Appendix A

Upper Guadalupe River Reach 12

Sampling and Analysis Report

(June 2013)

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UPPER GUADALUPE RIVER
REACH 12
SAMPLING AND ANALYSIS REPORT (SAR)

June 2013

U.S. Army Corps of Engineers
San Francisco District
Engineering and Technical Services Division
Planning Branch
Environmental Section A

Table of Contents

Appendices

List of Figures

List of Tables

1 INTRODUCTION

The US Army Corps of Engineers, San Francisco District (USACE) undertook a sampling effort from within Reach 12 of the Upper Guadalupe River Flood Control Project in October 2012. The purpose of this effort was to characterize existing conditions to evaluate the suitability of material for reuse within Reach 12. This sampling and analysis effort was conducted according to the procedures and requirements in the *Upper Guadalupe Reach 12, Sampling and Analysis Plan (SAP)*. This data report has been prepared to provide the evaluation of these sediments. Based upon results of previous comprehensive analysis conducted in Reach 10B of this same project, USACE believes that mercury will be the primary driver for evaluating suitability for reuse. After the mercury reuse guidelines for Reach 12 have been established, USACE anticipates analyzing and evaluating the soils for a wider array of constituents.

1.1 Project Description

The Upper Guadalupe River Flood Control Project is located in the city of San Jose, Santa Clara County, California. The portion of Reach 12 to be reconstructed is located between Branham Lane and Blossom Hill Road and is approximately 1.05 miles in length (See Figure 1).

The Upper Guadalupe River project is a flood damage reduction project which will be utilizing a combination of bypass channels, floodwalls, and some channel widening to reduce flood risks in surrounding areas. To help mitigate project impacts on terrestrial and aquatic habitats, pre-existing channel modifications in Reach 12 are being reconfigured to restore more natural habitat conditions while maintaining the existing level of flood protection. This work is expected to aid the long-term recovery of riparian forest habitat and salmonid migration in the project area.

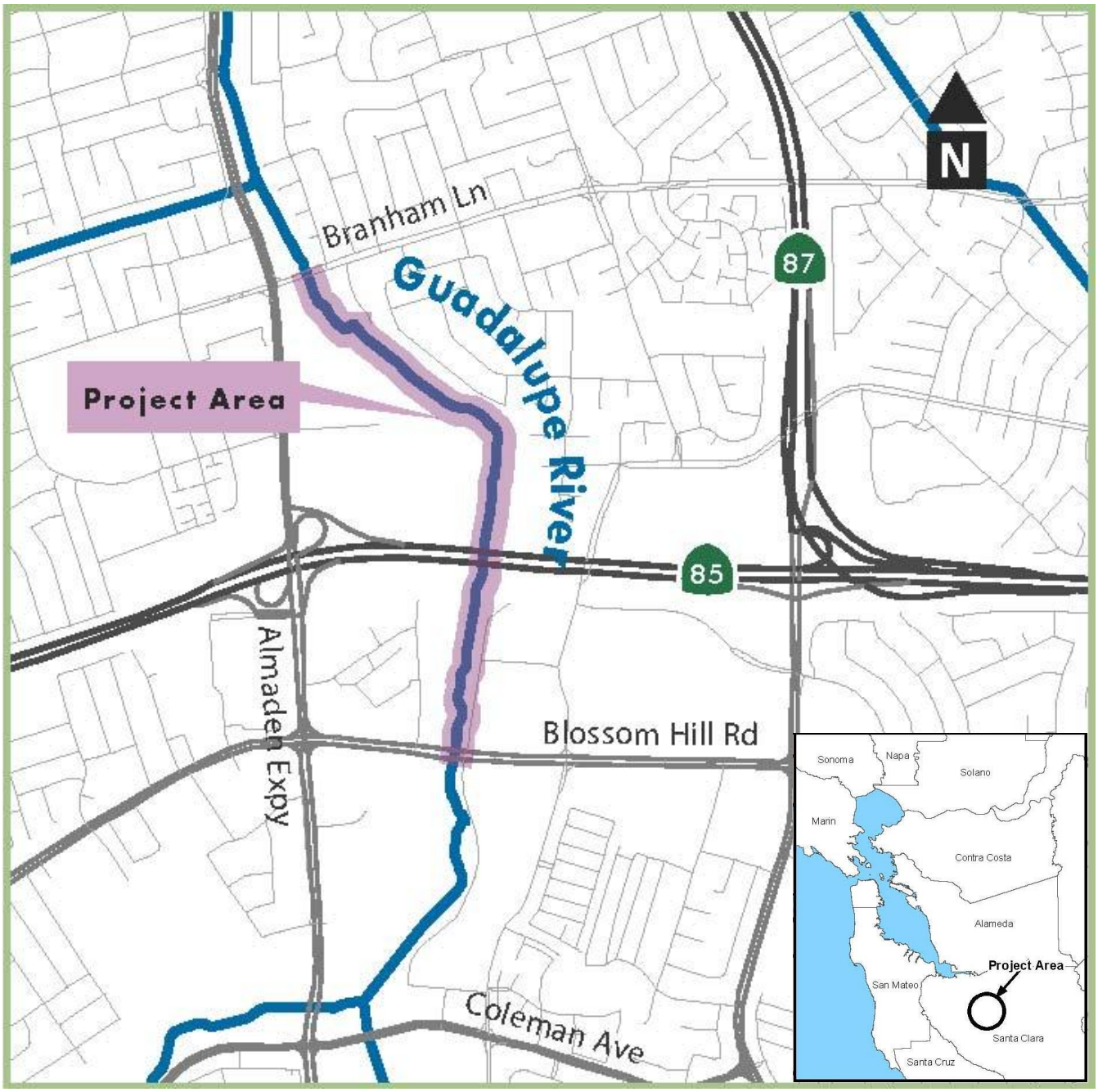
Native habitat restoration activities for Reach 12 consist of:

- Restoring up to 1.05 miles of channel and riparian habitat between Branham Lane and Blossom Hill Road;
- Modifying the existing low-flow and bankfull channels to give them a more natural size and shape by excavating and redistributing soil;
- Stabilizing the new inner channels and create habitat diversity for the listed steelhead trout by using rootwad structures in the channel; and
- Planting native trees, shrubs, and grasses.

The former New Almaden mines, located approximately 4.5 miles upstream of Reach 12 were in operation from 1847 to 1976. Cinnabar ore was mined and processed at New Almaden to obtain mercury for use in the gold mining industry, where it was used to extract gold from crushed ore. As a result of cinnabar ore mining and processing at New Almaden, mercury-impacted sediment has been found along the Guadalupe River including Reach 12.

The area surrounding Reach 12 is primarily residential. However, agricultural, commercial and light industrial activities historically have taken place around and upstream of Reach 12 and commercial land uses continue today.

Figure 1-1 Location Map: Upper Guadalupe River Reach 12, San Jose, CA



1.2 Purpose of the Sampling Effort

The purpose of this sampling and analysis effort is twofold:

- First to characterize the existing conditions to evaluate the suitability of material for reuse within Reach 12; and
- Secondly to determine if there are any concerns with the new surface that will be exposed after the future excavations take place.

The habitat restoration work within Reach 12 requires the movement of existing soils to provide a more natural environment while maintaining flow capacities..

1.3 Organization of this Document

Sample collection and handling procedures are discussed in Sections 2 and 3. Analytical/Testing methods are described in Section 4. Chemical analyses results are provided in Section 5. A Quality Control (QC) summary is provided in Section 6. Section 7 presents the conclusions regarding possible impacted material within Reach 12. Deviations from the SAP are discussed in Section 8, while references are provided in Section 9. Appendix A contains supporting documentation for this study.

2 FIELD SEDIMENT SAMPLE COLLECTION

2.1 Collection of Upper Guadalupe Reach 12 Sediment Samples

This sampling event was conducted by USACE. Sediment sampling was performed between October 9th -11th, 2012 by USACE personnel Mr. Justin Kosta with the SPN Operations Section providing field support.

Sampling occurred within Reach 12 between Stations 961+00 and 1018+00 and was divided into three sampling areas. Sampling Area 1 was from Station 961+00 to Station 980+00, Sampling Area 2 was from Station 980+00 to Station 998+00, and Sampling Area 3 was from Station 998+00 to 1018+00.

All samples boreholes were advanced with an excavator do to the nature of the soil conditions within the reach and the depths to which boreholes were advanced. Material was collected at each two foot interval down to maximum depth. All samples were collected from the bucket of the excavator using a hand scoop. All samples were placed in polyethylene bags labeled with the sample names immediately after collection and placed in a cooler with ice. Once sediment sampling was completed for the day, sediment samples were observed from within the polyethylene bags and their physical and olfactory characteristics were noted. After all material had been collected from a borehole, the borehole was backfilled. The material from the borehole from surface down to the beginning of the z-layer depth was homogenized and placed in a sample jar. The material from z-layer depth was homogenized and placed in a separate sampling jar; resulting in two samples from each bore hole, one which represented surface material down to the beginning of the z-layer depth, and material which represented the z-layer depth itself.

Each sediment sample was assigned a unique alphanumeric identifier as described in the SAP. During sediment sample collection activities and during transportation to the Columbia Analytical Services, Inc., samples were stored on ice within insulated coolers.

What follows is the rationale for the sediment sample locations and their respective depths:

Area 1, sediment samples 1-1 to 1-6: Six excavations are planned within Area 1. Excavated volumes will range from 60 to 730 cubic yards (cy). Maximum excavated depths will range from 1.39 to 5.80 feet below ground surface (ft. bgs.). Material was collected at two foot depth intervals from each sampling location within all six excavations, and homogenized to form one sample for each sampling location. Some material from each location was combined and homogenized to create a six-point composite sample for Area 1. Material was also collected from a six inch layer immediately below the maximum depth in each excavation. This material was homogenized to produce one, six point composited Z-layer sample for Area 1.

Area 2, sediment samples 2-1 to 2-6: Four excavations are planned within Area 2. Excavated volumes will range from 1,150 to 4,160 cy. Maximum excavated depths will range from 5.79 to 8.65 ft. bgs. Material was collected at two foot depth intervals from each sampling location within all four excavations and homogenized to form one sample for each sampling location.

Some material from each location was combined and homogenized to create a six-point composite sample for Area 2. Material was also collected from a six inch layer immediately below the maximum depth in each excavation. This material was homogenized to produce one, six point composited Z-layer sample for Area 2. Even though only four sections are being excavated in Area 2, six sampling locations were advanced due to the larger variation in the volumes at each section to be excavated.

Area 3, sediment samples 3-1 to 3-4: Three excavations are planned within Area 3. Excavated volumes will range from 1,240 to 6,660 cy. Maximum excavated depths will range from 6.64 to 10.17 ft. bgs. Material was collected at two foot depth intervals from each sampling location within all three excavations and homogenized to form one sample for each sampling location. Some material from each location was combined and homogenized to create a four-point composite sample for Area 3. Material was also collected from a six inch layer immediately below maximum depth in each excavation. This material was homogenized to produce one, four point composited Z-layer sample for Area 3. Due to the larger variation in the volumes at each section to be excavated, four sampling locations were appropriate within the aforementioned three excavations.

Each sampling area consisted of four to six sampling locations; resulting in sixteen physical sampling locations as is shown in Figure 2-1. Material was collected at two foot depth intervals from within each excavation area; there were 13 excavation areas to characterize within Reach 12. Sixteen homogenized discrete samples were collected according to the sampling scheme outlined in Table 2-2. From those sixteen discrete samples some material was used to generate two, six-point composite samples and one, four-point composite sample, one composite sample representing each sampling area. Furthermore, from those sixteen discrete sample locations, three composite Z-layer samples were made. The Z-layer samples characterized the material which will become exposed after construction activities have ceased, and were collected from the top six inches of that material.

In summation, from the sixteen sampling locations six composite samples were produced, three made up of material homogenized over the entire depth of the excavations, and three from the Z-layer (i.e. top six inches below the excavation depth). Further, sixteen individual samples representing the material to be excavated were collected. All samples were analyzed for mercury only.

One duplicate composite sample from a location was chosen while in the field.

Final site positions were determined with a differential global positioning system (DGPS) and are accurate to ± 15 feet.

Table 2-1 Upper Guadalupe River Reach 12 Sampling Areas

Stations	Sampling Area	Approximate Length (ft.)
961+00 to 980+00	Area 1	1,900
980+00 to 998+00	Area 2	1,800
998+00 to 1018+00	Area 3	2,000

Table 2-2: Upper Guadalupe River Reach 12 Sampling and Analysis Scheme

Sampling Area	Composite Samples	Sent to Lab	Composite Samples Laboratory Analysis	Individual Samples	Sample Depth (ft. bgs)	Individual Samples Laboratory Analysis	Sent to Lab
Area 1	UGR-R12-2012-1	X	Conventional, Hg	UGR-R12-2012-1-1	4.18	Conventional, Hg	X
				UGR-R12-2012-1-2	2.44		
				UGR-R12-2012-1-3	3.91		
	UGR-R12-2012-1Z			UGR-R12-2012-1-4	5.80		
				UGR-R12-2012-1-5	5.34		
				UGR-R12-2012-1-6	1.39		
Area 2	UGR-R12-2012-2	X	Conventional, Hg	UGR-R12-2012-2-1	4.18	Conventional, Hg	X
				UGR-R12-2012-2-2	2.44		
				UGR-R12-2012-2-3	3.91		
	UGR-R12-2012-2Z			UGR-R12-2012-2-4	5.80		
				UGR-R12-2012-2-5	5.34		
				UGR-R12-2012-2-6	1.39		
Area 3	UGR-R12-2012-3	X	Conventional, Hg	UGR-R12-2012-3-1	10.00	Conventional, Hg	X
				UGR-R12-2012-3-2	10.17		
	UGR-R12-2012-3Z			UGR-R12-2012-3-3	10.17		
				UGR-R12-2012-3-4	6.64		

2.2 Field Observations

The soil which underlays all of the sampling locations consisted of approximately 40-60 percent cobble. The cobble encountered did not resemble native cinnabar formations prevalent to the area. As such, manual drilling was not an option and an excavator was used to dig down to the required depths. The grain size and chemical analysis did not take into account the high percentage of cobbles on site. The analysis focused on the finer grained material that could be collected and sent to the lab in the specified jars. This affects the data in that the actual insitu grain size is much coarser than reported; and the concentrations of chemicals is likely biased high since the total mass present is not accounted for and organics would not be anticipated in the cobbles. Grain size analyses for all composite and individual samples are located in Appendix A.

During the sampling event temperatures within the Reach were between approximately 60-65º Fahrenheit.

2.3 Field Equipment Decontamination Procedure

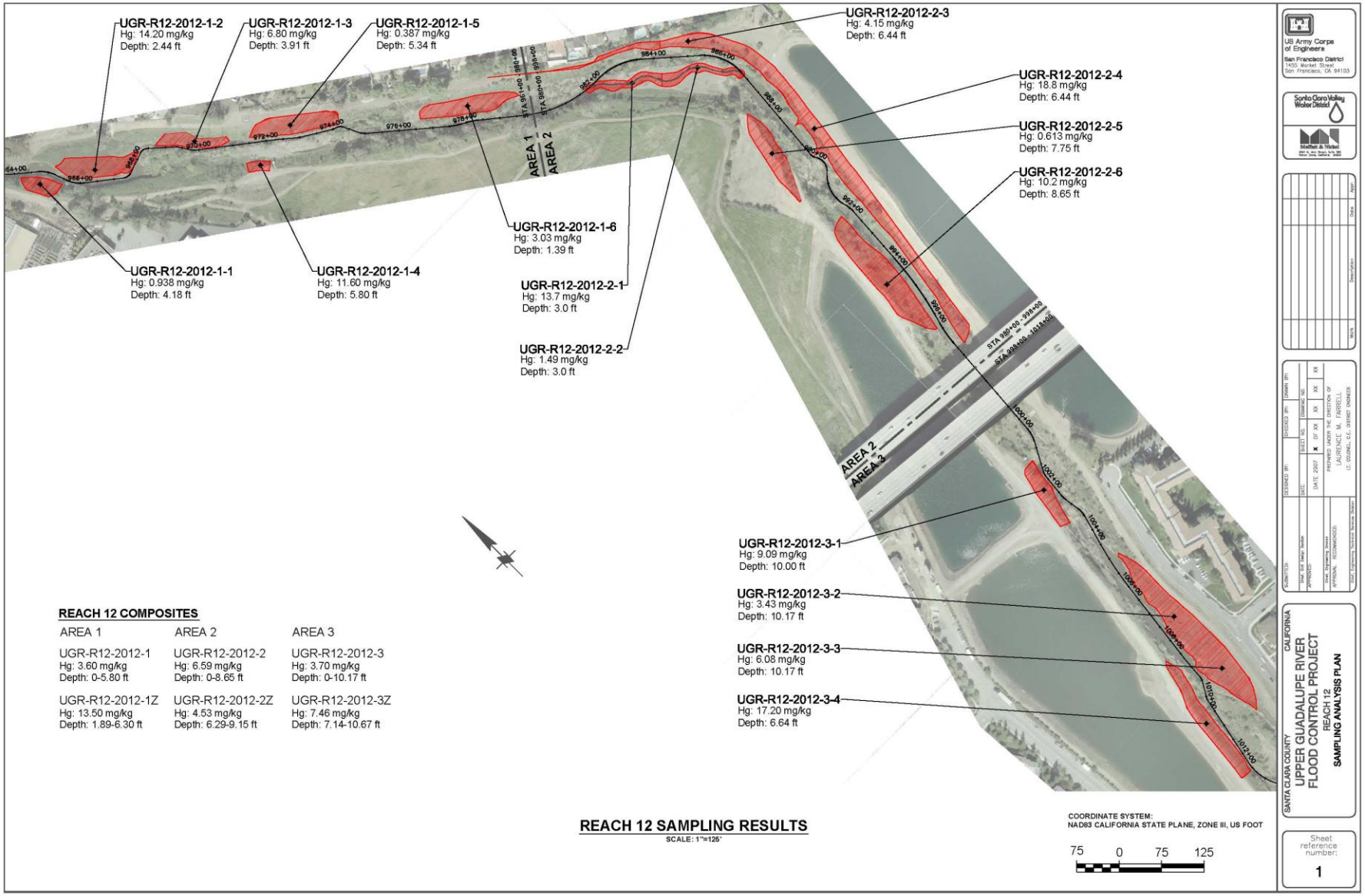
Sampling equipment used to collect the samples consisted of an excavator and a hand scoop. All equipment used for collecting, homogenizing and packaging the collected sediments, except the bucket of the excavator, were decontaminated between samples using the following procedures:

- Rinse with distilled water and wash with scrub brush until free of sediment;
- Wash with phosphate-free biodegradable soap solution; and
- Second rinse with distilled water.

The bucket of the excavator was cleaned by hand as thoroughly as possible in between sample locations by scrapping off accumulated material. Regardless, all samples collected from the excavator bucket were collected from the center of the bucket, from soil which had not made any contact with the bucket itself, to prevent cross-contamination.

Any sampling equipment that could not be properly cleaned was not used for subsequent sampling activities.

Figure 2-1 Upper Guadalupe River Reach 12 Sampling Locations and Results



3 SAMPLE PROCESSING

3.1 Homogenization and Compositing of Sediments

Homogenization of sediment samples was performed onsite within Reach 12. Each composited sediment sample was homogenized in a stainless-steel bowl according to the composite sampling scheme identified in the SAP. In total, four, six-point composite; two, four-point composite, homogenized sediment samples; one duplicate composite; as well as sixteen individual samples were submitted to the analytical laboratory for physical and chemical analysis.

Sample labels were filled out with an indelible-ink pen and affixed to the sample containers. Each label contained the project name, sample identification number, preservation technique, requested analyses, date and time of collection and preparation, and initials of the person preparing the sample. To protect the information on the sample labels, clear tape was placed around the labeled sample containers. The sample containers were then placed into a cooler with ice and stored at $\leq$4°C.

3.2 Sample Shipping

Prior to shipping to the analytical laboratory, sample containers were securely packed inside a cooler with ice packs or crushed ice. A temperature blank was included in the cooler. The original signed chain-of-custody (COC) forms were placed in a sealed plastic bag and taped to the inside lid of the cooler.

Sediment samples were picked up by ADH Environmental personnel for shipment to the analytical laboratory on October 11th, 2012.

3.3 Chain-of-Custody (COC) Protocol

COC procedures were followed for all samples throughout the collection, handling, and analyses activities. The Sampling and Analysis Project Manager, or a designee, was responsible for all sample tracking and COC procedures. This person was responsible for final sample inventory, maintenance of sample custody documentation, and completion of COC forms prior to transferring samples to the analytical laboratory. A COC form accompanied each cooler of samples to the respective analytical laboratories. Each custodian of the samples signed the COC form; copies of the COC forms are retained in the project file.

4 ANALYTICAL AND TESTING METHODS

All analyses were conducted as per the SAP and in accordance with USACE guidelines.

4.1 Sediment Analytical Chemistry Procedures

Sediment samples were collected and analyzed according to the sampling scheme outlined in the SAP and included in Table 2-2. The analytical methods and reporting limits (RL) for chemical analyses of bulk sediment are provided in Table 4-2. All sediment analytical results are presented on a dry weight basis (e.g., mg/kg, dry wt). Analyses of matrix spikes and sample duplicates were performed on the site samples. All samples were maintained according to the appropriate holding times and temperatures for each analysis as per the SAP.

Table 4-2: List of Standard Analytes, Methods, and Targeted Reporting Limits

Parameter	Analysis Method	Targeted Reporting Limit (RL)[1]
Total Solids (%)	SM 2540B	+0.1
Total Organic Carbon (%)	EPA 5310B mod or EPA 9060	+0.1
Grain Size (%)	Plumb 1991[2]	+0.1
Metals		
Mercury (mg/kg)	EPA 7471	0.05

1 RLs are based on dry sample weight assuming no interferences; site-specific method modifications may be required to achieve these RLs in some cases.
2 Plumb, RH, Jr 1981

4.2 Data Analysis

Data were analyzed and are presented clearly to determine sediment quality within Reach 12 of the Upper Guadalupe River. All analytical data were reviewed for accuracy. The chemical characteristics of sediment samples were screened against San Francisco Regional Water Quality Control Board Environmental Screening Levels (SFRWQCB ESLs) for residential and commercial/industrial use scenarios where the soil is found less than three meters below grade and where groundwater is ***not*** used for drinking (SFRWQCB, 2013).

5 RESULTS OF LABORATORY ANALYSES

Physical and chemical analysis was performed on all composited and individual sediment samples. Sediment samples were chemically-analyzed for mercury only, and physically-analyzed for Total Solids (TS), Total Organic Carbon (TOC) and Grain Size (i.e. Conventionals) as specified in the SAP. No fine grained material was encounter in any sample analyzed for Reach 12.

The results of the chemical analyses for all analyzed samples were compared to SFRWQCB ESLs for Residential, and Commercial/Industrial use scenarios.

Initially only the composite samples were analyzed for mercury in October 2012. Results of the composite analysis showed that this portion of the project does have levels of mercury that exceed those found in reaches previously worked on. The data also did not show any clear trends. As a result, in January 2013, USACE requested that the laboratory analyze all sixteen individual samples in an effort to determine if there were in fact any trends to the mercury concentrations.

Individual mercury analysis indicated that individual samples, UGR-R12-2012-1-2, UGR-R12-2012-1-4, UGR-R12-2012-2-2, UGR-R12-2012-2-4, UGR-R12-2012-2-6, UGR-R12-2012-3-1, and UGR-R12-2012-3-4, exceeded the SFRWQCB ESLs.

Full analytical laboratory data reports for these sediments are provided in Table 5-1 below.

Table 5-1: Upper Guadalupe River Reach 12 Analytical Results

Upper Guadalupe Reach 12 Analytical Results				
11-Oct-12				
Analyte	UGR-R12-2012-1-1	UGR-R12-2012-1-2	UGR-R12-2012-1-3	UGR-R12-2012-1-4
Carbon, Total Organic (%)	1.39	0.42	0.494	0.825
Solids, Total (%)	91.6	95.7	89.9	89.9
Grain Size (%)				
Gravel	28.95	22.2	43.3	27.15
Sand	71.05	77.8	56.7	72.85

Upper Guadalupe Reach 12 Analytical Results				
11-Oct-12				
Analyte	UGR-R12-2012-1-5	UGR-R12-2012-1-6	UGR-R12-2012-1	UGR-R12-2012-1Z
Carbon, Total Organic (%)	0.158	--	0.774	0.863
Solids, Total (%)	90.8	98.3	91.3	91.2
Grain Size (%)				
Gravel	59.5	--	49.6	43.05
Sand	40.5	--	50.4	56.95

Upper Guadalupe Reach 12 Analytical Results				
11-Oct-12				
Analyte	UGR-R12-2012-2-1	UGR-R12-2012-2-2	UGR-R12-2012-2-3	UGR-R12-2012-2-4
Carbon, Total Organic (%)	0.241	0.608	0.837	0.597
Solids, Total (%)	97.5	97.8	92	90.9
Grain Size (%)				
Gravel	87.15	42.8	20.85	16.5
Sand	12.85	57.2	79.15	83.5

Upper Guadalupe Reach 12 Analytical Results				
11-Oct-12				
Analyte	UGR-R12-2012-2-5	UGR-R12-2012-2-6	UGR-R12-2012-2	UGR-R12-2012-2Z
Carbon, Total Organic (%)	0.704	0.423	0.731	0.885
Solids, Total (%)	89	90.9	94	90
Grain Size (%)				
Gravel	3.4	43.95	66.4	17.8
Sand	96.6	56.05	33.6	82.2

Upper Guadalupe Reach 12 Analytical Results				
11-Oct-12				
Analyte	UGR-R12-2012-3-1	UGR-R12-2012-3-2	UGR-R12-2012-3-3	UGR-R12-2012-3-4
Carbon, Total Organic (%)	0.416	0.171	0.261	0.846
Solids, Total (%)	93.5	87.3	88.5	93.2
Grain Size (%)				
Gravel	46.95	51.3	57.95	13
Sand	53.05	48.7	42.05	87

Upper Guadalupe Reach 12 Analytical Results		
11-Oct-12		
Analyte	UGR-R12-2012-3	UGR-R12-2012-3Z
Carbon, Total Organic (%)	0.395	0.541
Solids, Total (%)	88.6	81.2
Grain Size (%)		
Gravel	50.55	44.65
Sand	49.45	55.35

Upper Guadalupe Reach 12 Analytical Results

11-Oct-12

Analyte	SFRWQCB ESLs (Residential)	SFRWQCB ESLs (Commercial/Industrial)	UGR-R12-2012-1-6	UGR-R12-2012-1	UGR-R12-2012-1Z	UGR-R12-2012-2-1	UGR-R12-2012-2-2
Mercury (mg/kg)	6.70	10.00	3.03	3.60	13.5	1.49	13.7

Exceeds SFRWQCB Residential ESLs
Exceeds SFRWQCB Commercial/Industrial ESLs
Above Detection Limits

Upper Guadalupe Reach 12 Analytical Results

11-Oct-12

Analyte	SFRWQCB ESLs (Residential)	SFRWQCB ESLs (Commercial/Industrial)	UGR-R12-2012-2-3	UGR-R12-2012-2-4	UGR-R12-2012-2-5	UGR-R12-2012-2-6	UGR-R12-2012-2
Mercury (mg/kg)	6.70	10.00	4.15	18.8	0.613	10.2	6.59

Exceeds SFRWQCB Residential ESLs
Exceeds SFRWQCB Commercial/Industrial ESLs
Above Detection Limits

Upper Guadalupe Reach 12 Analytical Results

11-Oct-12

Analyte	SFRWQCB ESLs (Residential)	SFRWQCB ESLs (Commercial/Industrial)	UGR-R12-2012-2Z	UGR-R12-2012-3-1	UGR-R12-2012-3-2	UGR-R12-2012-3-3	UGR-R12-2012-3-4
Mercury (mg/kg)	6.70	10.00	4.53	9.09	3.43	6.08	17.2

Exceeds SFRWQCB Residential ESLs
Exceeds SFRWQCB Commercial/Industrial ESLs
Above Detection Limits

Upper Guadalupe Reach 12 Analytical Results

11-Oct-12

Analyte	SFRWQCB ESLs (Residential)	SFRWQCB ESLs (Commercial/Industrial)	UGR-R12-2012-3	UGR-R12-2012-3Z
Mercury (mg/kg)	6.70	10.00	3.7	7.46

Exceeds SFRWQCB Residential ESLs
Exceeds SFRWQCB Commercial/Industrial ESLs
Above Detection Limits

6 LABORATORY QUALITY CONTROL/QUALITY ASSURANCE

Provided below is a narrative of the analytical effort, including any unique features or anomalies encountered as part of the analysis of the sediment samples.

All analyses were performed consistent with the quality assurance program of ALS Environmental.

6.1 Composite Sample Analysis

Sample Receipt- Twenty three sediment samples were received for analysis at ALS Environmental on October 16, 2012. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC and frozen at –20ºC upon receipt at the laboratory.

General Comments- The DoD QSM 4.2 requires detections reported to the Method Detection Limit (MDL). Values greater than the MDL and less than the Limit of Quantitation (LOQ) were flagged as estimates (J). Values less than the MDL and Limit of Detection (LOD) were reported as non-detect (ND). The LOD for each analyte is verified quarterly by the laboratory using procedures defined in Grey Box D-13 of the DoD Quality Systems Manual Version 4.2.

The Limit of Quantitation (LOQ) is verified quarterly for each analyte using procedures defined in Grey Box D-14 of the DoD Quality Systems Manual Version 4.2.

General Chemistry Parameters-No anomalies associated with the analysis of these samples were observed.

Matrix Spike Recovery Exceptions- The control criteria for matrix spike and matrix spike duplicate recoveries of Mercury for sample UGR-R12-2012-1 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

6.2 Individual Sample Analysis

All analyses were performed consistent with the quality assurance program of ALS Environmental.

Sample Receipt- On January 14, 2013 Christian Kocher with ADH Environmental, Inc. requested that sixteen frozen archived samples be tested for Mercury, TOC, Total Solids and Particle Size Distribution.

General Comments-The DoD QSM 4.2 requires detections reported to the Method Detection Limit (MDL). Values greater than the MDL and less than the Limit of Quantitation (LOQ) were flagged as estimates (J). Values less than the MDL and Limit of Detection (LOD) were reported as non-detect (ND). The LOD for each analyte is verified quarterly by the laboratory using procedures defined in Grey Box D-13 of the DoD Quality Systems Manual Version 4.2. The Limit of Quantitation (LOQ) is verified quarterly for each analyte using procedures defined in Grey Box D-14 of the DoD Quality Systems Manual Version 4.2. General Chemistry Parameters

Particle Size- Samples were previously frozen prior to analyses

Total Organic Carbon by PSEP- All samples were reissued past holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data was flagged to indicate the holding time violation.

No other anomalies associated with the analysis of these samples were observed.

Matrix Spike Recovery Exceptions- The control criteria for matrix spike and matrix spike duplicate recoveries of Mercury for sample UGR-R12-2012-1-2 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

7 SUMMARY

A summary of the laboratory physical and chemistry analytical results from the sampling effort is presented below. Appendix A provides the analytical results discussed below.

7.1 Conventionals

Based on the grain size results, Area 2 samples had a higher percentage of gravel (51 percent) than Areas 1 and 3 (36 percent and 42 percent, respectively). Area 1 had the highest average percentage of sand (64 percent), while sand content in Areas 2 and 3 were 49 and 58 percent, respectively. Silt and clay-like soils were not encountered anywhere within Reach 12 during sampling.

With respect to total organic carbon, percentages across Areas 1, 2 and 3 ranged from 0.171-0.774.

With respect to total solids, percentages across all sampling areas ranged from 88.5-98.0

7.2 Mercury

Concentrations of mercury were detected above the laboratory detection limits in all samples analyzed.

Concentrations of mercury, 6.8-18.8 mg/kg, exceeding SFRWQCB ESLs, were detected in samples UGR-R12-2012-1-2, UGR-R12-2012-1-3, UGR-R12-2012-1-4, UGR-R12-2012-1Z, UGR-R12-2012-2-2, UGR-R12-2012-2-4, UGR-R12-2012-2-6, UGR-R12-2012-3-1, UGR-R12-2012-3-4, and UGR-R12-2012-3Z.

7.3 Conclusions

In general the samples from Reach 12 that were analyzed had higher mercury concentrations than those from other downstream reaches of this project. The cobbles encountered in Reach 12 did not appear to be directly from the cinnabar formation. For this reason the USACE believes that the source of mercury is further upstream where the historic mercury mines are located. Over time the mercury has migrated downstream from the historic mining areas.

The amount of cobble present affects the relationship of the sample concentrations to the true onsite concentrations of mercury on a mass basis. The sampling was focused on the smaller grain sized particles that would fit into the sample jars and did not account for the mass of cobbles within the matrix. The concentration of cobbles did not appear to be from the cinnabar formation and they were estimated to make up 40 to 60 % of the soil matrix. This leads to reported concentrations which are biased high from true on site mass comparisons.

Twelve of the 22 samples analyzed met the SFRWQCB Residential ESLs. Of the ten that did not meet this criterion only seven also did not meet the SFRWQCB Commercial/Industrial ESL. The project area is not being used for residential nor commercial/industrial activities; however this does provide some comparison to established values for these uses. If the cobbles mentioned above are taken into consideration, then all concentration likely meet the criterion for commercial/industrial use. The USACE believes that the exposure for recreational uses would be less than for commercial/industrial uses and therefore these values would also be protective of recreational users.

While there is variability in the results from the 22 analyzed samples; there were no real trends present. In some cases the material at depth had higher concentrations than the overlying material. In some cases, the highest concentrations were located adjacent to some of the lowest concentrations. The USACE believes that the sampling did not show any true source areas to be avoided, but rather showed results that are likely representative of the rocky heterogeneous nature of the project site.

USACE does believe that on site soils can be reused in a prudent manor to minimize future exposure of mercury to species that will inhabit the site. The sampling data indicates that a majority of the on-site soils contain mercury concentration below 10 mg/kg. The USACE believes that this range represents the cleaner soils present in this reach of the project. Only two of the 22 samples analyzed were greater than 15 mg/kg and the USACE believes that this represents the higher concentrations present in this reach of the project.

Prudent measures can be implemented that would lessen mercury exposures. First, use soils with lower concentrations, less than 10 mg/kg, for surface soils in areas of the low flow channel. Next use those soils with concentrations from 10 mg/kg to 15 mg/kg in areas that are more than 20 feet from the low flow channel or where there is at least 2 feet of cover by cleaner material. Then use soils with concentration greater than 15 mg/kg but less than 20 mg/kg only in areas above the 3 year flood level.

8 DEVIATIONS FROM SAP

The following describes deviations from the approved SAP for Upper Guadalupe River Reach 12.

- Due to the locations of samples UGR-R12-2012-2-1 and 2-2, excavator access was not possible. Thus, both boreholes were advanced manually with a shovel and post-hole digger. Samples were still collected with a metal scoop. However, due to the need for manual drilling, both boreholes could only be advanced to 3 feet bgs rather than the required 5.79 feet bgs outlined in the SAP. Thus, Z-layers samples from these boreholes were not included in the composite Z-layer samples UGR-R12-2012-2 and only material down to 3 feet bgs from both boreholes was included in composite UGR-R12-2012-2.

9 REFERENCES

SFRWQCB (2013) Screening Levels For Environmental Concerns at Sites with Contaminated Soil and. San Francisco Regional Water Quality Control Board, Oakland, CA, February 2013.

USACE (2012) Upper Guadalupe River Reach 12 Sampling and Analysis Plan, February 2012. U.S. Army Corps of Engineers San Francisco District, Engineering and Technical Services Division Planning Branch, Environmental Section A.

Appendix A

Laboratory Analytical Report

November 1, 2012 Analytical Report for Service Request No: K1210451

Christian Kocher
ADH Environmental Inc.
3065 Porter St
Suite 101
Soquel, CA 95073

RE: ACOE Upper Guad. River Reach 12

Dear Christian:

Enclosed are the results of the samples submitted to our laboratory on October 16, 2012. For your reference, these analyses have been assigned our service request number K1210451.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at Lisa.Domenighini@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc. dba ALS Environmental

Lisa Domenighini
Project Manager

LD/jw

Columbia Analytical Services
ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
Columbia Analytical Services, Inc.
Part of the ALS Group A Campbell Brothers Limited Company
Environmental www.caslab.com ▪ www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

TABLE OF CONTENTS

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

ALS ENVIRONMENTAL

Client:	ADH Environmental Inc.	**Service Request No.:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Sample Matrix:	Sediment		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier III deliverables including summary forms for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty three sediment samples were received for analysis at ALS Environmental on 10/16/12. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC and frozen at –20ºC upon receipt at the laboratory.

General Comments:

The DoD QSM 4.2 requires detections reported to the Method Detection Limit (MDL). Values greater than the MDL and less than the Limit of Quantitation (LOQ) were flagged as estimates (J). Values less than the MDL and Limit of Detection (LOD) were reported as non-detect (ND). The LOD for each analyte is verified quarterly by the laboratory using procedures defined in Grey Box D-13 of the DoD Quality Systems Manual Version 4.2.

The Limit of Quantitation (LOQ) is verified quarterly for each analyte using procedures defined in Grey Box D-14 of the DoD Quality Systems Manual Version 4.2.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike and matrix spike duplicate recoveries of Mercury for sample UGR-R12-2012-1 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

CHAIN OF CUSTODY

ALS Environmental

1317 South 13th Ave., Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR# K1210451

PAGE 1 OF 3 COC#

PROJECT NAME: ACOE Upper Guad. River Reach 12
PROJECT NUMBER:
PROJECT MANAGER:
COMPANY NAME: ADH Environmental
ADDRESS: 3065 Porter St., Ste. 101
CITY/STATE/ZIP: Soquel, CA 95073
E-MAIL ADDRESS: ckocher@adhenvironmental.com
PHONE #: (831) 477-2003 FAX #: (831) 477-0895
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ SIM PAH☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCBs Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.	(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity ☐ CO_3 ☐ HCO_3 ☐	Dioxins/Furans 1613☐ 8290☐	Dissolved Gases RSK 175☐ CO_2☐ Methane☐ Ethane☐ Ethene☐	7471B/Hg; ASTM D4129-05 Modified / TOC	PSEP PS/PSEP Part Size EB	TS - MET / Total Solids	REMARKS
UGR-R12-2012-1	10/11/12	1420	1	Sed	1																X	X	X	one 160z jar
UGR-R12-2012-1Z	10/11/12	1430	2	Sed	1																X	X	X	
UGR-R12-2012-2	10/11/12	1440	3	Sed	1																X	X	X	
UGR-R12-2012-2Z	10/11/12	1445	4	Sed	1																X	X	X	
UGR-R12-2012-3	10/11/12	1450	5	Sed	1																X	X	X	
UGR-R12-2012-3Z	10/11/12	1500	6	Sed	1																X	X	X	
UGR-R12-2012-DUP-1	10/11/12	1510	7	Sed	1																X	X	X	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
✓ IV. Data Validation Report
✓ V. EDD

INVOICE INFORMATION

P.O. #
Bill To: Christian Kocher
ADH Environmental
3065 Porter St. Ste101 Soquel, CA

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
✓ Standard (15 working days)
___ Provide FAX Results
Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

1) Level III Data Package
2) Report Data to the MDL
3) SEDD 5.0 2A Data Format

Container Supply Number: 33749

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature]	Alaya Vautier 10/12/12 1400	Alaya Vautier 10/15/12 1700	[signature] 10/16/12 1000
Date/Time: 10/12/12 1400			
Printed Name: J. LOSTA	Alaya Vautier	Alaya Vautier	
Firm: USACE	ADH Environ	ADH Environm	

CHAIN OF CUSTODY

ALS Environmental

1317 South 13th Ave., Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR# K1210451

PAGE 2 OF 3 COC#

PROJECT NAME: ACOE Upper Guad. Rivet Reach 12
PROJECT NUMBER:
PROJECT MANAGER:
COMPANY NAME: ADH Environmental
ADDRESS: 3065 Porter St Ste 101
CITY/STATE/ZIP: Soquel, CA 95073
E-MAIL ADDRESS: Kocher@adhenvironmental.com
PHONE #: (831) 477-2003 FAX #: (831) 477-0895
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Archive / Archive - 20C	REMARKS
UGR-R12-2012-1-1	10/11/12	1520		Sed	1	X	one 16oz jar
UGR-R12-2012-1-2	10/11/12	1525		Sed	1	X	
UGR-R12-2012-1-3	10/11/12	1530		Sed	1	X	
UGR-R12-2012-1-4	10/11/12	1535		Sed	1	X	
UGR-R12-2012-1-5	10/11/12	1540		Sed	1	X	
UGR-R12-2012-1-6	10/11/12	1545		Sed	1	X	
UGR-R12-2012-2-1	10/11/12	1550		Sed	1	X	
UGR-R12-2012-2-2	10/11/12	1555		Sed	1	X	

Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐ SIM PAH☐
Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐
Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐
Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐
PCBs Aroclors☐ Congeners☐
Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐
Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐
Metals, Total or Dissolved (See List below)
Cyanide☐ Hex-Chrom☐
(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.
(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos
TOX 9020☐ AOX 1650☐ 506☐
Alkalinity ☐ CO_3 ☐ HCO_3 ☐
Dioxins/Furans 1613☐ 8290☐
Dissolved Gases RSK 175☐ Methane☐ Ethane☐ Ethene☐ CO_2☐

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
✓ IV. Data Validation Report
✓ V. EDD

INVOICE INFORMATION

P.O. #
Bill To: Christian Kocher
ADH Environmental
3065 Porter St Ste 101 Soquel, CA

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
✓ Standard (15 working days)
___ Provide FAX Results
Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Archive at -20°C for six months

Container Supply Number

33749

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature	Alaya Vautier	Alaya Vautier	
Printed Name: J. Rosa	Printed Name: Alaya Vautier	Printed Name: Alaya Vautier	Printed Name:
Date/Time: 10/12/12 1400	Date/Time: 10/12/12 1400	Date/Time: 10/15/12 1700	Date/Time: 10/16/12 1000
Firm: USACE	Firm: ADH Environ.	Firm: ADH Environ.	Firm: ALS

CHAIN OF CUSTODY

ALS Environmental

1317 South 13th Ave., Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR# K1210451

PAGE 3 OF 3 COC#

PROJECT NAME: ACOE Upper Quad River Reach 12
PROJECT NUMBER:
PROJECT MANAGER:
COMPANY NAME: ADH Environmental
ADDRESS: 3065 Porter St. Ste 101
CITY/STATE/ZIP: Soquel CA 95073
E-MAIL ADDRESS: ~~ckocher~~ ckocher@adhenvironmental.com
PHONE#: (831) 477-2003 FAX #: (831) 477-0895
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Archive / Archive - 20 C	REMARKS
UGR-R12-2012-2-3	10/11/12	1600		Sed	1	X	one 16oz jar
UGR-R12-2012-2-4	10/11/12	1610		sed	1	X	one 16oz jar
UGR-R12-2012-2-5	10/11/12	1615		sed	1	X	one 16oz jar
UGR-R12-2012-2-6	10/11/12	1620		sed	1	X	one 16oz jar
UGR-R12-2012-3-1	10/11/12	1625		Sed	1	X	one 16oz jar
UGR-R12-2012-3-2	10/11/12	1630		sed	1	X	one 16oz jar
UGR-R12-2012-3-3	10/11/12	1635		sed	1	X	one 16oz jar
UGR-R12-2012-3-4	10/11/12	1640		sed	1	X	one 16oz jar
						X	one 16oz jar

Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐ SIM PAH☐
Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐
Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐
Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐
PCBs Aroclors☐ Congeners☐
Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐
Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐
Metals, Total or Dissolved (See List below)
Cyanide☐ Hex-Chrom☐
(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.
(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos
TOX 9020☐ AOX 1650☐ 506☐
Alkalinity ☐ CO_3☐ HCO_3☐
Dioxins/Furans 1613☐ 8290☐
Dissolved Gases CO_2☐ RSK 175☐ Methane☐ Ethane☐ Ethene☐

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
✓ IV. Data Validation Report
✓ V. EDD

INVOICE INFORMATION

P.O. #
Bill To: Christian Kocher
ADH Environmental
3065 Porter St Ste 101 Soquel, CA

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
✓ Standard (15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Archive at -20°C for six months

Container Supply Number

33749

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:		RECEIVED BY:		RELINQUISHED BY:		RECEIVED BY:	
Signature	Date/Time 10/12/12 1400	Signature Alaya Vautier	Date/Time 10/12/12 1400	Signature Alaya Vautier	Date/Time 10/15/12 1700	Signature	Date/Time 10/16/12 1000
Printed Name S. Foster	Firm USACE	Printed Name Alaya Vautier	Firm ADH Environ.	Printed Name Alaya Vautier	Firm ADH Environ.	Printed Name	Firm ALS

PC Leva

Cooler Receipt and Preservation Form

Client / Project: ADH Service Request K12 1041511

Received: 10/16/12 Opened: 10/16/12 By: AJ Unloaded: 10/16/12 By: AJ

1. Samples were received via? *Mail* *Fed Ex* *(UPS)* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *(Cooler)* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Temp	Corr. Temp	Raw Blank	Corr. Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.2	-0.2	1.2	1.2	0.0	319		1Z2Y985T093	

7. Packing material: *Inserts* *Baggies* *(Bubble Wrap)* *Gel Packs* *(Wet Ice)* *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Missing cooler w/ Samples

PC Lisa

Cooler Receipt and Preservation Form

Client / Project: ADH Service Request *K12* 10451

Received: 10/18/12 Opened: 10/18/12 By: BT Unloaded: 10/18/12 By: BT

1. Samples were received via? *Mail* *Fed Ex* *(UPS)* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *(Cooler)* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Temp	Corr. Temp	Raw Blank	Corr. Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
0.9	0.6	4.3	4.0	-0.3	315		J229 9857 100	

7. Packing material: *Inserts* *Baggies* *(Bubble Wrap)* *(Gel Packs)* *Wet Ice* *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Rec'd missing cooler

Analytical Results

Client: ADH Environmental Inc.
Project: ACOE Upper Guad. River Reach 12
Sample Matrix: Sediment

Service Request: K1210451

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
UGR-R12-2012-1	K1210451-001	10/11/2012	10/16/2012	10/26/2012	91.3	
UGR-R12-2012-1Z	K1210451-002	10/11/2012	10/16/2012	10/26/2012	91.2	
UGR-R12-2012-2	K1210451-003	10/11/2012	10/16/2012	10/26/2012	94.0	
UGR-R12-2012-2Z	K1210451-004	10/11/2012	10/16/2012	10/26/2012	90.0	
UGR-R12-2012-3	K1210451-005	10/11/2012	10/16/2012	10/26/2012	88.6	
UGR-R12-2012-3Z	K1210451-006	10/11/2012	10/16/2012	10/26/2012	81.2	
UGR-R12-2012-DUP-1	K1210451-007	10/11/2012	10/16/2012	10/26/2012	87.6	

QA/QC Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Duplicate Sample Summary
Total Solids

Prep Method:	NONE	**Units:**	PERCENT
Analysis Method:	160.3M	**Basis:**	Wet
Test Notes:			

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
UGR-R12-2012-1	K1210451-001	91.3	91.3	91.3	<1	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-1
Lab Code: K1210451-001

Sand Fraction: Dry Weight (Grams)	35.7117
Sand Fraction: Weight Recovered (Grams)	35.7614
Sand Fraction: Percent Recovery	100.14

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	19.9923	49.62
Very Coarse Sand	-1 to 0 Ø	3.8596	9.58
Coarse Sand	0 to 1 Ø	3.7045	9.19
Medium Sand	1 to 2 Ø	4.1058	10.19
Fine Sand	2 to 3 Ø	2.9052	7.21
Very Fine Sand	3 to 4 Ø	1.1143	2.77
62.5 µm	4 to 5 Ø	1.2100	3.00
31.3 µm	5 to 6 Ø	0.4500	1.12
15.6 µm	6 to 7 Ø	0.8000	1.99
7.8 µm	7 to 8 Ø	0.4550	1.13
3.9 µm	8 to 9 Ø	0.4900	1.22
1.95 µm	9 to 10 Ø	0.3550	0.88
0.98 µm	> 10 Ø	1.2800	3.18
		40.7217	101.07

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-1Z
Lab Code: K1210451-002

Sand Fraction:	Dry Weight (Grams)	30.7451
Sand Fraction:	Weight Recovered (Grams)	30.7357
Sand Fraction:	Percent Recovery	99.97

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	15.1696	43.04
Very Coarse Sand	-1 to 0 Ø	3.4098	9.67
Coarse Sand	0 to 1 Ø	3.3591	9.53
Medium Sand	1 to 2 Ø	4.9430	14.02
Fine Sand	2 to 3 Ø	2.7304	7.75
Very Fine Sand	3 to 4 Ø	1.0303	2.92
62.5 µm	4 to 5 Ø	1.1500	3.26
31.3 µm	5 to 6 Ø	0.6200	1.76
15.6 µm	6 to 7 Ø	0.5200	1.48
7.8 µm	7 to 8 Ø	0.5650	1.60
3.9 µm	8 to 9 Ø	0.3400	0.96
1.95 µm	9 to 10 Ø	0.3550	1.01
0.98 µm	> 10 Ø	1.0850	3.08
		35.2772	100.09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2
Lab Code: K1210451-003

Sand Fraction:	Dry Weight (Grams)	33.3859
Sand Fraction:	Weight Recovered (Grams)	33.4404
Sand Fraction:	Percent Recovery	100.16

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	23.6658	66.37
Very Coarse Sand	-1 to 0 Ø	2.3507	6.59
Coarse Sand	0 to 1 Ø	2.1225	5.95
Medium Sand	1 to 2 Ø	2.1360	5.99
Fine Sand	2 to 3 Ø	1.9648	5.51
Very Fine Sand	3 to 4 Ø	1.0297	2.89
62.5 µm	4 to 5 Ø	0.9550	2.68
31.3 µm	5 to 6 Ø	0.5150	1.44
15.6 µm	6 to 7 Ø	0.2850	0.80
7.8 µm	7 to 8 Ø	0.2050	0.57
3.9 µm	8 to 9 Ø	0.2100	0.59
1.95 µm	9 to 10 Ø	0.1400	0.39
0.98 µm	> 10 Ø	0.6550	1.84
		36.2345	101.63

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2Z
Lab Code: K1210451-004

Sand Fraction: Dry Weight (Grams)	14.2783
Sand Fraction: Weight Recovered (Grams)	14.3974
Sand Fraction: Percent Recovery	100.83

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	4.4354	17.83
Very Coarse Sand	-1 to 0 Ø	1.6275	6.54
Coarse Sand	0 to 1 Ø	1.6346	6.57
Medium Sand	1 to 2 Ø	2.0216	8.13
Fine Sand	2 to 3 Ø	2.5808	10.37
Very Fine Sand	3 to 4 Ø	1.8972	7.63
62.5 µm	4 to 5 Ø	2.6650	10.71
31.3 µm	5 to 6 Ø	1.7650	7.09
15.6 µm	6 to 7 Ø	1.7700	7.11
7.8 µm	7 to 8 Ø	1.1400	4.58
3.9 µm	8 to 9 Ø	0.9900	3.98
1.95 µm	9 to 10 Ø	0.6250	2.51
0.98 µm	> 10 Ø	1.5700	6.31
		24.7221	99.36

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-3
Lab Code: K1210451-005

Sand Fraction: Dry Weight (Grams)	32.8488
Sand Fraction: Weight Recovered (Grams)	32.9547
Sand Fraction: Percent Recovery	100.32

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	19.0207	50.53
Very Coarse Sand	-1 to 0 Ø	5.2358	13.91
Coarse Sand	0 to 1 Ø	3.4861	9.26
Medium Sand	1 to 2 Ø	2.7898	7.41
Fine Sand	2 to 3 Ø	1.6109	4.28
Very Fine Sand	3 to 4 Ø	0.6648	1.77
62.5 µm	4 to 5 Ø	1.0250	2.72
31.3 µm	5 to 6 Ø	0.5450	1.45
15.6 µm	6 to 7 Ø	0.7150	1.90
7.8 µm	7 to 8 Ø	0.5150	1.37
3.9 µm	8 to 9 Ø	0.4600	1.22
1.95 µm	9 to 10 Ø	0.5100	1.35
0.98 µm	> 10 Ø	1.6950	4.50
		38.2731	101.67

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-3Z
Lab Code: K1210451-006

Sand Fraction: Dry Weight (Grams)	24.3020
Sand Fraction: Weight Recovered (Grams)	24.3701
Sand Fraction: Percent Recovery	100.28

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	13.7417	44.64
Very Coarse Sand	-1 to 0 Ø	3.5622	11.57
Coarse Sand	0 to 1 Ø	2.4751	8.04
Medium Sand	1 to 2 Ø	2.0980	6.82
Fine Sand	2 to 3 Ø	1.6114	5.24
Very Fine Sand	3 to 4 Ø	0.8435	2.74
62.5 µm	4 to 5 Ø	1.2500	4.06
31.3 µm	5 to 6 Ø	0.7250	2.36
15.6 µm	6 to 7 Ø	0.9500	3.09
7.8 µm	7 to 8 Ø	0.5850	1.90
3.9 µm	8 to 9 Ø	0.5850	1.90
1.95 µm	9 to 10 Ø	0.6050	1.97
0.98 µm	> 10 Ø	2.2550	7.33
		31.2869	101.64

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-DUP-1
Lab Code: K1210451-007

Sand Fraction:	Dry Weight (Grams)	36.9878
Sand Fraction:	Weight Recovered (Grams)	37.0715
Sand Fraction:	Percent Recovery	100.23

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	23.7963	59.49
Very Coarse Sand	-1 to 0 Ø	5.1045	12.76
Coarse Sand	0 to 1 Ø	3.2293	8.07
Medium Sand	1 to 2 Ø	2.6549	6.64
Fine Sand	2 to 3 Ø	1.5261	3.82
Very Fine Sand	3 to 4 Ø	0.6307	1.58
62.5 µm	4 to 5 Ø	0.8350	2.09
31.3 µm	5 to 6 Ø	0.4300	1.07
15.6 µm	6 to 7 Ø	0.5650	1.41
7.8 µm	7 to 8 Ø	0.3950	0.99
3.9 µm	8 to 9 Ø	0.3600	0.90
1.95 µm	9 to 10 Ø	0.3850	0.96
0.98 µm	> 10 Ø	1.4800	3.70
		41.3918	103.48

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-DUP-1
Lab Code: K1210451-007DUP

Sand Fraction: Dry Weight (Grams)	38.7866
Sand Fraction: Weight Recovered (Grams)	38.8673
Sand Fraction: Percent Recovery	100.21

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	25.8256	60.95
Very Coarse Sand	-1 to 0 Ø	4.8299	11.40
Coarse Sand	0 to 1 Ø	3.0883	7.29
Medium Sand	1 to 2 Ø	2.7080	6.39
Fine Sand	2 to 3 Ø	1.6089	3.80
Very Fine Sand	3 to 4 Ø	0.6860	1.62
62.5 µm	4 to 5 Ø	0.8850	2.09
31.3 µm	5 to 6 Ø	0.4500	1.06
15.6 µm	6 to 7 Ø	0.5900	1.39
7.8 µm	7 to 8 Ø	0.3300	0.78
3.9 µm	8 to 9 Ø	0.4050	0.96
1.95 µm	9 to 10 Ø	0.4300	1.01
0.98 µm	> 10 Ø	1.4000	3.30
		43.2367	102.04

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	10/26/2012

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-DUP-1
Lab Code: K1210451-007TRP

Sand Fraction: Dry Weight (Grams)	35.5220
Sand Fraction: Weight Recovered (Grams)	35.6633
Sand Fraction: Percent Recovery	100.40

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	21.2218	54.69
Very Coarse Sand	-1 to 0 Ø	5.3625	13.82
Coarse Sand	0 to 1 Ø	3.6566	9.42
Medium Sand	1 to 2 Ø	2.9185	7.52
Fine Sand	2 to 3 Ø	1.6061	4.14
Very Fine Sand	3 to 4 Ø	0.6711	1.73
62.5 µm	4 to 5 Ø	0.6600	1.70
31.3 µm	5 to 6 Ø	0.4450	1.15
15.6 µm	6 to 7 Ø	0.4300	1.11
7.8 µm	7 to 8 Ø	0.3950	1.02
3.9 µm	8 to 9 Ø	0.2400	0.62
1.95 µm	9 to 10 Ø	0.3650	0.94
0.98 µm	> 10 Ø	1.3800	3.56
		39.3516	101.42

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/12
Sample Matrix:	Sediment	**Date Received:**	10/16/12
Analysis Method:	ASTM D4129-05 Modified	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
UGR-R12-2012-1	K1210451-001	**0.774**	0.050	0.020	0.020	1	10/26/12	10/19/12	
UGR-R12-2012-1Z	K1210451-002	**0.863**	0.050	0.020	0.020	1	10/26/12	10/19/12	
UGR-R12-2012-2	K1210451-003	**0.731**	0.050	0.020	0.020	1	10/26/12	10/19/12	
UGR-R12-2012-2Z	K1210451-004	**0.885**	0.050	0.020	0.020	1	10/26/12	10/19/12	
UGR-R12-2012-3	K1210451-005	**0.395**	0.050	0.020	0.020	1	10/26/12	10/19/12	
UGR-R12-2012-3Z	K1210451-006	**0.541**	0.050	0.020	0.020	1	10/26/12	10/19/12	
UGR-R12-2012-DUP-1	K1210451-007	**0.325**	0.050	0.020	0.020	1	10/26/12	10/19/12	
Method Blank	K1210451-MB	ND U	0.050	0.020	0.020	1	10/26/12		

QA/QC Report

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/12
Sample Matrix:	Sediment	**Date Received:**	10/16/12
		Date Analyzed:	10/26/12

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	UGR-R12-2012-2Z	**Units:**	Percent
Lab Code:	K1210451-004	**Basis:**	Dry, per Method

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K1210451-004DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	ASTM D4129-05 Modified	0.050	0.020	0.020	0.885	0.855	0.870	3	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: ADH Environmental Inc.
Project: ACOE Upper Guad. River Reach 12
Sample Matrix: Sediment

Service Request: K1210451
Date Collected: 10/11/12
Date Received: 10/16/12
Date Analyzed: 10/26/12
Date Extracted: 10/19/12

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name: UGR-R12-2012-2Z
Lab Code: K1210451-004
Analysis Method: ASTM D4129-05 Modified
Prep Method: CAS SOP

Units: Percent
Basis: Dry, per Method

		Matrix Spike K1210451-004MS			Duplicate Matrix Spike K1210451-004DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.885	4.29	3.54	96	4.55	3.73	98	70-122	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: ADH Environmental Inc.
Project: ACOE Upper Guad. River Reach 12
Sample Matrix: Sediment

Service Request:K1210451
Date Analyzed:10/26/12

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method: ASTM D4129-05 Modified

Units: Percent
Basis: Dry, per Method
Analysis Lot:315743

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1210451-LCS	0.248	0.280	88	72-122

Client: ADH Environmental Inc. **Service Request:** K1210451
Project: ACOE Upper Guad. River Reach 12

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: ASTM D4129-05 Modified **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	315743	KQ1212674-01	10/26/12 09:20	20.0	19.5	98	90-110
CCV2	315743	KQ1212674-02	10/26/12 09:20	20.0	19.5	97	90-110
CCV3	315743	KQ1212674-03	10/26/12 09:20	20.0	19.7	99	90-110

Client: ADH Environmental Inc. **Service Request:**K1210451
Project: ACOE Upper Guad. River Reach 12

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: ASTM D4129-05 Modified **Units:**Percent

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	315743	KQ1212674-04	10/26/12 09:20	0.050	0.020	0.020	ND	U
CCB2	315743	KQ1212674-05	10/26/12 09:20	0.050	0.020	0.020	ND	U
CCB3	315743	KQ1212674-06	10/26/12 09:20	0.050	0.020	0.020	ND	U

COLUMBIA ANALYTICAL SERVICES, INC.

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- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: ADH Environmental Inc.
Project Name: ACOE Upper Guad. River Reach 12
Project No.:

Service Request: K1210451

Sample Name:	Lab Code:
UGR-R12-2012-1	K1210451-001
UGR-R12-2012-1S	K1210451-001S
UGR-R12-2012-1SD	K1210451-001SD
UGR-R12-2012-1Z	K1210451-002
UGR-R12-2012-2	K1210451-003
UGR-R12-2012-2Z	K1210451-004
UGR-R12-2012-3	K1210451-005
UGR-R12-2012-3Z	K1210451-006
UGR-R12-2012-DUP-1	K1210451-007
Method Blank	K1210451-MB

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-1** **Lab Code:** **K1210451-001**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.194	0.049	0.019	**10.0**	**10/29/12**	**10/30/12**	**3.60**		

% Solids: **91.3**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-1Z** **Lab Code:** **K1210451-002**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	**0.380**	**0.095**	**0.038**	**20.0**	**10/29/12**	**10/30/12**	**13.5**		

% Solids: **91.2**

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-2** **Lab Code:** **K1210451-003**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.194	0.049	0.019	**10.0**	**10/29/12**	**10/30/12**	**6.59**		

% Solids: **94.0**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-2Z** **Lab Code:** **K1210451-004**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.192	0.048	0.019	**10.0**	**10/29/12**	**10/30/12**	**4.53**		

% Solids: **90.0**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-3** **Lab Code:** **K1210451-005**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.184	0.046	0.018	**10.0**	**10/29/12**	**10/30/12**	**3.70**		

% Solids: **88.6**

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-3Z** **Lab Code:** **K1210451-006**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.190	0.047	0.019	**10.0**	**10/29/12**	**10/30/12**	**7.46**		

% Solids: **81.2**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-DUP-1** **Lab Code:** **K1210451-007**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.193	0.048	0.019	**10.0**	**10/29/12**	**10/30/12**	**4.35**		

% Solids: **87.6**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Date Collected:**	
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	
Matrix:	SEDIMENT	**Units:**	ug/L
		Basis:	DRY

Sample Name: **Method Blank** **Lab Code:** **K1210451-MB**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.020	0.005	0.002	**1.0**	**10/29/12**	**10/30/12**	**0.005**	**U**	

% Solids: **100.0**

Comments:

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury	5.00	5.01	100	5.00	5.13	103	5.27	105	7471B

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury				5.00	5.30	106	5.30	106	7471B

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury				5.00	5.32	106	5.42	108	7471B

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury				5.00	5.45	109	5.39	108	7471B

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury				5.00	5.38	108	5.39	108	7471B

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury				5.00	5.33	107			7471B

Metals

- 2b -
CRDL STANDARD FOR AA AND ICP

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Mercury	0.20	0.206	103					

Metals

- 3 -

BLANKS

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Mercury	0.02	U	0.02	U	0.04	J	0.02	U	7471B

Metals

- 3 -

BLANKS

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Mercury			0.02	U	0.02	U	0.02	U	7471B

Metals

- 3 -

BLANKS

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Mercury			0.02	U	0.02	J	0.02	U	7471B

Metals

- 3 -

BLANKS

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Mercury			0.02	U	0.02	U			7471B

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Units:**	MG/KG
Project Name:	ACOE Upper Guad. River Reach 12	**Basis:**	DRY
Matrix:	SEDIMENT	**% Solids:**	91.3

Sample Name: **UGR-R12-2012-1S** **Lab Code:** **K1210451-001S**

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury		5.84		3.60		0.49	457.1		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Units:**	MG/KG
Project Name:	ACOE Upper Guad. River Reach 12	**Basis:**	DRY
Matrix:	SEDIMENT	**% Solids:**	91.3

Sample Name: **UGR-R12-2012-1SD** **Lab Code:** **K1210451-001SD**

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury		5.42		3.60		0.48	379.2		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5B -

POST SPIKE SAMPLE RECOVERY

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA **Units:** UG/L

Project Name: ACOE Upper Guad. River Reach 12 **Basis:** DRY

Matrix: WATER

Sample Name: **UGR-R12-2012-1A** **Lab Code:** **K1210451-001A**

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	75 - 125	8.75		3.71		5.00	101		7471B

Metals

- 6 -

DUPLICATES

Client:	ADH Environmental Inc.	**Service Request:**	K1210451
Project No.:	NA	**Units:**	MG/KG
Project Name:	ACOE Upper Guad. River Reach 12	**Basis:**	DRY
Matrix:	SEDIMENT	**% Solids:**	91.3

Sample Name: **UGR-R12-2012-1SD** **Lab Code:** **K1210451-001SD**

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	5.84		5.42		7.5		7471B

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Aqueous LCS Source: **CAS MIXED** **Solid LCS Source:**

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury	5.00	5.65	113.0					

Metals

- 10 -

DETECTION LIMITS

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICP/ICP-MS ID #: **K-CVAA-02**

GFAA ID #: **AA ID #:**

Analyte	Wave-length (nm)	Back-ground	LOQ ug/L	LOD ug/L	MDL ug/L	M
Mercury	253.7		0.20	0.05	0.02	CV

Comments:

Metals

-13-

PREPARATION LOG

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Method: CV

Sample ID	Preparation Date	Initial Weight (g)	Final Volume(mL)
K1210451-001	10/29/12	0.56	50.0
K1210451-001S	10/29/12	0.56	50.0
K1210451-001SD	10/29/12	0.57	50.0
K1210451-002	10/29/12	0.58	50.0
K1210451-003	10/29/12	0.55	50.0
K1210451-004	10/29/12	0.58	50.0
K1210451-005	10/29/12	0.62	50.0
K1210451-006	10/29/12	0.65	50.0
K1210451-007	10/29/12	0.59	50.0
K1210451-MB	10/29/12	0.50	50.0
LCSW	10/29/12	50.0	50.0

Metals

- 14 -

ANALYSIS RUN LOG

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA **Run Number:** 103012B HG2

Project Name: ACOE Upper Guad. River Reach 12

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 10/30/12 **End Date:** 10/30/12

Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
Calibration Blank	1.0	11:52																X												
Standard #1	1.0	11:54																X												
Standard #2	1.0	11:55																X												
Standard #3	1.0	11:57																X												
Standard #4	1.0	12:03																X												
Standard #5	1.0	12:04																X												
ICV1	1.0	12:06																X												
ICB1	1.0	12:08																X												
CRA1	1.0	12:09																X												
CCV1	1.0	12:11																X												
CCB1	1.0	12:13																X												
ZZZZZZ	1.0	12:14																												
ZZZZZZ	1.0	12:16																												
ZZZZZZ	1.0	12:17																												
ZZZZZZ	1.0	12:19																												
ZZZZZZ	1.0	12:21																												
ZZZZZZ	1.0	12:22																												
ZZZZZZ	1.0	12:27																												
ZZZZZZ	1.0	12:29																												
ZZZZZZ	1.0	12:30																												
ZZZZZZ	1.0	12:32																												
CCV2	1.0	12:39																X												
CCB2	1.0	12:40																X												
ZZZZZZ	1.0	12:42																												
ZZZZZZ	1.0	12:47																												
ZZZZZZ	1.0	12:49																												
ZZZZZZ	1.0	12:51																												
ZZZZZZ	1.0	12:52																												
ZZZZZZ	1.0	12:54																												
ZZZZZZ	1.0	12:55																												
ZZZZZZ	1.0	12:57																												
ZZZZZZ	1.0	12:59																												

*** - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14**

Metals

- 14 -

ANALYSIS RUN LOG

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA **Run Number:** 103012B HG2

Project Name: ACOE Upper Guad. River Reach 12

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 10/30/12 **End Date:** 10/30/12

Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.0	13:00																												
CCV3	1.0	13:02																X												
CCB3	1.0	13:04																X												
ZZZZZZ	1.0	13:05																												
ZZZZZZ	1.0	13:07																												
ZZZZZZ	1.0	13:08																												
ZZZZZZ	1.0	13:10																												
ZZZZZZ	1.0	13:12																												
ZZZZZZ	1.0	13:13																												
ZZZZZZ	1.0	13:15																												
ZZZZZZ	1.0	13:16																												
ZZZZZZ	1.0	13:18																												
ZZZZZZ	1.0	13:20																												
ZZZZZZ	1.0	13:21																												
CCV4	1.0	13:27																X												
CCB4	1.0	13:29																X												
ZZZZZZ	1.0	13:31																												
ZZZZZZ	1.0	13:32																												
ZZZZZZ	1.0	13:34																												
ZZZZZZ	1.0	13:35																												
ZZZZZZ	1.0	13:37																												
ZZZZZZ	1.0	13:39																												
ZZZZZZ	1.0	13:40																												
ZZZZZZ	1.0	13:42																												
ZZZZZZ	1.0	13:44																												
ZZZZZZ	1.0	13:45																												
CCV5	1.0	13:47																X												
CCB5	1.0	13:48																X												
ZZZZZZ	1.0	13:50																												
ZZZZZZ	1.0	13:52																												
ZZZZZZ	1.0	13:53																												
ZZZZZZ	1.0	13:55																												

*** - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14**

Metals

- 14 -

ANALYSIS RUN LOG

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA **Run Number:** 103012B HG2

Project Name: ACOE Upper Guad. River Reach 12

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 10/30/12 **End Date:** 10/30/12

Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.0	13:58																										
ZZZZZZ	1.0	13:59																										
ZZZZZZ	1.0	14:01																										
ZZZZZZ	1.0	14:03																										
ZZZZZZ	1.0	14:04																										
ZZZZZZ	1.0	14:06																										
CCV6	1.0	14:09																X										
CCB6	1.0	14:11																X										
ZZZZZZ	1.0	14:12																										
ZZZZZZ	1.0	14:17																										
ZZZZZZ	1.0	14:18																										
ZZZZZZ	1.0	14:23																										
K1210451-MB	1.0	14:24																X										
ZZZZZZ	5.0	14:26																										
LCSW	1.0	14:27																X										
ZZZZZZ	1.0	14:29																										
ZZZZZZ	1.0	14:32																										
ZZZZZZ	1.0	14:35																										
ZZZZZZ	1.0	14:39																										
CCV7	1.0	14:50																X										
CCB7	1.0	14:52																X										
ZZZZZZ	1.0	14:53																										
ZZZZZZ	1.0	14:57																										
ZZZZZZ	1.0	15:01																										
ZZZZZZ	1.0	15:05																										
ZZZZZZ	1.0	15:08																										
ZZZZZZ	1.0	15:12																										
ZZZZZZ	1.0	15:16																										
ZZZZZZ	1.0	15:19																										
CCV8	1.0	15:23																X										
CCB8	1.0	15:24																X										
ZZZZZZ	1.0	15:26																										

*** - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14**

Metals

ANALYSIS RUN LOG

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA **Run Number:** 103012B HG2

Project Name: ACOE Upper Guad. River Reach 12

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 10/30/12 **End Date:** 10/30/12

Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	5.0	15:28																												
ZZZZZZ	5.0	15:29																												
ZZZZZZ	5.0	15:31																												
ZZZZZZ	5.0	15:33																												
ZZZZZZ	2.0	15:34																												
ZZZZZZ	10.0	15:36																												
ZZZZZZ	10.0	15:37																												
ZZZZZZ	1.0	15:39																												
ZZZZZZ	5.0	15:48																												
CCV9	1.0	15:49																X												
CCB9	1.0	15:51																X												
ZZZZZZ	2.0	15:52																												
ZZZZZZ	10.0	15:54																												
ZZZZZZ	100.0	15:56																												
ZZZZZZ	50.0	15:57																												
K1210451-001	10.0	15:59																X												
K1210451-001A	10.0	16:01																X												
ZZZZZZ	10.0	16:02																												
K1210451-001SD	10.0	16:04																X												
K1210451-002	20.0	16:06																X												
K1210451-003	10.0	16:07																X												
ZZZZZZ	1.0	16:09																												
CCV10	1.0	16:14																X												
CCB10	1.0	16:15																X												
K1210451-004	10.0	16:17																X												
K1210451-005	10.0	16:19																X												
K1210451-006	10.0	16:20																X												
K1210451-007	10.0	16:22																X												
ZZZZZZ	10.0	16:23																												
K1210451-001S	10.0	16:32																X												
ZZZZZZ	5.0	16:34																												
CCV11	1.0	16:35																X												

*** - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14**

Metals

- 14 -

ANALYSIS RUN LOG

Client: ADH Environmental Inc. **Service Request:** K1210451

Project No.: NA **Run Number:** 103012B HG2

Project Name: ACOE Upper Guad. River Reach 12

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 10/30/12 **End Date:** 10/30/12

Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB11	1.0	16:37																X									

* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

February 6, 2013 Analytical Report for Service Request No: K1300396

Christian Kocher
ADH Environmental Inc.
3065 Porter St
Suite 101
Soquel, CA 95073

RE: ACOE Upper Guad. River Reach 12

Dear Christian:

Enclosed are the results of the samples submitted to our laboratory on October 16, 2012. For your reference, these analyses have been assigned our service request number K1300396.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at Lisa.Domenighini@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc. dba ALS Environmental

Lisa Domenighini
Project Manager

LD/mj

Columbia Analytical Services
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Columbia Analytical Services, Inc.
Part of the ALS Group A Campbell Brothers Limited Company
Environmental www.caslab.com ▪ www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

TABLE OF CONTENTS

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

ALS ENVIRONMENTAL

Client:	ADH Environmental, Inc.	**Service Request No.:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Sample Matrix:	Sediment		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier III deliverables including summary forms for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

On January 14,2013 Christian Kocher with ADH Environmental, Inc. requested that sixteen frozen archived samples be tested for Mercury, TOC, Total Solids and Particle Size Distribution.

General Comments:

The DoD QSM 4.2 requires detections reported to the Method Detection Limit (MDL). Values greater than the MDL and less than the Limit of Quantitation (LOQ) were flagged as estimates (J). Values less than the MDL and Limit of Detection (LOD) were reported as non-detect (ND). The LOD for each analyte is verified quarterly by the laboratory using procedures defined in Grey Box D-13 of the DoD Quality Systems Manual Version 4.2.

The Limit of Quantitation (LOQ) is verified quarterly for each analyte using procedures defined in Grey Box D-14 of the DoD Quality Systems Manual Version 4.2.

General Chemistry Parameters

Particle Size:
Samples were previously frozen prior to analyses

Total Organic Carbon by PSEP:
All samples were reissued past holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data was flagged to indicate the holding time violation.

No other anomalies associated with the analysis of these samples were observed.

Total Metals

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike and matrix spike duplicate recoveries of Mercury for sample UGR-R12-2012-1-2 were not applicable. The analyzed concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

ALS Environmental

CHAIN OF CUSTODY

1317 South 13th Ave., Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR# ______

PAGE 1 OF 3 COC# ______

PROJECT NAME: ACOE Upper Guad. River Reach 12
PROJECT NUMBER:
PROJECT MANAGER:
COMPANY NAME: ADH Environmental
ADDRESS: 3065 Porter St., Ste. 101
CITY/STATE/ZIP: Soquel, CA 95073
E-MAIL ADDRESS: ckocher@adhenvironmental.com
PHONE #: (831) 477-2003 FAX #: (831) 477-0895
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐ SIM PAH☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCBs Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS, Turb.	(circle) NH3-N, COD, TKN, TOC, DOC, NO2+NO3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity☐ CO3☐ HCO3☐	Dioxins/Furans 1613☐ 8290☐	Dissolved Gases RSK 175☐ Methane☐ Ethane☐ Ethene☐ CO2☐	7471B / Hg; ASTM D4129-05 Modified / TOC	PSEP PS/PSEP Part Size EB	TS - MET / Total Solids	REMARKS
UGR-R12-2012-1	10/11/12	1420		Sed	1																X	X	X	one 16oz jar
UGR-R12-2012-1Z	10/11/12	1430		Sed	1																X	X	X	↓
UGR-R12-2012-2	10/11/12	1440		Sed	1																X	X	X	
UGR-R12-2012-2Z	10/11/12	1445		Sed	1																X	X	X	
UGR-R12-2012-3	10/11/12	1450		Sed	1																X	X	X	
UGR-R12-2012-3Z	10/11/12	1500		Sed	1																X	X	X	
UGR-R12-2012-DUP-1	10/11/12	1510		Sed	1																X	X	X	↓

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

✓ IV. Data Validation Report

✓ V. EDD

INVOICE INFORMATION

P.O. # ______

Bill To: Christian Kocher, ADH Environmental, 3065 Porter St. Ste101 Soquel, CA

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.

___ 5 day

✓ Standard (15 working days)

___ Provide FAX Results

______ Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: ______ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

1) Level III Data Package
2) Report Data to the MDL
3) SEDD 5.0 2A Data Format

Container Supply Number 33749

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date/Time: 10/12/12 1400	Signature: Alaya Vautier Date/Time: 10/12/12 1400	Signature: Alaya Vautier Date/Time: 10/15/12 1700	Signature: Date/Time:
Printed Name: J. Acosta Firm: USACE	Printed Name: Alaya Vautier Firm: ADH Environ	Printed Name: Alaya Vautier Firm: ADH Environm.	Printed Name: Firm:

CHAIN OF CUSTODY

ALS Environmental

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SR# _____ PAGE 2 OF 3 COC# _____

PROJECT NAME: ACOE Upper Guad. Rivet Reach 12
PROJECT NUMBER:
PROJECT MANAGER:
COMPANY NAME: ADH Environmental
ADDRESS: 3065 Porter St Ste 101
CITY/STATE/ZIP: Soquel, CA 95073
E-MAIL ADDRESS: <Kocher@adhenvironmental.com
PHONE #: (831) 477-2003 FAX #: (831) 477-0895
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Archive / Archive -20C	REMARKS
UGR-R12-2012-1-1	10/11/12	1520		Sed	1	X	one 16oz jar
UGR-R12-2012-1-2	10/11/12	1525		Sed	1	X	
UGR-R12-2012-1-3	10/11/12	1530		Sed	1	X	
UGR-R12-2012-1-4	10/11/12	1535		Sed	1	X	
UGR-R12-2012-1-5	10/11/12	1540		Sed	1	X	
UGR-R12-2012-1-6	10/11/12	1545		Sed	1	X	
UGR-R12-2012-2-1	10/11/12	1550		Sed	1	X	
UGR-R12-2012-2-2	10/11/12	1555		Sed	1	X	

Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐ SIM PAH☐
Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐
Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐
Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐
PCBs Aroclors☐ Congeners☐
Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐
Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐
Metals, Total or Dissolved (See List below)
Cyanide☐ Hex-Chrom☐
(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.
(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos
TOX 9020☐ AOX 1650☐ 506☐
Alkalinity ☐ CO_3☐ HCO_3☐
Dioxins/Furans 1613☐ 8290☐
Dissolved Gases RSK 175☐ CO_2☐ Methane☐ Ethane☐ Ethene☐

REPORT REQUIREMENTS

- ___ I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ✓ IV. Data Validation Report
- ✓ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: Christian Kocher
ADH Environmental
3065 Porter St Ste 101 Soquel, CA

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
✓ Standard (15 working days)
___ Provide FAX Results

Requested Report Date: _____

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Archive at -20°C for six months

Container Supply Number

33749

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature:
Printed Name: J. Rosa	Printed Name: Alaya Vautier	Printed Name: Alaya Vautier	Printed Name:
Date/Time: 10/12/12 1400	Date/Time: 10/12/12 1400	Date/Time: 10/15/12 1700	Date/Time:
Firm: USACE	Firm: ADH Environ.	Firm: ADH Environ.	Firm:

CHAIN OF CUSTODY

ALS Environmental

1317 South 13th Ave., Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR# _____ PAGE 3 OF 3 COC# _____

PROJECT NAME: ACOE Upper Quad River Reach 12
PROJECT NUMBER:
PROJECT MANAGER:
COMPANY NAME: ADH Environmental
ADDRESS: 3065 Porter St. Ste 101
CITY/STATE/ZIP: Soquel CA 95073
E-MAIL ADDRESS: ~~ckocher~~ ckocher@adhenvironmental.com
PHONE#: (831) 477-2003 FAX #: (831) 477-0895
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Archive	Archive -20C	REMARKS
UGR-R12-2012-2-3	10/11/12	1600		sed	1	X		one 16oz jar
UGR-R12-2012-2-4	10/11/12	1610		sed	1	X		one 16oz jar
UGR-R12-2012-2-5	10/11/12	1615		sed	1	X		one 16oz jar
UGR-R12-2012-2-6	10/11/12	1620		sed	1	X		one 16oz jar
UGR-R12-2012-3-1	10/11/12	1625		sed	1	X		one 16oz jar
UGR-R12-2012-3-2	10/11/12	1630		sed	1	X		one 16oz jar
UGR-R12-2012-3-3	10/11/12	1635		sed	1	X		one 16oz jar
UGR-R12-2012-3-4	10/11/12	1640		sed	1	X		one 16oz jar
						X		one 16oz jar

Semivolatile Organics by GC/MS 625☐ 8270☐ SIM PAH☐
Volatile Organics 624☐ 8260☐ 8270LL☐ 8021☐ BTEX☐
Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐
Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐
PCBs Aroclors☐ Congeners☐
Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐
Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐
Metals, Total or Dissolved (See List below)
Cyanide☐ Hex-Chrom☐
(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.
(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos
TOX 9020☐ AOX 1650☐ 506☐
Alkalinity ☐ CO_3☐ HCO_3☐
Dioxins/Furans 1613☐ 8290☐
Dissolved Gases CO_2☐ RSK 175☐ Methane☐ Ethane☐ Ethene☐

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
✓ IV. Data Validation Report
✓ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: Christian Kocher
ADH Environmental
3065 Porter St Ste 101 Soquel, CA

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
✓ Standard (15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Archive at ~20°C for six months

Container Supply Number

33749

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: JL	Signature: Alaya Vautier	Signature: Alaya Vautier	Signature:
Date/Time: 10/12/12 1400	Date/Time: 10/12/12 1400	Date/Time: 10/15/12 1700	Date/Time:
Printed Name: S. KOSTA	Printed Name: Alaya Vautier	Printed Name: Alaya Vautier	Printed Name:
Firm: USACE	Firm: ADH Environ.	Firm: ADH Environ.	Firm:

PC Leva

Cooler Receipt and Preservation Form

Client / Project: ADH Service Request K12 1204151

Received: 10/16/12 Opened: 10/16/12 By: AJ Unloaded: 10/16/12 By: AJ

1. Samples were received via? *Mail* *Fed Ex* (*UPS*) *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Temp	Corr. Temp	Raw Blank	Corr. Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.2	-0.2	1.2	1.2	0.0	319		1Z2Y985T093	

7. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Missing cooler w/ Samples

Page _____ *of* _____

PC Lisa

Cooler Receipt and Preservation Form

Client / Project: ADH Service Request *K12* 10451

Received: 10/18/12 Opened: 10/18/12 By: BT Unloaded: 10/18/12 By: BT

1. Samples were received via? *Mail* *Fed Ex* *(UPS)* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *(Cooler)* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Temp	Corr. Temp	Raw Blank	Corr. Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
0.9	0.6	4.3	4.0	-0.3	315		J229 9857 100	

7. Packing material: *Inserts* *Baggies* *(Bubble Wrap)* *(Gel Packs)* *Wet Ice* *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Rec'd missing cooler

Page _____ *of* _____

Analytical Results

Client: ADH Environmental Inc.
Project: ACOE Upper Guad. River Reach 12
Sample Matrix: Sediment

Service Request: K1300396

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
UGR-R12-2012-1-1	K1300396-001	10/11/2012	10/16/2012	01/15/2013	91.6	
UGR-R12-2012-1-2	K1300396-002	10/11/2012	10/16/2012	01/15/2013	95.7	
UGR-R12-2012-1-3	K1300396-003	10/11/2012	10/16/2012	01/15/2013	89.9	
UGR-R12-2012-1-4	K1300396-004	10/11/2012	10/16/2012	01/15/2013	89.9	
UGR-R12-2012-1-5	K1300396-005	10/11/2012	10/16/2012	01/15/2013	90.8	
UGR-R12-2012-1-6	K1300396-006	10/11/2012	10/16/2012	01/15/2013	98.3	
UGR-R12-2012-2-1	K1300396-007	10/11/2012	10/16/2012	01/15/2013	97.5	
UGR-R12-2012-2-2	K1300396-008	10/11/2012	10/16/2012	01/15/2013	97.8	
UGR-R12-2012-2-3	K1300396-009	10/11/2012	10/16/2012	01/15/2013	92.0	
UGR-R12-2012-2-4	K1300396-010	10/11/2012	10/16/2012	01/15/2013	90.9	
UGR-R12-2012-2-5	K1300396-011	10/11/2012	10/16/2012	01/15/2013	89.0	
UGR-R12-2012-2-6	K1300396-012	10/11/2012	10/16/2012	01/15/2013	90.9	
UGR-R12-2012-3-1	K1300396-013	10/11/2012	10/16/2012	01/15/2013	93.5	
UGR-R12-2012-3-2	K1300396-014	10/11/2012	10/16/2012	01/15/2013	87.3	
UGR-R12-2012-3-3	K1300396-015	10/11/2012	10/16/2012	01/15/2013	88.5	
UGR-R12-2012-3-4	K1300396-016	10/11/2012	10/16/2012	01/15/2013	93.2	

QA/QC Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	01/15/2013

Duplicate Sample Summary
Total Solids

Prep Method:	NONE	**Units:**	PERCENT
Analysis Method:	160.3M	**Basis:**	Wet
Test Notes:			

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
UGR-R12-2012-1-1	K1300396-001	91.6	91.2	91.4	<1	

QA/QC Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	01/15/2013

Duplicate Sample Summary
Total Solids

Prep Method:	NONE	**Units:**	PERCENT
Analysis Method:	160.3M	**Basis:**	Wet
Test Notes:			

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
UGR-R12-2012-2-5	K1300396-011	89.0	89.0	89.0	<1	

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/12
Sample Matrix:	Sediment	**Date Received:**	10/16/12
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	CAS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
UGR-R12-2012-1-1	K1300396-001	**1.39**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-1-2	K1300396-002	**0.420**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-1-3	K1300396-003	**0.494**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-1-4	K1300396-004	**0.825**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-1-5	K1300396-005	**0.158**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-2-1	K1300396-007	**0.241**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-2-2	K1300396-008	**0.608**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-2-3	K1300396-009	**0.837**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-2-4	K1300396-010	**0.597**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-2-5	K1300396-011	**0.704**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-2-6	K1300396-012	**0.423**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-3-1	K1300396-013	**0.416**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-3-2	K1300396-014	**0.171**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-3-3	K1300396-015	**0.261**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
UGR-R12-2012-3-4	K1300396-016	**0.846**	0.050	0.020	0.020	1	02/01/13	1/16/13	*
Method Blank	K1300396-MB	ND U	0.050	0.020	0.020	1	02/01/13		

COLUMBIA ANALYTICAL SERVICES, INC.

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QA/QC Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/12
Sample Matrix:	Sediment	**Date Received:**	10/16/12
		Date Analyzed:	02/01/13

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	UGR-R12-2012-1-1	**Units:**	Percent
Lab Code:	K1300396-001	**Basis:**	Dry, per Method

Analyte Name	Analysis Method	LOQ	LOD	MDL	Sample Result	Duplicate Sample K1300396-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	PSEP TOC	0.050	0.020	0.020	1.39	1.35	1.37	2	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.
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QA/QC Report

Client: ADH Environmental Inc.
Project: ACOE Upper Guad. River Reach 12
Sample Matrix: Sediment

Service Request: K1300396
Date Collected: 10/11/12
Date Received: 10/16/12
Date Analyzed: 02/1/13
Date Extracted: 01/16/13

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name: UGR-R12-2012-1-1
Lab Code: K1300396-001
Analysis Method: PSEP TOC
Prep Method: CAS SOP

Units: Percent
Basis: Dry, per Method

		Matrix Spike K1300396-001MS			Duplicate Matrix Spike K1300396-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	1.39	6.67	5.59	94	6.24	5.39	90	69-123	4	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: ADH Environmental Inc. **Service Request:**K1300396
Project: ACOE Upper Guad. River Reach 12 **Date Analyzed:**02/01/13
Sample Matrix: Sediment

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:**Percent
Basis: Dry, per Method
Analysis Lot:327806

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1300396-LCS	0.297	0.280	106	74-118

Client: ADH Environmental Inc. **Service Request:** K1300396
Project: ACOE Upper Guad. River Reach 12

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	327806	KQ1301002-01	02/01/13 09:00	20.0	18.7	93	90-110
CCV2	327806	KQ1301002-02	02/01/13 09:00	20.0	18.7	94	90-110
CCV3	327806	KQ1301002-03	02/01/13 09:00	20.0	19.0	95	90-110
CCV4	327806	KQ1301002-04	02/01/13 09:00	20.0	18.9	95	90-110

Client: ADH Environmental Inc. **Service Request:**K1300396
Project: ACOE Upper Guad. River Reach 12

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:**Percent

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	327806	KQ1301002-05	02/01/13 09:00	0.050	0.020	0.020	ND	U
CCB2	327806	KQ1301002-06	02/01/13 09:00	0.050	0.020	0.020	ND	U
CCB3	327806	KQ1301002-07	02/01/13 09:00	0.050	0.020	0.020	ND	U
CCB4	327806	KQ1301002-08	02/01/13 09:00	0.050	0.020	0.020	ND	U

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-1-1
Lab Code: K1300396-001

Sand Fraction: Dry Weight (Grams)	24.1630
Sand Fraction: Weight Recovered (Grams)	24.1875
Sand Fraction: Percent Recovery	100.10

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	8.2743	28.95
Very Coarse Sand	-1 to 0 Ø	2.9248	10.23
Coarse Sand	0 to 1 Ø	2.7562	9.64
Medium Sand	1 to 2 Ø	3.5268	12.34
Fine Sand	2 to 3 Ø	3.8132	13.34
Very Fine Sand	3 to 4 Ø	2.3758	8.31
62.5 µm	4 to 5 Ø	0.9850	3.45
31.3 µm	5 to 6 Ø	1.0200	3.57
15.6 µm	6 to 7 Ø	0.7400	2.59
7.8 µm	7 to 8 Ø	0.4950	1.73
3.9 µm	8 to 9 Ø	0.3950	1.38
1.95 µm	9 to 10 Ø	0.3750	1.31
0.98 µm	> 10 Ø	0.9150	3.20
		28.5961	100.04

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-1-2
Lab Code: K1300396-002

Sand Fraction:	Dry Weight (Grams)	30.8816
Sand Fraction:	Weight Recovered (Grams)	30.9576
Sand Fraction:	Percent Recovery	100.25

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	7.0666	22.18
Very Coarse Sand	-1 to 0 Ø	3.3381	10.48
Coarse Sand	0 to 1 Ø	5.2986	16.63
Medium Sand	1 to 2 Ø	7.6658	24.06
Fine Sand	2 to 3 Ø	5.9200	18.58
Very Fine Sand	3 to 4 Ø	1.5318	4.81
62.5 µm	4 to 5 Ø	0.3700	1.16
31.3 µm	5 to 6 Ø	0.1700	0.53
15.6 µm	6 to 7 Ø	0.1000	0.31
7.8 µm	7 to 8 Ø	0.0850	0.27
3.9 µm	8 to 9 Ø	0.0000	0.00
1.95 µm	9 to 10 Ø	0.0850	0.27
0.98 µm	> 10 Ø	0.1250	0.39
		31.7559	99.66

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-1-3
Lab Code: K1300396-003

Sand Fraction:	Dry Weight (Grams)	32.4528
Sand Fraction:	Weight Recovered (Grams)	32.4637
Sand Fraction:	Percent Recovery	100.03

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	15.2413	43.31
Very Coarse Sand	-1 to 0 Ø	5.0828	14.44
Coarse Sand	0 to 1 Ø	4.5060	12.81
Medium Sand	1 to 2 Ø	4.4181	12.56
Fine Sand	2 to 3 Ø	2.0983	5.96
Very Fine Sand	3 to 4 Ø	0.9225	2.62
62.5 µm	4 to 5 Ø	0.5450	1.55
31.3 µm	5 to 6 Ø	0.4350	1.24
15.6 µm	6 to 7 Ø	0.3400	0.97
7.8 µm	7 to 8 Ø	0.2850	0.81
3.9 µm	8 to 9 Ø	0.2250	0.64
1.95 µm	9 to 10 Ø	0.2750	0.78
0.98 µm	> 10 Ø	0.6800	1.93
		35.0540	99.62

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-1-4
Lab Code: K1300396-004

Sand Fraction: Dry Weight (Grams)	27.6662
Sand Fraction: Weight Recovered (Grams)	27.6994
Sand Fraction: Percent Recovery	100.12

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	9.4161	27.14
Very Coarse Sand	-1 to 0 Ø	3.4384	9.91
Coarse Sand	0 to 1 Ø	3.5730	10.30
Medium Sand	1 to 2 Ø	4.4565	12.85
Fine Sand	2 to 3 Ø	3.9802	11.47
Very Fine Sand	3 to 4 Ø	2.3822	6.87
62.5 µm	4 to 5 Ø	1.5250	4.40
31.3 µm	5 to 6 Ø	1.5950	4.60
15.6 µm	6 to 7 Ø	1.0900	3.14
7.8 µm	7 to 8 Ø	0.8250	2.38
3.9 µm	8 to 9 Ø	0.6050	1.74
1.95 µm	9 to 10 Ø	0.6000	1.73
0.98 µm	> 10 Ø	1.3200	3.80
		34.8064	100.33

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-1-5
Lab Code: K1300396-005

Sand Fraction: Dry Weight (Grams)	34.4350
Sand Fraction: Weight Recovered (Grams)	34.5283
Sand Fraction: Percent Recovery	100.27

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	21.4683	59.43
Very Coarse Sand	-1 to 0 Ø	4.4258	12.25
Coarse Sand	0 to 1 Ø	4.4582	12.34
Medium Sand	1 to 2 Ø	3.1034	8.59
Fine Sand	2 to 3 Ø	0.7984	2.21
Very Fine Sand	3 to 4 Ø	0.2485	0.69
62.5 µm	4 to 5 Ø	0.1300	0.36
31.3 µm	5 to 6 Ø	0.1550	0.43
15.6 µm	6 to 7 Ø	0.1300	0.36
7.8 µm	7 to 8 Ø	0.0750	0.21
3.9 µm	8 to 9 Ø	0.0750	0.21
1.95 µm	9 to 10 Ø	0.2200	0.61
0.98 µm	> 10 Ø	1.4800	4.10
		36.7676	101.78

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2-1
Lab Code: K1300396-007

Sand Fraction: Dry Weight (Grams)	52.8374
Sand Fraction: Weight Recovered (Grams)	52.9168
Sand Fraction: Percent Recovery	100.15

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	45.8487	87.15
Very Coarse Sand	-1 to 0 Ø	3.8419	7.30
Coarse Sand	0 to 1 Ø	2.4050	4.57
Medium Sand	1 to 2 Ø	0.6796	1.29
Fine Sand	2 to 3 Ø	0.0822	0.16
Very Fine Sand	3 to 4 Ø	0.0499	0.09
62.5 µm	4 to 5 Ø	0.0500	0.10
31.3 µm	5 to 6 Ø	0.0050	0.01
15.6 µm	6 to 7 Ø	0.0100	0.02
7.8 µm	7 to 8 Ø	0.0150	0.03
3.9 µm	8 to 9 Ø	0.0000	0.00
1.95 µm	9 to 10 Ø	0.0650	0.12
0.98 µm	> 10 Ø	0.0000	0.00
		53.0523	100.84

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2-2
Lab Code: K1300396-008

Sand Fraction: Dry Weight (Grams)	35.0369
Sand Fraction: Weight Recovered (Grams)	35.1180
Sand Fraction: Percent Recovery	100.23

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	15.2950	42.78
Very Coarse Sand	-1 to 0 Ø	6.7262	18.81
Coarse Sand	0 to 1 Ø	6.3446	17.74
Medium Sand	1 to 2 Ø	3.7266	10.42
Fine Sand	2 to 3 Ø	2.0641	5.77
Very Fine Sand	3 to 4 Ø	0.8351	2.34
62.5 µm	4 to 5 Ø	0.2950	0.83
31.3 µm	5 to 6 Ø	0.1850	0.52
15.6 µm	6 to 7 Ø	0.1050	0.29
7.8 µm	7 to 8 Ø	0.0750	0.21
3.9 µm	8 to 9 Ø	0.0550	0.15
1.95 µm	9 to 10 Ø	0.0850	0.24
0.98 µm	> 10 Ø	0.1000	0.28
		35.8916	100.38

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2-3
Lab Code: K1300396-009

Sand Fraction:	Dry Weight (Grams)	20.1542
Sand Fraction:	Weight Recovered (Grams)	20.1789
Sand Fraction:	Percent Recovery	100.12

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	4.8805	20.85
Very Coarse Sand	-1 to 0 Ø	2.2868	9.77
Coarse Sand	0 to 1 Ø	2.4233	10.35
Medium Sand	1 to 2 Ø	3.5656	15.23
Fine Sand	2 to 3 Ø	4.1096	17.56
Very Fine Sand	3 to 4 Ø	2.2995	9.83
62.5 µm	4 to 5 Ø	0.6200	2.65
31.3 µm	5 to 6 Ø	0.9450	4.04
15.6 µm	6 to 7 Ø	0.6250	2.67
7.8 µm	7 to 8 Ø	0.4250	1.82
3.9 µm	8 to 9 Ø	0.3550	1.52
1.95 µm	9 to 10 Ø	0.3050	1.30
0.98 µm	> 10 Ø	1.1100	4.74
		23.9503	102.33

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2-4
Lab Code: K1300396-010

Sand Fraction: Dry Weight (Grams)	23.9443
Sand Fraction: Weight Recovered (Grams)	23.9052
Sand Fraction: Percent Recovery	99.84

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	4.7995	16.48
Very Coarse Sand	-1 to 0 Ø	2.5991	8.93
Coarse Sand	0 to 1 Ø	2.5114	8.63
Medium Sand	1 to 2 Ø	3.9577	13.59
Fine Sand	2 to 3 Ø	5.3409	18.34
Very Fine Sand	3 to 4 Ø	3.6633	12.58
62.5 µm	4 to 5 Ø	1.4700	5.05
31.3 µm	5 to 6 Ø	1.2550	4.31
15.6 µm	6 to 7 Ø	0.7450	2.56
7.8 µm	7 to 8 Ø	0.4550	1.56
3.9 µm	8 to 9 Ø	0.4000	1.37
1.95 µm	9 to 10 Ø	0.3450	1.18
0.98 µm	> 10 Ø	1.3400	4.60
		28.8819	99.19

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2-5
Lab Code: K1300396-011

Sand Fraction:	Dry Weight (Grams)	19.3504
Sand Fraction:	Weight Recovered (Grams)	19.2965
Sand Fraction:	Percent Recovery	99.72

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	0.9567	3.38
Very Coarse Sand	-1 to 0 Ø	0.8940	3.15
Coarse Sand	0 to 1 Ø	1.5940	5.62
Medium Sand	1 to 2 Ø	3.0878	10.90
Fine Sand	2 to 3 Ø	5.5350	19.53
Very Fine Sand	3 to 4 Ø	4.9491	17.46
62.5 µm	4 to 5 Ø	1.9600	6.92
31.3 µm	5 to 6 Ø	2.4700	8.72
15.6 µm	6 to 7 Ø	1.1350	4.00
7.8 µm	7 to 8 Ø	0.5400	1.91
3.9 µm	8 to 9 Ø	1.2800	4.52
1.95 µm	9 to 10 Ø	0.6050	2.13
0.98 µm	> 10 Ø	1.7700	6.25
		26.7766	94.48

COLUMBIA ANALYTICAL SERVICES, INC.

Now Part of ALS Group

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2-6
Lab Code: K1300396-012

Sand Fraction: Dry Weight (Grams)	27.1416
Sand Fraction: Weight Recovered (Grams)	27.2305
Sand Fraction: Percent Recovery	100.33

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	13.1734	43.94
Very Coarse Sand	-1 to 0 Ø	2.5942	8.65
Coarse Sand	0 to 1 Ø	2.5038	8.35
Medium Sand	1 to 2 Ø	2.8827	9.62
Fine Sand	2 to 3 Ø	3.3419	11.15
Very Fine Sand	3 to 4 Ø	2.1336	7.12
62.5 µm	4 to 5 Ø	0.7050	2.35
31.3 µm	5 to 6 Ø	0.7050	2.35
15.6 µm	6 to 7 Ø	0.2400	0.80
7.8 µm	7 to 8 Ø	0.3000	1.00
3.9 µm	8 to 9 Ø	0.1900	0.63
1.95 µm	9 to 10 Ø	0.2850	0.95
0.98 µm	> 10 Ø	1.0750	3.59
		30.1296	100.51

COLUMBIA ANALYTICAL SERVICES, INC.

Now Part of ALS Group

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-3-1
Lab Code: K1300396-013

Sand Fraction: Dry Weight (Grams)	24.9952
Sand Fraction: Weight Recovered (Grams)	25.0793
Sand Fraction: Percent Recovery	100.34

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	13.2652	46.95
Very Coarse Sand	-1 to 0 Ø	2.8105	9.95
Coarse Sand	0 to 1 Ø	2.4651	8.73
Medium Sand	1 to 2 Ø	2.4724	8.75
Fine Sand	2 to 3 Ø	2.3756	8.41
Very Fine Sand	3 to 4 Ø	1.3628	4.82
62.5 µm	4 to 5 Ø	0.6300	2.23
31.3 µm	5 to 6 Ø	0.6900	2.44
15.6 µm	6 to 7 Ø	0.4300	1.52
7.8 µm	7 to 8 Ø	0.3350	1.19
3.9 µm	8 to 9 Ø	0.2500	0.88
1.95 µm	9 to 10 Ø	0.3050	1.08
0.98 µm	> 10 Ø	1.1900	4.21
		28.5816	101.17

COLUMBIA ANALYTICAL SERVICES, INC.

Now Part of ALS Group

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-3-2
Lab Code: K1300396-014

Sand Fraction:	Dry Weight (Grams)	39.9543
Sand Fraction:	Weight Recovered (Grams)	40.0559
Sand Fraction:	Percent Recovery	100.25

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	21.8988	51.29
Very Coarse Sand	-1 to 0 Ø	6.0963	14.28
Coarse Sand	0 to 1 Ø	4.4811	10.49
Medium Sand	1 to 2 Ø	4.7335	11.09
Fine Sand	2 to 3 Ø	2.0808	4.87
Very Fine Sand	3 to 4 Ø	0.7095	1.66
62.5 µm	4 to 5 Ø	0.4050	0.95
31.3 µm	5 to 6 Ø	0.3650	0.85
15.6 µm	6 to 7 Ø	0.2450	0.57
7.8 µm	7 to 8 Ø	0.2100	0.49
3.9 µm	8 to 9 Ø	0.2050	0.48
1.95 µm	9 to 10 Ø	0.2800	0.66
0.98 µm	> 10 Ø	1.6350	3.83
		43.3450	101.51

COLUMBIA ANALYTICAL SERVICES, INC.

Now Part of ALS Group

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-3-3
Lab Code: K1300396-015

Sand Fraction: Dry Weight (Grams)	41.9245
Sand Fraction: Weight Recovered (Grams)	42.0128
Sand Fraction: Percent Recovery	100.21

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	26.0076	57.97
Very Coarse Sand	-1 to 0 Ø	6.9523	15.50
Coarse Sand	0 to 1 Ø	4.7769	10.65
Medium Sand	1 to 2 Ø	2.7310	6.09
Fine Sand	2 to 3 Ø	1.1084	2.47
Very Fine Sand	3 to 4 Ø	0.3900	0.87
62.5 µm	4 to 5 Ø	0.2200	0.49
31.3 µm	5 to 6 Ø	0.2650	0.59
15.6 µm	6 to 7 Ø	0.2900	0.65
7.8 µm	7 to 8 Ø	0.2900	0.65
3.9 µm	8 to 9 Ø	0.2750	0.61
1.95 µm	9 to 10 Ø	0.3850	0.86
0.98 µm	> 10 Ø	1.6500	3.68
		45.3412	101.06

COLUMBIA ANALYTICAL SERVICES, INC.

Now Part of ALS Group

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-3-4
Lab Code: K1300396-016

Sand Fraction:	Dry Weight (Grams)	23.4221
Sand Fraction:	Weight Recovered (Grams)	23.3749
Sand Fraction:	Percent Recovery	99.80

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	3.8747	13.00
Very Coarse Sand	-1 to 0 Ø	2.1490	7.21
Coarse Sand	0 to 1 Ø	2.6440	8.87
Medium Sand	1 to 2 Ø	4.0741	13.67
Fine Sand	2 to 3 Ø	5.1812	17.38
Very Fine Sand	3 to 4 Ø	3.7995	12.75
62.5 µm	4 to 5 Ø	1.9250	6.46
31.3 µm	5 to 6 Ø	1.8800	6.31
15.6 µm	6 to 7 Ø	1.1850	3.98
7.8 µm	7 to 8 Ø	0.8350	2.80
3.9 µm	8 to 9 Ø	0.5350	1.79
1.95 µm	9 to 10 Ø	0.4550	1.53
0.98 µm	> 10 Ø	0.9500	3.19
		29.4875	98.91

COLUMBIA ANALYTICAL SERVICES, INC.

Now Part of ALS Group

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2-2
Lab Code: K1300396-008 DUP

Sand Fraction:	Dry Weight (Grams)	29.6234
Sand Fraction:	Weight Recovered (Grams)	29.7089
Sand Fraction:	Percent Recovery	100.29

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	13.6779	45.44
Very Coarse Sand	-1 to 0 Ø	6.5952	21.91
Coarse Sand	0 to 1 Ø	5.1957	17.26
Medium Sand	1 to 2 Ø	2.5223	8.38
Fine Sand	2 to 3 Ø	1.1832	3.93
Very Fine Sand	3 to 4 Ø	0.4580	1.52
62.5 µm	4 to 5 Ø	0.1400	0.47
31.3 µm	5 to 6 Ø	0.1500	0.50
15.6 µm	6 to 7 Ø	0.0800	0.27
7.8 µm	7 to 8 Ø	0.0650	0.22
3.9 µm	8 to 9 Ø	0.0200	0.07
1.95 µm	9 to 10 Ø	0.0850	0.28
0.98 µm	> 10 Ø	0.0750	0.25
		30.2473	100.49

COLUMBIA ANALYTICAL SERVICES, INC.

Now Part of ALS Group

Analytical Report

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project:	ACOE Upper Guad. River Reach 12	**Date Collected:**	10/11/2012
Sample Matrix:	Sediment	**Date Received:**	10/16/2012
		Date Analyzed:	1/21/2013

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: UGR-R12-2012-2-2
Lab Code: K1300396-008 TRP

Sand Fraction: Dry Weight (Grams)	29.8355
Sand Fraction: Weight Recovered (Grams)	29.9239
Sand Fraction: Percent Recovery	100.30

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	14.8052	48.74
Very Coarse Sand	-1 to 0 Ø	5.5528	18.28
Coarse Sand	0 to 1 Ø	4.7716	15.71
Medium Sand	1 to 2 Ø	2.7663	9.11
Fine Sand	2 to 3 Ø	1.3880	4.57
Very Fine Sand	3 to 4 Ø	0.5597	1.84
62.5 µm	4 to 5 Ø	0.1850	0.61
31.3 µm	5 to 6 Ø	0.1550	0.51
15.6 µm	6 to 7 Ø	0.0900	0.30
7.8 µm	7 to 8 Ø	0.0450	0.15
3.9 µm	8 to 9 Ø	0.0300	0.10
1.95 µm	9 to 10 Ø	0.0800	0.26
0.98 µm	> 10 Ø	0.0900	0.30
		30.5186	100.46

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: ADH Environmental Inc.
Project Name: ACOE Upper Guad. River Reach 12
Project No.:

Service Request: K1300396

Sample Name:	Lab Code:
UGR-R12-2012-1-1	K1300396-001
UGR-R12-2012-1-2	K1300396-002
UGR-R12-2012-1-2S	K1300396-002S
UGR-R12-2012-1-2SD	K1300396-002SD
UGR-R12-2012-1-3	K1300396-003
UGR-R12-2012-1-4	K1300396-004
UGR-R12-2012-1-5	K1300396-005
UGR-R12-2012-1-6	K1300396-006
UGR-R12-2012-2-1	K1300396-007
UGR-R12-2012-2-2	K1300396-008
UGR-R12-2012-2-3	K1300396-009
UGR-R12-2012-2-4	K1300396-010
UGR-R12-2012-2-5	K1300396-011
UGR-R12-2012-2-6	K1300396-012
UGR-R12-2012-3-1	K1300396-013
UGR-R12-2012-3-2	K1300396-014
UGR-R12-2012-3-3	K1300396-015
UGR-R12-2012-3-4	K1300396-016
Method Blank	K1300396-MB

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-1-1** **Lab Code:** **K1300396-001**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.021	0.005	0.002	**1.0**	**01/16/13**	**01/16/13**	**0.938**		

% Solids: **91.6**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-1-2** **Lab Code:** **K1300396-002**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.991	0.248	0.099	**50.0**	**01/16/13**	**01/16/13**	**14.2**		

% Solids: **95.7**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-1-3** **Lab Code:** **K1300396-003**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.376	0.094	0.038	**20.0**	**01/16/13**	**01/16/13**	**6.80**		

% Solids: **89.9**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-1-4** **Lab Code:** **K1300396-004**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	**0.988**	**0.247**	**0.099**	**50.0**	**01/16/13**	**01/16/13**	**11.6**		

% Solids: **89.9**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-1-5** **Lab Code:** **K1300396-005**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.019	0.005	0.002	**1.0**	**01/16/13**	**01/16/13**	**0.387**		

% Solids: **90.8**

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-1-6** **Lab Code:** **K1300396-006**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.098	0.024	0.010	**5.0**	**01/16/13**	**01/16/13**	**3.03**		

% Solids: **98.3**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-2-1** **Lab Code:** **K1300396-007**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	**0.093**	**0.023**	**0.009**	**5.0**	**01/16/13**	**01/16/13**	**1.49**		

% Solids: **97.5**

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-2-2** **Lab Code:** **K1300396-008**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.959	0.240	0.096	**50.0**	**01/16/13**	**01/16/13**	**13.7**		

% Solids: **97.8**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-2-3** **Lab Code:** **K1300396-009**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.195	0.049	0.020	**10.0**	**01/16/13**	**01/16/13**	**4.15**		

% Solids: **92.0**

Comments:

Metals
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-2-4** **Lab Code:** **K1300396-010**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	1.93	0.483	0.193	**100.0**	**01/16/13**	**01/16/13**	**18.8**		

% Solids: **90.9**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-2-5** **Lab Code:** **K1300396-011**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.019	0.005	0.002	**1.0**	**01/16/13**	**01/16/13**	**0.613**		

% Solids: **89.0**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-2-6** **Lab Code:** **K1300396-012**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.395	0.099	0.040	**20.0**	**01/16/13**	**01/16/13**	**10.2**		

% Solids: **90.9**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-3-1** **Lab Code:** **K1300396-013**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.378	0.094	0.038	**20.0**	**01/16/13**	**01/16/13**	**9.09**		

% Solids: **93.5**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-3-2** **Lab Code:** **K1300396-014**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	0.178	0.045	0.018	**10.0**	**01/16/13**	**01/16/13**	**3.43**		

% Solids: **87.3**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-3-3** **Lab Code:** **K1300396-015**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	**0.347**	**0.087**	**0.035**	**20.0**	**01/16/13**	**01/16/13**	**6.08**		

% Solids: **88.5**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Date Collected:**	10/11/12
Project Name:	ACOE Upper Guad. River Reach 12	**Date Received:**	10/16/12
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **UGR-R12-2012-3-4** **Lab Code:** **K1300396-016**

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	**7471B**	1.87	0.467	0.187	**100.0**	**01/16/13**	**01/16/13**	**17.2**		

% Solids: **93.2**

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ADH Environmental Inc.
Service Request: K1300396
Project No.: NA
Date Collected:
Project Name: ACOE Upper Guad. River Reach 12
Date Received:
Matrix: SEDIMENT
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: K1300396-MB

Analyte	Analysis Method	LOQ	LOD	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	7471B	0.020	0.005	0.002	1.0	01/16/13	01/16/13	0.005	U	

% Solids: 100.0

Comments:

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury	5.00	5.02	100	5.00	5.19	104	4.99	100	7471B

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury				5.00	5.06	101	5.06	101	7471B

Metals
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICV Source: Inorganic Ventures **CCV Source:** CAS MIXED

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	Method
Mercury				5.00	5.15	103	5.03	101	7471B

Metals

- 2b -

CRDL STANDARD FOR AA AND ICP

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Mercury	0.20	0.196	98					

Metals

- 3 -

BLANKS

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Mercury	0.02	U	0.02	U	0.02	U	0.02	U	7471B

Metals

- 3 -

BLANKS

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Method
Mercury			0.02	U	0.02	U	0.02	U	7471B

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Units:**	MG/KG
Project Name:	ACOE Upper Guad. River Reach 12	**Basis:**	DRY
Matrix:	SEDIMENT	**% Solids:**	95.7

Sample Name: **UGR-R12-2012-1-2S** **Lab Code:** **K1300396-002S**

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury		8.53		14.2		0.49	-1157.1		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 5A -

SPIKE SAMPLE RECOVERY

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Units:**	MG/KG
Project Name:	ACOE Upper Guad. River Reach 12	**Basis:**	DRY
Matrix:	SEDIMENT	**% Solids:**	95.7

Sample Name: **UGR-R12-2012-1-2SD** **Lab Code:** **K1300396-002SD**

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury		8.71		14.2		0.49	-1120.4		7471B

An empty field in the Control Limit column indicates the control limit is not applicable

Metals
- 5B -
POST SPIKE SAMPLE RECOVERY

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA **Units:** UG/L

Project Name: ACOE Upper Guad. River Reach 12 **Basis:** DRY

Matrix: WATER

Sample Name: **UGR-R12-2012-1-5A** **Lab Code:** **K1300396-005A**

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Mercury	75 - 125	9.07		4.06		5.00	100		7471B

Metals

- 6 -

DUPLICATES

Client:	ADH Environmental Inc.	**Service Request:**	K1300396
Project No.:	NA	**Units:**	MG/KG
Project Name:	ACOE Upper Guad. River Reach 12	**Basis:**	DRY
Matrix:	SEDIMENT	**% Solids:**	95.7

Sample Name: **UGR-R12-2012-1-2SD** **Lab Code:** **K1300396-002SD**

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	20	8.53		8.71		2.1		7471B

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

- 7 -

LABORATORY CONTROL SAMPLE

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Aqueous LCS Source: **CAS MIXED** **Solid LCS Source:**

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Mercury	5.00	5.05	101.0					

Metals

- 9 -

ICP SERIAL DILUTIONS

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA **Units:** UG/L

Project Name: ACOE Upper Guad. River Reach 12

Sample Name: **UGR-R12-2012-1-1L** **Lab Code:** **K1300396-001L**

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Mercury	8.90		9.20		3.4		CV

Metals

- 10 -

DETECTION LIMITS

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

ICP/ICP-MS ID #: **K-CVAA-02**

GFAA ID #: **AA ID #:**

Analyte	Wave-length (nm)	Back-ground	LOQ ug/L	LOD ug/L	MDL ug/L	M
Mercury	253.7		0.20	0.05	0.02	CV

Comments:

Metals
-13-
PREPARATION LOG

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA

Project Name: ACOE Upper Guad. River Reach 12

Method: CV

Sample ID	Preparation Date	Initial Weight (g)	Final Volume(mL)
K1300396-001	01/16/13	0.52	50.0
K1300396-002	01/16/13	0.53	50.0
K1300396-002S	01/16/13	0.53	50.0
K1300396-002SD	01/16/13	0.53	50.0
K1300396-003	01/16/13	0.59	50.0
K1300396-004	01/16/13	0.56	50.0
K1300396-005	01/16/13	0.58	50.0
K1300396-006	01/16/13	0.52	50.0
K1300396-007	01/16/13	0.55	50.0
K1300396-008	01/16/13	0.53	50.0
K1300396-009	01/16/13	0.56	50.0
K1300396-010	01/16/13	0.57	50.0
K1300396-011	01/16/13	0.59	50.0
K1300396-012	01/16/13	0.56	50.0
K1300396-013	01/16/13	0.57	50.0
K1300396-014	01/16/13	0.64	50.0
K1300396-015	01/16/13	0.65	50.0
K1300396-016	01/16/13	0.57	50.0
K1300396-MB	01/16/13	0.50	50.0
LCSW	01/16/13	50.0	50.0

Metals

- 14 -

ANALYSIS RUN LOG

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA **Run Number:** 011613B HG2

Project Name: ACOE Upper Guad. River Reach 12

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 01/16/13 **End Date:** 01/16/13

Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
Calibration Blank	1.0	12:59																X								
Standard #1	1.0	13:00																X								
Standard #2	1.0	13:02																X								
Standard #3	1.0	13:03																X								
Standard #4	1.0	13:05																X								
Standard #5	1.0	13:07																X								
ICV1	1.0	13:10																X								
ICB1	1.0	13:11																X								
CRA1	1.0	13:13																X								
CCV1	1.0	13:14																X								
CCB1	1.0	13:16																X								
ZZZZZZ	1.0	13:18																								
ZZZZZZ	1.0	13:19																								
ZZZZZZ	1.0	13:21																								
ZZZZZZ	1.0	13:22																								
K1300396-MB	1.0	13:24																X								
ZZZZZZ	5.0	13:26																								
LCSW	1.0	13:27																X								
ZZZZZZ	1.0	13:29																								
ZZZZZZ	1.0	13:31																								
ZZZZZZ	1.0	13:32																								
CCV2	1.0	13:34																X								
CCB2	1.0	13:35																X								
ZZZZZZ	1.0	13:37																								
K1300396-001	1.0	13:39																X								
ZZZZZZ	1.0	13:40																								
ZZZZZZ	1.0	13:45																								
ZZZZZZ	1.0	13:49																								
ZZZZZZ	1.0	13:54																								
ZZZZZZ	1.0	13:57																								
ZZZZZZ	1.0	14:02																								
K1300396-005	1.0	14:06																X								

*** - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14**

Metals

- 14 -

ANALYSIS RUN LOG

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA **Run Number:** 011613B HG2

Project Name: ACOE Upper Guad. River Reach 12

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 01/16/13 **End Date:** 01/16/13

Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
ZZZZZZ	1.0	14:07																										
CCV3	1.0	14:11																X										
CCB3	1.0	14:12																X										
ZZZZZZ	1.0	14:14																										
ZZZZZZ	1.0	14:17																										
ZZZZZZ	1.0	14:21																										
ZZZZZZ	1.0	14:26																										
K1300396-011	1.0	14:31																X										
ZZZZZZ	1.0	14:33																										
ZZZZZZ	1.0	14:38																										
ZZZZZZ	1.0	14:42																										
ZZZZZZ	1.0	14:46																										
ZZZZZZ	1.0	14:50																										
CCV4	1.0	14:55																X										
CCB4	1.0	14:56																X										
K1300396-001L	5.0	15:02																X										
K1300396-002	50.0	15:04																X										
K1300396-002S	50.0	15:05																X										
K1300396-002SD	50.0	15:07																X										
K1300396-003	20.0	15:09																X										
K1300396-004	50.0	15:10																X										
K1300396-005A	1.0	15:12																X										
K1300396-006	5.0	15:14																X										
K1300396-007	5.0	15:15																X										
K1300396-008	50.0	15:17																X										
CCV5	1.0	15:18																X										
CCB5	1.0	15:20																X										
K1300396-009	10.0	15:22																X										
K1300396-010	100.0	15:23																X										
K1300396-012	20.0	15:25																X										
K1300396-013	20.0	15:26																X										
K1300396-014	10.0	15:28																X										

*** - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14**

Metals

- 14 -

ANALYSIS RUN LOG

Client: ADH Environmental Inc. **Service Request:** K1300396

Project No.: NA **Run Number:** 011613B HG2

Project Name: ACOE Upper Guad. River Reach 12

Instrument ID Number: K-CVAA-02 **Method:** CV

Start Date: 01/16/13 **End Date:** 01/16/13

Sample No.	D/F	Time	% R	Analytes																								
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
K1300396-015	20.0	15:30																X									
K1300396-016	100.0	15:31																X									
CCV6	1.0	15:33																X									
CCB6	1.0	15:35																X									

*** - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14**