.16		

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:24:00 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-1 and B-2 1.0-1.5 ft

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	0.834	Mean	4.262
Maximum	7.69	Median	4.262

Warning: This data set only has 2 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable C24 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:44:33 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-1 and B-2 0.0-1.5

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	0.83	Mean	4.358
Maximum	7.69	Median	4.05
SD	2.833	SD of logged Data	0.896
Coefficient of Variation	0.65	Skewness	-0.0114

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.958	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.191	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.396	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	7.059	95% Adjusted-CLT UCL (Chen-1995)	6.435
		95% Modified-t UCL (Johnson-1978)	7.057

Suggested UCL to Use

95% Student's-t UCL	7.059

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:50:40 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-1 and B-2 2.0-2.5 ft

General Statistics

Total Number of Observations	4	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	10.8	Mean	28.55
Maximum	46.3	Median	28.55
SD	20.5	SD of logged Data	0.84
Coefficient of Variation	0.718	Skewness	5.634E-16

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.731	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.307	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.443	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	52.67	95% Adjusted-CLT UCL (Chen-1995)	45.41
		95% Modified-t UCL (Johnson-1978)	52.67

Suggested UCL to Use

95% Student's-t UCL	52.67		

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:51:04 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-3 through B-7 0.0-0.5 ft

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	8.87	Mean	36.15
Maximum	61	Median	38.9
SD	19.68	SD of logged Data	0.749
Coefficient of Variation	0.544	Skewness	-0.275

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.993	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.155	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	54.92	95% Adjusted-CLT UCL (Chen-1995)	49.48
		95% Modified-t UCL (Johnson-1978)	54.74

Suggested UCL to Use

95% Student's-t UCL	54.92

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:27:18 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-3 through B-7 0.0-0.5 ft

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	0.5	Mean	1.151
Maximum	2.38	Median	0.972
SD	0.722	SD of logged Data	0.567
Coefficient of Variation	0.627	Skewness	1.702

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.831	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.334	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1.839	95% Adjusted-CLT UCL (Chen-1995)	1.944
		95% Modified-t UCL (Johnson-1978)	1.88

Suggested UCL to Use

95% Student's-t UCL	1.839

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:52:56 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-3 through B-7 1.0-1.5 ft

General Statistics

Total Number of Observations	7	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	6.14	Mean	11.57
Maximum	24.6	Median	11.1
SD	6.462	SD of logged Data	0.495
Coefficient of Variation	0.558	Skewness	1.61

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.821	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.803	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.237	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.335	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	16.32	95% Adjusted-CLT UCL (Chen-1995)	17.18
		95% Modified-t UCL (Johnson-1978)	16.57

Suggested UCL to Use

95% Student's-t UCL	16.32

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:28:06 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-3 through B-7 1.0-1.5 ft

General Statistics

Total Number of Observations	5	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	0.5	Mean	0.539
Maximum	0.694	Median	0.5
SD	0.0868	SD of logged Data	0.147
Coefficient of Variation	0.161	Skewness	2.236

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.552	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.473	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	0.622	95% Adjusted-CLT UCL (Chen-1995)	0.644
		95% Modified-t UCL (Johnson-1978)	0.628

Suggested UCL to Use

Data do not follow a Discernible Distribution, May want to try Nonparametric UCLs

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:45:27 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-3 through B-7 0.0-1.5 ft

General Statistics

Total Number of Observations	10	Number of Distinct Observations	6
		Number of Missing Observations	0
Minimum	0.5	Mean	0.845
Maximum	2.38	Median	0.597
SD	0.582	SD of logged Data	0.513
Coefficient of Variation	0.689	Skewness	2.411

Normal GOF Test

Shapiro Wilk Test Statistic	0.661	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.277	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.28	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1.182	95% Adjusted-CLT UCL (Chen-1995)	1.298
		95% Modified-t UCL (Johnson-1978)	1.206

Suggested UCL to Use

95% Student's-t UCL	1.182

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.

For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:54:02 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-3 through B-7 2.0-2.5 ft

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	4.18	Mean	6.072
Maximum	10.6	Median	5.15
SD	2.646	SD of logged Data	0.378
Coefficient of Variation	0.436	Skewness	1.797

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.788	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.294	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	8.595	95% Adjusted-CLT UCL (Chen-1995)	9.035
		95% Modified-t UCL (Johnson-1978)	8.753

Suggested UCL to Use

95% Student's-t UCL	8.595

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:46:14 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

East 0.0-0.5

General Statistics

Total Number of Observations	7	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	0.5	Mean	3.76
Maximum	8.82	Median	0.5
SD	4.089	SD of logged Data	1.489
Coefficient of Variation	1.088	Skewness	0.418

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.715	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.803	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.359	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.335	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	6.763	95% Adjusted-CLT UCL (Chen-1995)	6.563
		95% Modified-t UCL (Johnson-1978)	6.804

Suggested UCL to Use

Data do not follow a Discernible Distribution, May want to try Nonparametric UCLs

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:46:58 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

East 1.0-1.5

General Statistics

Total Number of Observations	8	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	0.5	Mean	3.308
Maximum	15.5	Median	0.5
SD	5.208	SD of logged Data	1.388
Coefficient of Variation	1.575	Skewness	2.298

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.63	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.33	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.313	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	6.796	95% Adjusted-CLT UCL (Chen-1995)	7.934
		95% Modified-t UCL (Johnson-1978)	7.045

Suggested UCL to Use

Data do not follow a Discernible Distribution, May want to try Nonparametric UCLs

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:47:48 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

East 0.0-1.5

General Statistics

Total Number of Observations	16	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	0.5	Mean	3.33
Maximum	15.5	Median	0.5
SD	4.468	SD of logged Data	1.368
Coefficient of Variation	1.342	Skewness	1.64

Normal GOF Test

Shapiro Wilk Test Statistic	0.702	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.887	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.362	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.222	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	5.288	95% Adjusted-CLT UCL (Chen-1995)	5.657
		95% Modified-t UCL (Johnson-1978)	5.365

Suggested UCL to Use

Data do not follow a Discernible Distribution, May want to try Nonparametric UCLs

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:57:52 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-8 thorugh B-11 0.0-0.5 ft

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	5.17	Mean	16.97
Maximum	32.5	Median	15.1
SD	12.31	SD of logged Data	0.821
Coefficient of Variation	0.726	Skewness	0.613

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.945	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.233	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.443	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	31.45	95% Adjusted-CLT UCL (Chen-1995)	29.11
		95% Modified-t UCL (Johnson-1978)	31.77

Suggested UCL to Use

95% Student's-t UCL	31.45

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

1	**Normal UCL Statistics for Uncensored Full Data Sets**											
2												
3	User Selected Options											
4	Date/Time of Computation			10/18/2013 2:37:08 PM								
5	From File			C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8												
9	STLC											
10	**B-8 through B-11 0.0-0.5 ft**											
11												
12	**General Statistics**											
13	Total Number of Observations			4			Number of Distinct Observations			1		
14							Number of Missing Observations			0		
15	Minimum			0.5			Mean			0.5		
16	Maximum			0.5			Median			0.5		
17												
18	**Warning: There is only one distinct observation value in this data set - resulting in '0' variance!**											
19	**ProUCL (or any other software) should not be used on such a data set!**											
20	**The data set for variable 8-11 0.5 was not processed!**											
21												
22	**It is suggested to collect at least 8 to 10 observations using these statistical methods!**											
23	**If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.**											
24	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**											
25												
26												

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:58:31 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-8 thorugh B-11 1.0-1.5 ft

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	2.5	Mean	7.255
Maximum	12.7	Median	6.91
SD	4.877	SD of logged Data	0.772
Coefficient of Variation	0.672	Skewness	0.197

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.906	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.258	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.443	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	12.99	95% Adjusted-CLT UCL (Chen-1995)	11.52
		95% Modified-t UCL (Johnson-1978)	13.03

Suggested UCL to Use

95% Student's-t UCL	12.99		

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

1	**Normal UCL Statistics for Uncensored Full Data Sets**											
2												
3	User Selected Options											
4	Date/Time of Computation	10/18/2013 2:38:22 PM										
5	From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8												
9	STLC											
10	**B-8 through B-11 1.0-1.5 ft**											
11												
12	**General Statistics**											
13	Total Number of Observations	4			Number of Distinct Observations	1						
14					Number of Missing Observations	0						
15	Minimum	0.5			Mean	0.5						
16	Maximum	0.5			Median	0.5						
17												
18	**Warning: There is only one distinct observation value in this data set - resulting in '0' variance!**											
19	**ProUCL (or any other software) should not be used on such a data set!**											
20	**The data set for variable 8-11 1.5 was not processed!**											
21												
22	**It is suggested to collect at least 8 to 10 observations using these statistical methods!**											
23	**If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.**											
24	**The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**											
25												
26												

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:48:37 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-8 through B-11 0.0-1.5 ft

General Statistics

Total Number of Observations	8	Number of Distinct Observations	1
		Number of Missing Observations	0
Minimum	0.5	Mean	0.5
Maximum	0.5	Median	0.5

Warning: There is only one distinct observation value in this data set - resulting in '0' variance!

ProUCL (or any other software) should not be used on such a data set!

The data set for variable B-8 through B-11 was not processed!

If possible, compute and collect Data Quality Objectives (DQOs) based sample size and analytical results.

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:59:01 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-8 thorugh B-11 2.0-2.5 ft

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	3.94	Mean	4.675
Maximum	5.32	Median	4.72
SD	0.645	SD of logged Data	0.14
Coefficient of Variation	0.138	Skewness	-0.222

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.927	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.245	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.443	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	5.434	95% Adjusted-CLT UCL (Chen-1995)	5.167
		95% Modified-t UCL (Johnson-1978)	5.428

Suggested UCL to Use

95% Student's-t UCL	5.434		

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:59:39 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-12 through B-15 0.0-0.5 ft

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	8.21	Mean	129
Maximum	235	Median	124
SD	83.44	SD of logged Data	1.339
Coefficient of Variation	0.647	Skewness	-0.372

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.98	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.205	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.396	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	208.6	95% Adjusted-CLT UCL (Chen-1995)	183.8
		95% Modified-t UCL (Johnson-1978)	207.6

Suggested UCL to Use

95% Student's-t UCL	208.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:39:24 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-12 through B-15 0,0-0.5

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	0
Minimum	0.5	Mean	5.546
Maximum	8.82	Median	7.32
SD	3.647	SD of logged Data	1.216
Coefficient of Variation	0.658	Skewness	-0.754

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.869	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.287	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.396	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	9.023	95% Adjusted-CLT UCL (Chen-1995)	7.641
		95% Modified-t UCL (Johnson-1978)	8.932

Suggested UCL to Use

95% Student's-t UCL	9.023		

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 3:00:09 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-12 through B-15 1.0-1.5 ft

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	20.1	Mean	161
Maximum	381	Median	121.5
SD	155	SD of logged Data	1.221
Coefficient of Variation	0.962	Skewness	1.368

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.897	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.304	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.443	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	343.4	95% Adjusted-CLT UCL (Chen-1995)	345.1
		95% Modified-t UCL (Johnson-1978)	352.2

Suggested UCL to Use

95% Student's-t UCL	343.4

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 2:40:33 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-12 through B-15 1.0-1.5 ft

General Statistics

Total Number of Observations	4	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	0.5	Mean	6.115
Maximum	15.5	Median	4.23
SD	6.501	SD of logged Data	1.423
Coefficient of Variation	1.063	Skewness	1.543

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.848	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.353	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.443	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	13.76	95% Adjusted-CLT UCL (Chen-1995)	14.14
		95% Modified-t UCL (Johnson-1978)	14.18

Suggested UCL to Use

95% Student's-t UCL	13.76

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 1:49:29 PM
From File	C:\Users\keving\Desktop\Palo Comado Analytical Data\Palo Lead_101413.wst
Full Precision	OFF
Confidence Coefficient	95%

STLC

B-12 through B-15 0.0-1.5 ft

General Statistics

Total Number of Observations	8	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	0.5	Mean	6.16
Maximum	15.5	Median	5.87
SD	4.947	SD of logged Data	1.307
Coefficient of Variation	0.803	Skewness	0.733

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.926	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.17	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.313	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	9.474	95% Adjusted-CLT UCL (Chen-1995)	9.521
		95% Modified-t UCL (Johnson-1978)	9.549

Suggested UCL to Use

95% Student's-t UCL	9.474

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

Normal UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	10/18/2013 3:00:50 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%

TTLC

B-12 through B-15 2.0-2.5 ft

General Statistics

Total Number of Observations	5	Number of Distinct Observations	4
		Number of Missing Observations	0
Minimum	2.58	Mean	11.96
Maximum	24.2	Median	4.61
SD	11.2	SD of logged Data	1.054
Coefficient of Variation	0.936	Skewness	0.587

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0

Normal GOF Test

Shapiro Wilk Test Statistic	0.734	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.344	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.396	Data appear Normal at 5% Significance Level	

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	22.64	95% Adjusted-CLT UCL (Chen-1995)	21.6
		95% Modified-t UCL (Johnson-1978)	22.86

Suggested UCL to Use

95% Student's-t UCL	22.64

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.