Revised Supplement to Scoping Ecological and Off-site Human Health Risk Assessment

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Prepared for:

Sierra Pacific Industries
Arcata Division Sawmill
2593 New Navy Base Road
Arcata, California

September 2006

Project No. 9329.000, Task 20

Geomatrix

Geomatrix

September 1, 2006
Project 9329, Task 20

Executive Officer
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403

Attention: Kasey Ashley

Subject: Revised Supplement to Scoping Ecological and
Off-Site Human Health Risk Assessment
Sierra Pacific Industries
Arcata Division Sawmill
2593 New Navy Base Road
Arcata, California

Dear Ms. Ashley:

On behalf of Sierra Pacific Industries, Geomatrix Consultants, Inc. (Geomatrix) has prepared the *Revised Supplement to Scoping Ecological and Off-Site Human Health Risk Assessment*, dated September 1, 2006.

Please contact the undersigned if you have any questions regarding this submittal.

Sincerely yours,
GEOMATRIX CONSULTANTS, INC.

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Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Prepared for:

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2593 New Navy Base Road
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Geomatrix

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Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

1.0 INTRODUCTION

On behalf of Sierra Pacific Industries, Geomatrix Consultants, Inc. (Geomatrix) and NewFields have prepared this report, *Revised Supplement to Scoping Ecological and Off-Site Human Health Risk Assessment* (Revised Supplement to Scoping Risk Assessment), which documents implementation of the *Work Plan to Collect Sediment and Fin Fish Tissue Samples* (Sampling Work Plan; Geomatrix/NewFields, 2004a) and *Addendum to Work Plan To Collect Sediment and Fin Fish Tissue Samples* (Sampling Work Plan Addendum, Geomatrix/NewFields, 2004b). The Sampling Work Plan and Sampling Work Plan Addendum were approved by the California Regional Water Quality Control Board, North Coast Region (RWQCB), in a letter dated September 10, 2004 (RWQCB, 2004). The Revised Supplement to Scoping Risk Assessment addresses comments by the Office of Environmental Health Hazard Assessment (OEHHA, 2006) to the *Supplement to the Scoping Ecological and Off-Site Human Health Risk Assessment* (Geomatrix, 2005). Specifically, OEHHA requested copies of omitted laboratory data sheets and a quantitative comparison of human health risk assessment calculations for fin fish data collected in 2002 and fin fish data collected in 2005. In the process of updating these components of the Supplement to the Scoping Risk Assessment, we identified some additional revisions that were required that included a revision to the quality assurance/quality control review of the data, replacement pages for laboratory reports with mislabeled units, and an update to the zinc hazard index calculations from those in the Scoping Risk Assessment. These additional changes are described in more detail herein.

The Sampling Work Plan was implemented to address data needs identified in the *Scoping Ecological and Off-Site Human Health Risk Assessment* (the Scoping Risk Assessment; Geomatrix/MFG, 2004) for the Arcata Division Sawmill (the sawmill) in Arcata, California (Figure 1). The sawmill is located at 2593 New Navy Base Road in Arcata, California. The sawmill has been issued Cleanup and Abatement Orders No. R1-2001-0200 and No. R1-2003-127 by the RWQCB to address discharges of pentachlorophenol, tetrachlorophenol, and dioxins/furans to groundwater and surface water. These chemicals are constituents of wood

surface protection chemicals used historically in the vicinity of the former green chain where new lumber was cut (Figure 2).

The risk assessment process was initiated with preparation of the *Revised Work Plan for Performing a Human Health and Ecological Risk Assessment at the Sierra Pacific Industries, Arcata Division Sawmill, Arcata, California* (the Risk Assessment Work Plan; ENVIRON, 2002), which described the risk assessment process in relatively general terms. Potential on-site human health risks identified in the Risk Assessment Work Plan were evaluated in the *Baseline Human Health Risk Assessment of On-Site Soil and Groundwater* (Baseline Risk Assessment; Geomatrix, 2003). To implement the remaining components of the Risk Assessment Work Plan, the *Scoping Ecological and Off-site Human Health Risk Assessment* was issued on September 8, 2004 (the Scoping Risk Assessment, Geomatrix/MFG, 2004). The objective of the Scoping Risk Assessment was to assess ecological and human health risks to the extent possible using the available data collected by Sierra Pacific Industries, environmental groups, and the RWQCB. The data needs identified in the recommendations section of the Scoping Risk Assessment were addressed by implementation of the Sampling Work Plan in 2004 and 2005, and the results are documented in this Supplement to Scoping Risk Assessment.

1.1 OBJECTIVES

The recommendations of the Scoping Risk Assessment identified two areas that could be addressed by collection of additional data:

- ***Pentachlorophenol detection limits in sediment.*** The analytical detection limits reported for pentachlorophenol in sediments collected during 2002 were 990 or 1,000 micrograms per kilogram (µg/kg). This level is greater than the available sediment quality guidelines for the assessment of potential risks to some aquatic receptors (360 to 690 µg/kg) (Barick, et al., 1988, as cited in Hellyer and Balog, 1999). Since pentachlorophenol is a primary component in wood surface protection chemicals used historically at the site, additional analyses with more applicable detection limits were recommended to help evaluate potential risks to benthic organisms. Sediment sampling and analysis is described in Section 4.1.

- ***Representativeness of fin fish tissue samples for human health risk assessment.*** The fin fish tissue samples used to evaluate human health risks from ingestion of fin fish from the site vicinity were not ideal for human health risk assessment. The length and

size of fin fish in the samples were not available and whole-body samples were analyzed, instead of limiting analyses to edible portions of the fin fish (e.g., fillets). Collection of additional fin fish tissue samples was intended to address comments on previous sample collection efforts from California EPA's Office of Environmental Health Hazard Assessment (OEHHA, 2003). Based on the results of the Scoping Risk Assessment, dioxins/furans were the primary chemical of potential concern in fin fish. Fin fish tissue sampling and analysis is described in Section 4.2.

1.2 SITE BACKGROUND

The Sierra Pacific Industries Arcata Division Sawmill is situated at the northern end of Humboldt Bay (Figure 1) also referred to as Arcata Bay. Specifically, the sawmill is located along the west shore of Mad River Slough; the slough joins Humboldt Bay immediately south of the sawmill (Figure 2). As noted in the Remedial Investigation report (EnviroNet, 2003), before it was developed as a lumber mill in approximately 1950, the site consisted of sand dunes and mud flats. The site began operations as an active mill in approximately 1950. After initial construction, the sawmill property was expanded, including filling parts of Mad River Slough, into the 1960s.

Wood surface protection operations using products containing pentachlorophenol and tetrachlorophenol began in the early to mid-1960s and were discontinued in 1987. The wood surface protection products were applied to small quantities of milled lumber to provide cosmetic protection against mold and sap stains. The wood surface protection solution was stored and used in a dip tank located at the former green chain and in a nearby aboveground storage tank. The green chain was located south of the current sorter building and west of the current sawmill building. The area where the wood surface protection solutions were stored and used is now covered with concrete or asphalt and equipment.

1.3 REPORT ORGANIZATION

The remainder of this Supplement to Scoping Risk Assessment is organized in the following sections.

Section 2: Existing Data Summary
Section 3: Data Quality Objectives
Section 4: Sampling and Analytical Methods
Section 5: Quality Assurance/Quality Control
Section 6: Results

Section 7: Conclusions

Section 8: References

2.0 EXISTING DATA SUMMARY

The purpose of this section is to provide a brief summary of previously collected data that are relevant to the objectives of the Sampling Work Plan. Specifically, summaries of pentachlorophenol data in sediment and dioxin/furan data in fin fish tissue are presented in this section.

2.1 SEDIMENT DATA

Sediment samples in Mad River Slough analyzed for chlorinated phenols were collected primarily in October 2002 (EnviroNet, 2003b). However, as noted in the Scoping Risk Assessment, pentachlorophenol detection limits exceeded sediment quality guidelines for all samples (360 to 690 µg/kg for the apparent effects threshold, low and high, respectively). Subsequent to preparation of the Scoping Risk Assessment, four additional sediment samples were collected in April 2004 to evaluate whether lower detection limits could be achieved in the sediment matrix in Mad River Slough adjacent to the sawmill. The sample collection methods and results of these four additional samples were presented in the Sampling Work Plan, and the results are described in this section.

2.1.1 Initial Sediment Data Collection

Most of the initial surficial sediment and core samples from the Mad River Slough in the vicinity of the sawmill were collected by EnviroNet and ENVIRON in October 2002 (Figure 3). A total of 14 surface and 17 core samples from 21 locations in Mad River Slough were collected and analyzed for chlorinated phenols.

Surface sediment samples from the Mad River Slough analyzed for chlorinated phenols included:

- Eight samples collected from four locations and analyzed by the RWQCB, North Coast Region, or EnviroNet in June 2001 (EnviroNet, 2001 and RWQCB, 2001); and
- Six samples collected from five locations by EnviroNet and ENVIRON in October 2002 (EnviroNet, 2003b).

Core sediment samples from the Mad River Slough analyzed for chlorinated phenols included 17 core sediment samples from 12 locations in the Mad River Slough that were analyzed for chlorinated phenols (EnviroNet, 2003b).

Detection limits for pentachlorophenol in these sediment samples from Mad River Slough ranged from 990 to 1,000 µg/kg. No chlorinated phenols, including pentachlorophenol, were detected in these sediment samples from Mad River Slough.

2.1.2 Additional Sediment Data Collection

In April 2004, sediment samples (GSED-01 to GSED-04) were collected from four locations near the four outfalls from the sawmill to the Mad River Slough (Outfalls 1 to 4) (Figure 3). Samples were collected between 0.25 and 1 foot below the sediment surface.

Sediment samples were analyzed for percent solids and a subset of chlorinated phenols (pentachlorophenol, two trichlorophenols [2,4,5- and 2,4,6-trichlorophenol], 2,4-dichlorophenol, and 2-chlorophenol). The laboratory was instructed to report other chlorinated phenols, if identified, as tentatively identified compounds (Table 1).

None of the primary chlorinated phenols analyzed by the laboratory, including pentachlorophenol, were detected in any of the sediment samples. Laboratory reporting limits ranged from 10 to 250 µg/kg, well below the sediment quality guidelines, low and high, of 360 to 690 µg/kg, respectively. The laboratory also analyzed the sediment samples for additional chlorinated phenols as tentatively identified compounds, including: 2,3,4,5-tetrachlorophenol, 2,3,4,6-tetrachlorophenol, 2,3,5,6-tetrachlorophenol, 2,3,4-trichlorophenol, 2,3,5-trichlorophenol, 2,3,6-trichlorophenol, 3,4,5-trichlorophenol, 2,3-dichlorophenol, 2,5-dichlorophenol, 2,6-dichlorophenol, 3,4-dichlorophenol, 3,5-dichlorophenol, 3-chlorophenol, and 4-chlorophenol. None of these chlorinated phenols were identified as a tentatively identified compound above the estimated laboratory reporting limit of 10 µg/kg. The percent solids ranged from 45.4 to 63.1 percent.

2.2 FIN FISH TISSUE DATA

In October 2002, EnviroNet and ENVIRON collected fin fish samples at several locations in Mad River Slough and Arcata Bay for the purpose of analyzing tissue residues (Figure 4). Otter trawls (large nets dragged along the sediment surface) were used to collect fin fish at 18 sampling locations. Whole fin fish were shipped to the laboratory on ice. The laboratory determined the total weight of all fin fish of the same species from each trawl. A sample of

about 200 grams was the target tissue weight for each location. The composite tissue sample was then homogenized and stored at less than -20 °C until analyses were conducted by Columbia Analytical Services in Kelso, Washington.

Concentrations of dioxins/furans in fin fish, summarized as 2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalents (2,3,7,8-TCDD TEQs) and used in the Scoping Risk Assessment, are presented in Table 2. The representative concentration for each fin fish species was based on the 95 percent upper confidence limit (95% UCL) of the mean or the maximum detected concentration, whichever was lower. For fish species with less than five samples, the maximum detected concentration was used. In the assessment of human health risk, the concentration used to assess fin fish consumption by the receptors was the highest representative concentration among the fin fish species sampled from Mad River Slough. As shown in Table 3, the representative concentration of dioxins/furans (0.38 nanograms per kilograms [ng/kg]) used in the human health risk assessment was based on the maximum concentration in a shiner sample. This approach was conservative because it assumes all fin fish exposure is represented by the highest fin fish representative concentration and was used to account for limitations in the data (e.g., sample collection and preparation).

3.0 DATA QUALITY OBJECTIVES

Data quality objectives for this sampling effort were outlined in the Sampling Work Plan. The list below consolidates some similar objectives and provides more detail than was provided in the Sampling Work Plan. The data quality objectives for this sampling effort included (followed by the sections of this report where they are addressed):

1. Sample collection and processing methods that result in reliable data collected consistently across locations (Sections 4.1 and 4.2);

2. Analytical methods that identify chemicals of potential concern specific to the data needs identified in the Sampling Work Plan and of sufficient quality for use in risk assessment (Sections 4.1.5 and 4.2.4);

3. Detection limits adequate for evaluating potential ecological (sediment) and human health risks (fin fish tissue) (Sections 6.2 and 6.3);

4. Analytical chemistry quality assurance procedures, objectives, and criteria as established by the laboratory for quality assurance/quality control samples (Section 5.0);

5. Evaluation of chemistry data acceptability based on criteria outlined in the National Functional Guidelines (U.S. EPA, 1999 and 2002a and b; Section 5.0);

6. Collection of sufficient samples at appropriate locations to address the objectives outlined in Section 1.0 of this report (Sections 4.1.1, 4.1.2, and 4.2.3); and

7. Use of tables and figures to present the data to allow for interpretation (Section 6.0).

4.0 SAMPLING AND ANALYTICAL METHODS

This section outlines sample collection and analytical methods for sediment and fin fish samples. General sample handling, field documentation, and laboratory analyses are also discussed.

4.1 SEDIMENT SAMPLE COLLECTION

Sediment samples were collected from sediment cores at 10 locations, as proposed in the Sampling Work Plan and Sampling Work Plan Addendum, between September 13 and September 16, 2004. A total of 35 sediment samples were submitted for analysis to evaluate the potential for chlorinated phenols to be present in sediment in Mad River Slough adjacent to the sawmill.

4.1.1 Sampling Locations

Samples were collected at ten locations along a transect approximately parallel to the western bank of Mad River Slough that extends approximately 1500 feet from the Samoa Bridge to Outfall 5 (Figure 3). Sample locations corresponded to previous sediment sample locations and provided for overall coverage along the transect. Sample locations were identified in the field using a Wide Area Augmentation System (WAAS) enabled handheld unit, which is accurate to less than 3 meters. Using the previous sediment sampling location coordinates provided by the consultant at the time, the field team navigated as close as possible to the previous sampling location.

Effort was made to locate samples at the proposed sample locations, but in some cases this was not possible because of the conditions in the slough. For example, the sample located under the Samoa Bridge was relocated south of the bridge because of the concrete and large rocks used in the bridge abutment. Where new locations were sampled, the coordinate data were collected with the GPS unit and recorded in the field notes. A summary of the proposed and actual sample locations is presented in Table 4 and on Figure 3.

The sample locations represent the center point for the collection of a composite sample at each location. At each of the designated sample locations, four cores were collected approximately 1 meter to the north, east, south, and west of the sample location point and one core was collected from the center. The purpose of this approach was to provide adequate material for compositing from an area that is representative of the sample location.

4.1.2 Sample Depths

A core sampler was used to collect sediment samples, as described in Section 4.1.3. The objective was to collect a minimum of four samples from each location: one representative of the surface (0 to 6") and three representative of the subsurface (6 to 12", 12 to 24", and 24 to 36"). If adequate core penetration was achieved, additional samples were proposed at each subsequent foot below 36" (e.g., 36 to 48", 48 to 60"). For several cores, the apparatus was driven the entire 60 inches.

Overall, cores yielded recoveries lower than those anticipated in the Sampling Work Plan. In some cases, this resulted from large organic material plugging the core tube. This was similar to difficulties reported in previous investigations (Environet and ENVIRON, 2003). There may also have been compression in the core as the upper layers of soft and flocculent material responded to the impact of the core. The maximum depth from which a sample was collected was 3 feet below surface. In one location (103-GSED-CO7), the maximum depth of the sample collected was 1 foot below surface. Samples at all other locations were collected at least to a depth of 2 feet below surface.

4.1.3 Sample Collection Methods

Sediment core samples were retrieved using a coring device that was pushed or driven into the sediment surface. While sampling commenced each day during low tides (i.e., no overlying water), some samples were collected during the incoming tide (i.e., when overlying water was present) to complete work within the schedule. Sample integrity was maintained in samples with overlying water because the overlying water was retained with the samples so fine surface sediments were not lost. To minimize the loss of fines, surface water in these cores was decanted while the core was in a vertical position.

The core assembly consisted of a core tube, a check valve, and extension rods. Core tubes consisted of 2-inch stainless steel barrels, each about 3-feet in length. Clear core tube liners were used to minimize contact of the core barrel interior with the sediment. A check valve, a stainless steel head that screwed into the top of the core tube, contained a ball-check

mechanism that allowed water to flow through upon descent and closed to form a vacuum upon retrieval of the core. The check valve was threaded to receive the core tube on the lower end as well as steel extension rods on the upper end. Extension rods attached to the top of the check valve.

In most cases, a slide hammer was used to drive the core. Because of difficulties with threads on the core tube on September 16, samples at 109-GSEC-C01-1.0 and 110-GSED-C01A were collected using manual pushing. At each location, the core assembly was advanced to a depth of 60" or until refusal. Refusal was the depth at which successive blows yielded no further distinguishable penetration. Eight of the ten locations had at least one core to a depth of 5 feet bgs. As discussed below, samples were not recovered from below 3 feet in all cores. Because all cores were not able to be driven to the same depth at a particular sampling location, there was not sufficient material to create a composite sample to be submitted for analysis at each interval.

Core retrieval was conducted in the reverse order. The slide hammer was removed, and the core assembly and extension bars were raised. Once the core tube assembly was retrieved, the lower end of the core was capped to prevent loss of the material. Samples in liners were removed with the top of the core being elevated above the bottom of the core to prevent spillage. Once removed, the core liner with the intact sample was positioned vertically. The top of the sediment surface within the core was visually determined and marked. Overlying water was decanted by drilling a series of pilot holes above the sediment surface. This approach reduced the disturbance and loss of fine surficial materials encountered when decanting via a direct pour. Once the water was decanted, the top of the core tube was cut such that the core tube was a few inches longer than the sediment surface. The top opening was capped and marked indicating that it is the top of the core.

4.1.4 Sample Processing

All core samples were processed on shore. The core liner was split along its entire length using a knife and stainless steel wire, along two sides separated by 180 degrees. Once cut, the two halves were split internally using pre-cleaned stainless steel wire; where the leader wire could not be pulled through the sample, a large, flat-blade stainless steel knife was used to separate the two halves of the core. The two halves of the core were separated and positioned adjacent to each other. One half of the longest core was used to log the sediment layers at each sample location, while the other half was prepared as part of the sample to be analyzed. The core was logged and photographed to document the sediment layers present, the presence or absence of

macroinvertebrates, and the differentiation between sediment layers and substrata (sand and clay layers). No odors were noted. The logging was conducted to the extent practicable in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), and included such items as texture (relative sand, silt, and or clay content), color (as determined by using a Munsell Color Chart), apparent moisture content, and preliminary soil classification. Core logs are presented in Appendix A.

Cores collected from the north, south, east, west and center locations at each sample point were used to create composite samples at each of the specified intervals for chemical analysis. Sample intervals from the interior of each core were segregated and accumulated in a stainless steel bowl until sufficient sample volume was acquired. Bowls were covered with aluminum foil to prevent aerial deposition of materials into the samples. Once all cores for a location and interval had been segregated, the samples were homogenized and spooned into an 8-ounce sample container, labeled, double bagged, and placed on ice in a cooler. Sample containers were filled with sediment to the top of the container and the transfer of rocks, shells, sticks, or other debris into the sample container was avoided, if possible. Samples were clearly labeled in accordance with the Sampling Work Plan and submitted to the laboratory under chain-of-custody protocols.

Investigation-derived waste was containerized in DOT-approved drums and stored at the sawmill for subsequent disposal.

4.1.5 Laboratory Analyses

Laboratory analyses were conducted by Columbia Analytical Services in Kelso, Washington. Sediment samples were shipped to the laboratory on September 15 and 16, 2005. Sediment samples were analyzed for chlorinated phenols, percent solids, and total organic carbon. The laboratory used a modified EPA Method 8270c for the analysis of chlorinated phenols preceded by a sample cleanup procedure. EPA Method 160.3M was used for percent solids, and ASTM Method D4129-82M was used for total organic carbon. Laboratory analytical results for sediment samples are presented in Appendix B.

4.2 FIN FISH TISSUE SAMPLES

Fin fish samples representative of those fin fish likely consumed by the recreational angler were collected for comparison to existing data collected by EnviroNet (2003). The objectives of this sampling effort were to collect fin fish species of recreational importance (i.e., target species of legal and edible size). The edible fin fish tissues were analyzed for dioxins/furans.

4.2.1 Sample Collection Methods

Sampling was initiated on November 13, 2004 after some test fishing in November indicated fish could be caught using hook and line methods as outlined in the Sampling Work Plan. Nine anglers, using a combination of single or double fishing rods, fished from the former railroad bridge (adjacent to the Samoa Bridge) and from two skiffs that ranged throughout the sampling area. Fishing generally took place between 9:00 a.m. and 4:30 p.m. One jack smelt was the only legal-sized fish caught and preserved for analysis.[1] A more intensive effort was made the following week (November 16 to 18, 2004) using fish traps and set lines along with hook and line fishing. All fish caught were sub legal and were not retained for analysis. As discussed with agency representatives, fishing was discontinued until the spring when local fishermen indicated fishing in Mad River Slough would be more productive.

After some initial test fishing in early March 2005, hook and line fishing to catch fish from Mad River Slough was resumed in March through May 2005. Table 5 summarizes information for all the fish caught between March 16 and May 10, 2005 that were considered consistent with the target species and of sufficient size as identified in the Sampling Work Plan. Fishing was conducted from the Samoa Bridge and from a skiff in Mad River Slough. Figure 4 shows the locations from which fish were caught.

4.2.2 Sample Processing

Whole individual fin fish were submitted to the laboratory. Each fin fish collected for analysis was wrapped in heavy-duty aluminum foil, and the wrapped fish were placed in a waterproof Ziploc bag. Spines were severed to avoid puncture of the foil and bags. Samples were clearly labeled in accordance with the Sampling Work Plan and submitted to the laboratory under chain-of-custody protocols. All samples were kept on ice prior to and during shipment to the laboratory.

Fin fish were prepared (i.e., filleted) at the laboratory upon arrival and held until sufficient fish of a particular species (five fish or more if a composite was required) were collected and consensus with OEHHA staff regarding analysis was reached. All samples were shipped to the laboratory on ice within 24 hours of collection or kept on ice for shipment within 48 hours.

[1] The size of the fin fish submitted to the laboratory for tissue residue analysis followed the California Department of Fish and Game's fishing regulations if slot limits appled to a particular species. If no slot limits applied for a particular species, then size of the fin fish retained for analysis was based on retaining fin fish of edible sizes.

4.2.3 Selection of Fish for Analysis

Geomatrix personnel worked with OEHHA staff to identify the specific fish for analysis. The objective, as outlined in the Sampling Work Plan and Sampling Work Plan Addendum, was to analyze tissue from at least five samples from three target species. Target species for the sampling effort were defined as the species listed in Table 3 of the Sampling Work Plan Addendum and those species that are particularly abundant during the time of sampling.

Although the goal of this study was to analyze samples from individual fish, in some cases the fillets obtained by the laboratory were not of sufficient weight (30 grams) for analysis as outlined in the Sampling Work Plan. U.S. EPA guidance (2000) discusses the use of composite samples versus individual fin fish samples and suggests that either is viable depending on the goals of the study. In cases where composites were required, fillets from two fish were composited to create a 30-gram composite sample. Fin fish caught on separate days were processed and stored frozen until adequate tissue for a composite was compiled.

A summary of fish caught was submitted to a representative of OEHHA to develop consensus on which fish were to be composited and analyzed. A total of 41 fish were caught and submitted to the laboratory. Table 5 summarizes all fish caught and indicates which fish were analyzed and/or composited based on agreement with the OEHHA representative. Fin fish tissues from different species were not composited for analysis. The smallest individual in a composite sample was no less than 75 percent of the total length of the largest individual.

4.2.4 Laboratory Analysis

Laboratory analyses were conducted by Columbia Analytical Services in Kelso, Washington. Fin fish tissue samples were analyzed for dioxin/furans, percent lipids, and percent solids. Seventeen 2,3,7,8, substituted dioxin/furan congeners were reported in composite fin fish tissue samples using U.S. EPA Method 1613B. Percent solids and percent lipids also were reported under Method 1613B. Because pentachlorophenol was not detected in sediment samples (Section 6.2), fish tissue samples were not analyzed for pentachlorophenol per the Sampling Work Plan Addendum. Laboratory analytical results for the fin fish tissue samples are presented in Appendix C, which is comprised of five analytical data packages.

4.3 FIELD DOCUMENTATION

The Geomatrix field representatives documented details of the field investigation. At a minimum, the following information was recorded: site conditions, sample location, project personnel and visitors at the site, the use of personal safety equipment, waste disposition, and

any decisions made in the field about a specific sample or sample location that deviated from this Sampling Work Plan.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The purpose of quality assurance/quality control (QA/QC) procedures is to assess the quality of data by evaluating its accuracy and precision. To evaluate the quality of sampling data, the following quality assurance/quality control activities were conducted.

Quality control samples consisting of laboratory-analyzed method blanks, duplicates, laboratory control samples/laboratory control sample duplicates, and matrix spike/matrix spike duplicates were used to assess internal quality control at the laboratory. A minimum of one quality control sample of each type was analyzed per 20 samples for each analysis for each medium. The QA/QC results were evaluated in accordance with U.S. EPA guidelines for reviewing organic data (U.S. EPA, 1999) and for reviewing chlorinated dioxin/furan data (U.S. EPA, 2002a, b).

Geomatrix reviewed the data for compliance with the following QA/QC project and/or method-prescribed criteria.

- Holding time and preservation – the period between collection of a sample and preparation/analysis, along with acceptable temperature range of the sample upon receipt by the laboratory. Analyses that were performed for this project have method-prescribed holding times and preservation temperature ranges.

- Blank samples – the preparation and analysis of reagent (contaminant-free) water or soil. Blank samples for this investigation consist of equipment blanks (sediment only) and method blanks. Detection in an equipment or method blank would indicate possible laboratory contamination.

- Matrix and laboratory control spiked samples – the preparation and analysis of an environmental sample (matrix) or sample of reagent water (laboratory control) spiked with a subset of target compounds at known concentrations. Results of the laboratory spike analysis indicate laboratory accuracy in the reagent sample, and results of the matrix spike sample measure potential interference from the sample matrix.

- Surrogate spikes – the addition of compounds similar to target compounds that are added to sample aliquots for organic analysis. Surrogate spikes measure possible interference of the sample matrix when analyzing for the target compounds.

- Duplicate samples – collection and analysis of samples of the same media at the same location for evaluation of the accuracy of the analytical results.

- Mass spectrometer initial calibration – the objective of the initial calibration is to establish a linear range or curve, the mean relative responses, and the mean relative response factors for the instrument.

- Identification criteria – the primary objective is to unambiguously identify a gas chromatograph peak for a target analyte.

The results of the quality assurance/quality control review for sediment and fin fish tissue samples are presented separately in the following subsections. Only the exceptions to the acceptance criteria and the consequence of those exceptions for the data are discussed. A detailed summary of the entire QA/QC review is provided in Appendixes D and E for sediment and fin fish tissue samples, respectively.

5.1 SEDIMENT SAMPLES

Exceptions to the acceptance criteria for sediment samples occurred for three equipment blank samples, one matrix spike/matrix spike duplicate sample, and one surrogate spike sample.

- The three equipment blank samples were extracted beyond the method holding time of seven days (13 to 15 days). Results for the equipment blank samples were non-detect. Based on the holding time issue, these equipment blank results were qualified as estimated values (UJ). This is not expected to significantly affect the sediment sample results.

- In one of two matrix spike/matrix spike duplicate samples, the relative percent difference for 2-chlorophenol (53 percent) was above the range of acceptance criteria (0 to 40 percent). The RPD for 2-chlorophenol was within the range of the acceptance criteria in the other matrix spike/matrix spike duplicate sample. Since 2-chlorophenol was not detected in any samples, no revision to the data was required.

- The surrogate recovery for one surrogate spike (2-fluorophenol) in a laboratory control sample was above laboratory control limits (114 percent compared to 109 percent). Given this slight exceedance in a non-site sample, no adjustment to the data was required.

Other than these exceptions, all other QA/QC parameters reviewed were consistent with the acceptance criteria. The accuracy and precision of the sediment data is considered acceptable. No data was qualified based on this review.

5.2 FIN FISH TISSUE SAMPLES

Exceptions to acceptance criteria for fin fish tissue samples occurred for sample temperature, calibration standards, method blank samples, and abundance ratios.

- Ten of the samples were received at 5.6°C, above the required temperature of 4°C. Due to this temperature variance, all of the sample detections and detection limits are considered estimated values. All of the detected values were qualified as estimates (J) and all of the non-detects were qualified as (UJ). However, since dioxins/furans are not subject to rapid degradation, we do not believe this variance significantly affects the results.

- Results for ten of the samples had a reporting limit equal to the lowest calibration standard. All detections reported that were less than the reporting limit were qualified as estimates (J).

- The qualification procedure for detections in method blank samples has been revised from the 2005 report, but the TEQ calculation results did not change significantly. The method blank sample, for samples analyzed on May 18, 2005, had detections of 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin (HpCDD) at 0.067 pg/L, OCDD at 0.938 pg/L, and OCDF at 0.091 pg/L. The method blank sample, for samples analyzed on June 17, 2005, had detections of octachlorodibenzo-p-dioxin (OCDD) at 0.442 picograms/liter (pg/L) and of octachlordibenzo-p-furan (OCDF) at 0.341 pg/L. The method blank sample for the re-extraction of one sample and sample duplicate had detections of HpCDD at 0.074 pg/L and OCDD at 0.623 pg/L. U.S. EPA guidance for dioxin data validation (U.S. EPA 2002b) advises that, if the detections in the actual samples are less than five times the method blank result, the sample results for the analyte should be qualified. As a result, detections of OCDD in all the samples are qualified "UJ", indicating the analyte was not detected above the reported sample concentration. Also, OCDF results in 14 samples and HpCDD results in 6 samples are qualified "UJ." This qualification changes the result from a detected value to a non-detect with the detection limit set at the concentration reported in the sample. However, the detection limit is approximate ("J" qualification).

- Several analytes in ten of the samples analyzed had ion abundance ratios outside their associated QC limits. Therefore, the reported value is an estimated maximum possible concentration, and all of these reported detections were qualified as "U".

- The original duplicate sample data for sample PSP-SB-001 was withdrawn by the laboratory because of suspected contamination of the samples. The sample and duplicate were subsequently re-extracted and results were considered acceptable. The results from re-extraction were reported in the data package dated July 28, 2005.

- Laboratory reports for dioxins/furans from Columbia Analytical were mislabeled in various places where results were reported. On Forms 1, 2, and/or 3, some results were presented in units of ng/kg dry weight while some were reported in units of ng/kg wet weight. The units of wet weight are correct, and the units on the mislabeled forms have been corrected by the laboratory and presented in Appendix C.

Other than these exceptions, all other QA/QC parameters reviewed were consistent with the acceptance criteria. The accuracy and precision of the data is considered acceptable. Qualifications to the data are noted in Appendix F.

6.0 RESULTS

The results of sediment and fin fish tissue sampling are presented in this section and include tidal and sediment conditions in Mad River Slough, analytical results for sediment, and analytical results for fin fish tissue.

6.1 TIDAL AND SEDIMENT CONDITIONS

The intertidal flats are largely composed of very soft sediments, which contain large amounts of water due to daily inundation. Even under the lowest tide conditions, walking in the mud was difficult due to its unconsolidated nature. The water height observed during the high tide resulted in an estimated overlying water depth from 10 inches to approximately 2 feet at sample locations.

Biological activity was observed in the top few inches of most cores by an experienced field biologist. Further observations of the surface area of the intertidal flats surrounding each sample location indicated small boreholes in the sediment surface. Crabs, crab body parts, and invertebrates (bivalves) were observed in the vicinity of all locations sampled, along with abundant evidence of shore birds (tracks and sightings of individual species). Closer to shore, mammalian scat was observed near the high-tide water mark. At only one location, a bivalve was observed 8 inches below surface in a core. Invertebrate burrow tubes were not evident in any of the cores. Because burrow tubes may have been compressed during sampling, these results may not indicate the absence of activity at deeper depths.

Sediment composition varied along the sampling transect. The northernmost samples (101-GSED-C09, 102-GSED-C08, and 103-GSED-C07) had the highest amounts of relatively large particulate organic material resembling bark. This large organic material generally occurred between the surface and 2 feet below the surface and was overlain by sandy silt or silt with

sand when below the surface. Where the large organic material was present, very little sediment was present (less than 10 percent).

The samples in the middle of the transect (104-GSED-C06, 105-GSED-C05, 106-GSED-C31, 107-GSED-C32, and 108-GSED-CO2) appeared to have less large organic material (less than approximately 60 percent). Organic material in these samples appeared more decomposed than material in the northern samples. Lenses of clay and/or silt appeared to be present in the cores. Sediment was predominantly described as a sandy silt or a silt with sand.

At the southern end of the transect, near Outfall 1 and the Samoa Bridge (109-GSEC-C01, 110-GSED-CO1A), more sand was encountered and little or no large organic material was present in the samples (less than approximately 30 percent).

6.2 ANALYTICAL RESULTS FOR SEDIMENT

Sediment samples were analyzed for percent solids, total organic carbon, and chlorinated phenols (Table 1). Percent solids ranged from 40 to 77.5. Total organic carbon ranged from 0.28 to 20.6 percent. Pentachlorophenol was not detected in any of the 35 samples and three duplicate samples collected in September 2004. Detection limits ranged from 97 to 620 µg/kg, which are below the upper bound of the sediment quality guidelines of 360 to 690 µg/kg. Detection limits for only eight of the 35 samples exceeded the lower sediment benchmark. These results are consistent with samples collected in April 2004 and with the absence of pentachlorophenol detection in samples considered in the Scoping Risk Assessment. Of the 18 other chlorinated phenols reported by the laboratory, only 2,4,5-trichlorophenol was detected in three samples (102-GSED-C08-1.0; 104-GSED-C06-2.0; 106-GSED-C31-1.0) at concentrations of 9.3, 11, and 7.7 µg/kg, respectively). For several reasons, the low concentrations of 2,4,5-trichlorophenol are not considered to be related to the stormwater discharge at the sawmill:

- The absence of pentachlorophenol and other related breakdown products (e.g., tetrachlorophenol, dichlorophenol, and chlorophenol);
- The disconnect between locations of detections of 2,4,5-trichlorophenol and suspected historical stormwater discharges; and
- The presence of other potential sources to Mad River Slough.

In addition, toxicity was not observed in surface sediment toxicity tests conducted previously at C-06 (MEC, 2003) which is located near the highest detection of 2,4,5-trichloropehenol at 2

feet below surface (104-GSED-C06). Thus, chlorinated phenols in sediment are not considered chemicals of potential ecological concern for the sawmill.

6.3 ANALYTICAL RESULTS FOR FIN FISH TISSUE

Fin fish tissue samples were analyzed for percent lipids, percent solids, and dioxins/furans (Table 2). Results for dioxins/furans are presented in terms of 2,3,7,8-tetrachlorodibenzo-p-dioxin toxicity equivalents (2,3,7,8-TCDD TEQs) as calculated in Appendix F using toxicity equivalent factors (TEFs). Percent lipids ranged from 0.077 to 1.565 percent in the samples analyzed. Percent solids were analyzed in 10 of the 15 samples, and results ranged from 17.7 to 22.1 percent. 2,3,7,8-TCDD TEQ concentrations ranged from 0.03 to 0.07 nanograms per kilogram (ng/kg) except for one sample (PSP-SB-001) and corresponding duplicate reported at 0.3/0.22 ng/kg. The primary contribution to the 2,3,7,8-TCDD TEQ concentration in these samples are elevated detection limits compared to the other samples because one-half the detection limit was used to calculate the 2,3,7,9-TCDD concentration. At least one dioxin/furan congener was detected in approximately 50 percent of the samples (Appendix F). As shown on Table 3, the maximum concentration for the pile surfperch is consistent with concentrations used as representative concentrations in the Scoping Risk Assessment. The results for the remaining 14 samples were approximately 10 times lower than the whole fish samples (Table 2). This suggests that the estimate of human health risk in the Scoping Ecological Risk Assessment does not underestimate and may significantly overestimate potential human health risk from the consumption of fin fish.

7.0 ESTIMATE OF HUMAN HEALTH RISKS

Potential human health risks using fin fish dioxin/furan data collected in 2005 were compared to potential human health risks estimated using fin fish dioxin/furan data collected in 2002 and presented in the Scoping Risk Assessment. Shell fish data was also considered in the cumulative assessment of potential health risks, but data was only available from 2002 for this component of the assessment. The methodology for estimating potential health risks, which is consistent with the methodology used in the Scoping Risk Assessment, is presented followed by the results of the calculations.

Potential exposures for two receptors were evaluated: a resident who consumes an average amount of fin fish and shellfish and an angler who consumes an upper-bound amount of fin fish and shellfish (also representative of a subsistence fisherman). For the resident scenario, the mean concentration for each species was used as the representative concentration. For the

angler scenario, the upper-bound representative concentration (the 95 percent upper confidence limit or the maximum concentration, whichever was higher) for each species was used as the representative concentration. Appendix H presents the calculation results for the 95% UCL using the ProUCL software recommended by U.S. EPA.

Separate representative concentrations were developed for shell fish and fin fish because the concentrations of dioxins/furans and zinc were higher in shellfish than in fin fish. For shellfish, representative concentrations were developed for each individual species (e.g., oyster, crab, and shrimp). Since no new data was collected in 2005 for these species, the same representative concentrations from 2002 were used for the 2002 and 2002/2005 risk calculations. Zinc concentrations from 2002 in fin fish were also used in both risk calculations. For fin fish, the representative concentration for dioxins/furans was based on the highest concentration appropriate to the exposure scenario (i.e., resident or angler) among the fish species sampled in Mad River Slough. This approach is conservative in that it assumes all fin fish exposure is represented by the highest representative concentration even though concentrations for other types of fish may be lower.

All remaining exposure assumptions (e.g., fish ingestion rates) and toxicity criteria were consistent with the Scoping Risk Assessment.

7.1 2002 DATA AND HEALTH RISK EVALUATION

The fin fish and shellfish data collected in 2002 presented in the Scoping Risk Assessment was used to estimate representative concentrations for use in the risk calculations. The data consisted of whole fin fish data samples instead of the fish filets analyzed in the supplemental investigation. A summary of the representative concentrations from the Scoping Risk Assessment is presented in Table 6.

The results presented herein have been updated to correct calculations for potential zinc exposure, including the noncarcinogenic hazard index from those presented presented in the Scoping Risk Assessment. The representative concentrations for zinc in crabs and the potential hazard indexes have been updated. The representative zinc concentrations in crabs was corrected to be 32 from 37.7 mg/kg for the resident and to be 41.9 from 43 mg/kg for the adult angler. In addition, the hazard index calculation for the angler has been updated since the original calculations reflected exposure and hazard indexes applicable to the resident. Lifetime excess cancer risk calculations were not affected since zinc is not evaluated as a carcinogen. These changes do not significantly affect the overall hazard indexes, which changed from 0.2 to

0.3, nor do they change the conclusions of the Scoping Risk Assessment. The updated risk calculations using the data from the Scoping Risk Assessment are presented in Appendix G.

Using the 2002 data, the potential noncarcinogenic hazard quotients and hazard indexes associated with the resident's and angler's total exposure to the COPCs in fin fish and shellfish from Mad River Slough were 0.03 and 0.3, respectively. These estimates include a minor contribution from exposure to off-site receptors from chemicals at the sawmill as estimated in Baseline Human Health Risk Assessment. As concluded in the Scoping Risk Assessment, this indicates that exposure to chemicals in fin fish and shellfish should not result in unacceptable noncarcinogenic health effects under the conditions evaluated. A summary of the noncarcinogenic hazard indexes is presented in Table 7.

The estimated theoretical lifetime excess carcinogenic risks associated with a resident's exposure to the COPCs in fin fish and shellfish is 5×10^{-6}. The angler's estimated theoretical lifetime excess carcinogenic risks associated with exposure to the COPCs in fin fish and shellfish is 6×10^{-5}. These estimates include a minor contribution from exposure to off-site receptors from chemicals at the sawmill as estimated in the Baseline Human Health Risk Assessment. Both results are within the acceptable risk range of 1×10^{-4} to 1×10^{-6} developed by U.S. EPA. As concluded in the Scoping Risk Assessment, exposure to chemicals in fin fish and shellfish should not result in an unacceptable carcinogenic risk under the conditions evaluated for these receptors. The most significant contribution to risk is consumption of fin fish (more than 80 percent). A summary of the lifetime canter risks is presented in Table 8.

7.2 2005/2002 DATA AND HEALTH RISK EVALUATION

The 2005 dioxin/furan fin fish data and the 2002 shellfish data and zinc fin fish data were used to estimate representative concentrations and potential health risks from the ingestion of fish from the Mad River Slough. The calculations of representative concentrations for dioxins/furans in fin fish filets are presented in Appendix H and are summarized in Table 9. The calculations of noncarcinogenic hazard indexes and theoretical excess lifetime risks are presented in Appendix I.

The estimated noncarcinogenic hazard index associated with residential exposure to the COPCs in fin fish and shellfish from Mad River Slough is 0.02. The estimated noncarcinogenic hazard index associated with the angler's exposure is 0.3. These estimates include a minor contribution from exposure to off-site receptors from chemicals at the sawmill as estimated in Baseline Human Health Risk Assessment. These hazard indexes are less than 1, indicating that

the predicted exposure to the chemicals should not result in adverse noncarcinogenic health effects under the conditions evaluated. A summary of the noncarcinogenic hazard indexes is presented in Table 10. The ingestion of fin fish provides the most significant contribution (more than 80 percent) to noncarcinogenic hazard index based on the concentration of zinc in fin fish for the resident and zinc and dioxins/furans in fin fish for the angler.

The current estimated theoretical lifetime excess carcinogenic risks associated with a resident's exposure to the COPCs in fin fish and shellfish is 2×10^{-6}. The current estimated theoretical lifetime excess carcinogenic risk for anglers is 5×10^{-5}. These estimates include a minor contribution from exposure to off-site receptors from chemicals at the sawmill as estimated in Baseline Human Health Risk Assessment. The ingestion of fin fish accounts for approximately 70 percent of the risk for the resident and 80 percent of the risk for the angler; however, as discussed previously the risk is based 2,3,7,8-TCDD TEQs incorporating one-half the detection limit for many congeners that were not detected. A summary of the lifetime cancer risks is presented in Table 11. Both risks are within the acceptable risk range of 1×10^{-4} to 1×10^{-6} developed by U.S. EPA. Therefore, exposure to chemicals in fin fish and shellfish should not result in an unacceptable carcinogenic risk under the conditions evaluated for these receptors.

8.0 CONCLUSIONS

Sediment and fin fish tissue samples were collected from Mad River Slough adjacent to the sawmill for analysis of chlorinated phenols and dioxins/furans, respectively, to address data gaps outlined in the Scoping Risk Assessment. Specifically, (1) pentachlorophenol detection limits associated with previous sediment analyses were not sufficiently low to assess the potential effects on benthic invertebrates and (2) the fish samples available for the Scoping Risk Assessment did not represent the size or species that are most likely to be consumed by recreational fishers. Sediment and fin-fish sampling and analysis efforts were successful in addressing these data gaps. The results of sample analysis indicate:

- Pentachlorophenol was not detected in samples collected. Detection limits were within the range of sediment quality benchmarks available for benthos, and so pentachlorophenol is not present at levels of ecological concern in the sediment adjacent to the sawmill. Thus, pentachlorophenol is not considered a chemical of potential ecological concern in sediment.

- Dioxin/furan concentrations in fin fish fillets are equal to or lower than representative concentrations for whole fish used to assess potential human health risk in the Scoping Risk Assessment.

- The human health risks estimated using the 2005 fin fish filet data are compared to the updated calculations from the Scoping Risk Assessment in Table 12. As shown, the hazard index and lifetime cancer risk for the resident are lower using 2005 data for dioxins/furans in fin fish than in the assessment of 2002 data. The hazard indexes and lifetime cancer risks for the angler are essentially the same because the maximum concentration among the fin fish samples was used as the representative concentration, which was similar to the representative concentration for data collected in 2002 (0.38 in 2002 and 0.30 ng/kg in 2005). However, the maximum filet concentration (0.3 ng/kg) was significantly higher than the typical concentration among the remaining fin fish sampled in 2005 (0.03 to 0.07 ng/kg). As such, the health risk estimate for the angler represents an upperbound estimate and actual exposures could be much lower based on the typical dioxin/furan concentrations detected in fin fish.

- Pentachlorophenol was not detected in sediment samples collected in the Mad River Slough suggesting that risk to benthic invertebrates from this chemical is probably negligible. The dioxin/furan concentrations in the supplemental fish samples were equivalent to or lower than the concentrations used to estimate human exposure and health risk in the Scoping Risk Assessment. The Scoping Risk Assessment indicated that dioxin/furan exposures do not exceed acceptable limits, and concluded that risk management actions in Mad River Slough were not necessary to protect human health. The supplemental fin fish data collected for this study do not change this conclusion.

Overall, the supplemental data collected for this analysis do not change the overall conclusions of the Scoping Risk Assessment, which stated that these "risk assessment results do not indicate ecological or human health effects for which action is necessary to protect receptors." (Geomatrix/MFG, 2004).

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TABLES

TABLE 1
ANALYTICAL RESULTS FOR CHLORINATED PHENOLS IN SEDIMENT SAMPLES FROM MAD RIVER SLOUGH
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California
Concentrations in micrograms per kilogram (µg/kg) unless noted otherwise

Sample ID	Bottom Depth/ Depth Interval (feet below surface)	Date Collected	Solids, Total (%)	Total Organic Carbon (%)	2,3,4,5-Tetra-chloro-phenol[2]	2,3,4,6-Tetra-chloro-phenol[2]	2,3,4-Tri-chloro-phenol[2]	2,3,5,6-Tetra-chloro-phenol[2]	2,3,5-Tri-chloro-phenol[2]	2,3,6-Tri-chloro-phenol[2]	2,3-Dichloro-phenol[2]	2,4,5-Tri-chloro-phenol	2,4,6-Tri-chloro-phenol	2,4-Dichloro-phenol	2,5-Dichloro-phenol[2]	2,6-Dichloro-phenol[2]	2-Chloro-phenol	3,4,5-Tri-chloro-phenol[2]	3,4-Dichloro-phenol[2]	3,5-Dichloro-phenol[2]	3-Chloro-phenol[2]	4-Chloro-phenol[2]	Penta-chloro-phenol (PCP)
GSED-04	0.25 - 1.0	04/04/2004	**63.1**	--	-10	-10	-10	-10	-10	-10	-10	-12	-12	-12	-10	-10	-12	-10	-10	-10	-10	-10	-56
GSED-01	0.25 - 0.75	04/06/2004	**49.1**	--	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-50
GSED-02	0.5 - 1.0	04/07/2004	**51.1**	--	-10	-10	-10	-10	-10	-10	-10	-21	-21	-21	-10	-10	-21	-10	-10	-10	-10	-10	-110
GSED-03	0.5 - 1.0	04/07/2004	**45.4**	--	-10	-10	-10	-10	-10	-10	-10	-50	-50	-50	-10	-10	-50	-10	-10	-10	-10	-10	-250
101-GSED-C09-0.5	0.5	09/14/2004	**46.9**	**5.62**	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-200
101-GSED-C09-1.0	1	09/14/2004	**48.3**	**7.01**	-20	-20	-20	-20	-20	-20	-20	-21	-21	-21	-20	-20	-21	-20	-20	-20	-20	-20	-210
101-GSED-C09-2.0	2.0	09/14/2004	**46.2**	**11.9**	-10	-10	-10	-10	-10	-10	-10	-11	-11	-11	-10	-10	-11	-10	-10	-10	-10	-10	-110
101-GSED-C09-2.0D	2.0	09/14/2004	**46.9**	**13.7**	-10	-10	-10	-10	-10	-10	-10	-11	-11	-11	-10	-10	-11	-10	-10	-10	-10	-10	-110
101-GSED-C09-2.5	2.5	09/14/2004	**69.3**	**2.55**	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-100
102-GSED-C08-0.5	0.5	09/14/2004	**46.5**	**7.64**	-10	-10	-10	-10	-10	-10	-10	-11	-11	-11	-10	-10	-11	-10	-10	-10	-10	-10	-110
102-GSED-C08-1.0	1.0	09/14/2004	**47.1**	**12.1**	-10	-10	-10	-10	-10	-10	-10	**9.3**	-11	-11	-10	-10	-11	-10	-10	-10	-10	-10	-110
102-GSED-C08-2.0	2.0	09/14/2004	**45.6**	**14.5**	-10	-10	-10	-10	-10	-10	-10	-11	-11	-11	-10	-10	-11	-10	-10	-10	-10	-10	-110
102-GSED-C08-3.0	3.0	09/14/2004	**47.3**	**19.6**	-10	-10	-10	-10	-10	-10	-10	-11	-11	-11	-10	-10	-11	-10	-10	-10	-10	-10	-110
103-GSED-C07-0.5	0.5	09/14/2004	**45.6**	**8.53**	-10	-10	-10	-10	-10	-10	-10	-11	-11	-11	-10	-10	-11	-10	-10	-10	-10	-10	-110
103-GSED-C07-1.0	1.0	09/14/2004	**40.2**	**20.6**	-10	-10	-10	-10	-10	-10	-10	-13	-13	-13	-10	-10	-13	-10	-10	-10	-10	-10	-130
104-GSED-C06-0.5	0.5	09/15/2004	**46.9**	**4.45**	-10	-10	-10	-10	-10	-10	-10	-11	-11	-11	-10	-10	-11	-10	-10	-10	-10	-10	-110
104-GSED-C06-1.0	1.0	09/15/2004	**48.1**	**5.71**	-10	-10	-10	-10	-10	-10	-10	-11	-11	-11	-10	-10	-11	-10	-10	-10	-10	-10	-110
104-GSED-C06-2.0	2.0	09/15/2004	**52.1**	**8.19**	-10	-10	-10	-10	-10	-10	-10	**11**	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-100
105-GSED-C05-0.5	0.5	09/15/2004	**42.2**	**10.1**	-50	-50	-50	-50	-50	-50	-50	-59	-59	-59	-50	-50	-59	-50	-50	-50	-50	-50	-590
105-GSED-C05-1.0	1.0	09/15/2004	**40**	**17.4**	-50	-50	-50	-50	-50	-50	-50	-63	-63	-63	-50	-50	-63	-50	-50	-50	-50	-50	-630
105-GSED-C05-2.0	2.0	09/15/2004	**51.9**	**9.47**	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-200
105-GSED-C05-3.0	3.0	09/15/2004	**77.5**	**1.11**	-10	-10	-10	-10	-10	-10	-10	-9.7	-9.7	-9.7	-10	-10	-9.7	-10	-10	-10	-10	-10	-97
106-GSED-C31-0.5	0.5	09/15/2004	**42.5**	**10.2**	-20	-20	-20	-20	-20	-20	-20	-24	-24	-24	-20	-20	-24	-20	-20	-20	-20	-20	-240
106-GSED-C31-1.0	1.0	09/15/2004	**54.3**	**10.3**	-10	-10	-10	-10	-10	-10	-10	**7.7**	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-100
106-GSED-C31-2.0	2.0	09/15/2004	**52.7**	**8.11**	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-100
106-GSED-C31-2.0D[3]	2.0	09/15/2004	**52.9**	**7.46**	-20	-20	-20	-20	-20	-20	-20	-19	-19	-19	-20	-20	-19	-20	-20	-20	-20	-20	-190
106-GSED-C31-2.5	2.5	09/15/2004	**55.5**	**4.39**	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-100
107-GSED-C32-0.5	0.5	09/15/2004	**40.6**	**9.21**	-50	-50	-50	-50	-50	-50	-50	-62	-62	-62	-50	-50	-62	-50	-50	-50	-50	-50	-620
107-GSED-C32-1.0	1.0	09/15/2004	**46.6**	**6.36**	-50	-50	-50	-50	-50	-50	-50	-54	-54	-54	-50	-50	-54	-50	-50	-50	-50	-50	-540
107-GSED-C32-2.0	2.0	09/15/2004	**54.8**	**4.18**	-50	-50	-50	-50	-50	-50	-50	-49	-49	-49	-50	-50	-49	-50	-50	-50	-50	-50	-490
107-GSED-C32-3.0	3.0	09/15/2004	**57**	**3.88**	-10	-10	-10	-10	-10	-10	-10	-8.8	-8.8	-8.8	-10	-10	-8.8	-10	-10	-10	-10	-10	-88
108-GSED-C02-0.5	0.5	09/16/2004	**43.5**	**7.25**	-50	-50	-50	-50	-50	-50	-50	-57	-57	-57	-50	-50	-57	-50	-50	-50	-50	-50	-570
108-GSED-C02-1.0	1.0	09/16/2004	**44.6**	**7.04**	-20	-20	-20	-20	-20	-20	-20	-22	-22	-22	-20	-20	-22	-20	-20	-20	-20	-20	-220
108-GSED-C02-1.0D	1.0	09/16/2004	**46.3**	**6.72**	-50	-50	-50	-50	-50	-50	-50	-54	-54	-54	-50	-50	-54	-50	-50	-50	-50	-50	-540
108-GSED-C02-2.0	2.0	09/16/2004	**51.7**	**4.67**	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-500
108-GSED-C02-3.0	3.0	09/16/2004	**57.7**	**5.19**	-50	-50	-50	-50	-50	-50	-50	-19	-19	-19	-50	-50	-19	-50	-50	-50	-50	-50	-190
109-GSED-C01-0.5	0.5	09/16/2004	**43.4**	**6.73**	-50	-50	-50	-50	-50	-50	-50	-58	-58	-58	-50	-50	-58	-50	-50	-50	-50	-50	-580
109-GSED-C01-1.0	1.0	09/16/2004	**46**	**5.91**	-20	-20	-20	-20	-20	-20	-20	-22	-22	-22	-20	-20	-22	-20	-20	-20	-20	-20	-220
109-GSED-C01-2.0	2.0	09/16/2004	**54.5**	**4.57**	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-200
110-GSED-C01A-0.5	0.5	09/16/2004	**60.6**	**2.51**	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-50	-500
110-GSED-C01A-1.0	1.0	09/16/2004	**64.7**	**1.03**	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-100
110-GSED-C01A-2.0	2.0	09/16/2004	**82**	**0.28**	-10	-10	-10	-10	-10	-10	-10	-9.9	-9.9	-9.9	-10	-10	-9.9	-10	-10	-10	-10	-10	-99

Notes:
Bold values denote concentrations above the detection limit.
-10 = Sample result below the detection limited indicated

1. All results reported as dry weight.
2. Analyzed as a tentatively identified compound (TIC). Reporting limits estimated.
3. Duplicate sample (denoted "D")

Abbreviation:
µg/Kg = micrograms per kilogram

TABLE 2
ANALYTICAL RESULTS FOR DIOXINS/FURANS IN FIN FISH FROM MAD RIVER SLOUGH
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Sample ID/ Station Identifier	Date	Species	% Lipids	% Solids	2,3,7,8-TCDD TEQ (ng/kg)
DM-0054, TRAWL 10/11	10/25/2002	Sculpin	0.303	NM	0.15
DM-0080, TRAWL 13	10/25/2002	Sculpin	0.551	NM	0.36
DM-0060, TRAWL 13	10/25/2002	Shark	0.000	NM	0.06
DM-0055, TRAWL 10/11	10/25/2002	Shiner	1.000	NM	0.38
DM-0053, TRAWL 10/11	10/25/2002	Sole	1.437	NM	0.39
DM-0057, TRAWL 13	10/25/2002	Sole	2.712	NM	0.22
DM-0046, TRAWL 5	10/25/2002	Sole	0.833	NM	0.11
DM-0047, TRAWL 5	10/25/2002	Sole	1.703	NM	0.21
DM-0049, TRAWL 6	10/25/2002	Sole	2.368	NM	0.18
DM-0050, TRAWL 6	10/25/2002	Sole	0.578	NM	0.19
DM-0051, TRAWL 7/8	10/25/2002	Sole	0.541	NM	0.19
PSP-SB-001	3/16/2005	Pile Surfperch	0.077	24.00	0.30
PSP-SB-001 DUP[1]	3/16/2005	Pile Surfperch	NM	NM	0.21
PSP-SB-002	3/16/2005	Pile Surfperch	1.565	23.90	0.04
PSP-SB-003	3/16/2005	Pile Surfperch	0.803	24.50	0.03
PSP-SB-004	3/16/2005	Pile Surfperch	0.160	22.90	0.03
PSP-SB-005	3/16/2005	Pile Surfperch	0.206	25.50	0.03
JST-SB-009	3/16/2005	Jacksmelt	0.249	22.07	0.04
JST-SB-017	4/21/2005	Jacksmelt	0.115	21.26	0.06
Comp JST-SB-040/018	4/21/2005, 5/9/2005	Jacksmelt	0.100	19.81	0.06
JST-SB-019	4/21/2005	Jacksmelt	0.646	22.11	0.07
JST-SB-042	5/9/2005	Jacksmelt	0.307	17.69	0.06
WSP-SB-006	3/16/2005	Walleye Surfperch	0.426	20.97	0.07
WSP-SB-007	3/16/2005	Walleye Surfperch	0.330	19.82	0.06
WSP-SB-008	3/16/2005	Walleye Surfperch	0.220	21.02	0.07
Comp WSP-SB-033/045	4/22/2005, 5/10/2005	Walleye Surfperch	0.080	18.26	0.05
Comp WSP-SB-044/046	5/10/2005	Walleye Surfperch	0.197	18.81	0.05

Notes:
1. Duplicate of sample PSP-SB-001

Abbreviations:
ng/kg = nanograms per kilogram wet weight
2,3,7,8-TCDD TEQ = 2,3,7,8-tetrachlorodibenzo-p-dioxin toxicity equivalent
NM = not measured

TABLE 3
COMPARISON OF 2005 FIN FISH TISSUE SAMPLE RESULTS TO 2002 RESULTS
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Fall 2002[1]		Spring 2005	
Fish Type	UCL (ng/kg)	Fish Type	Range of TEQs (ng/kg)
Shiner[2]	0.38	Pile Surfperch	0.03-0.30
Sole	0.30	Jacksmelt	0.04-0.07
Shark	0.06	Walleye Surperch	0.05-0.07
Sculpin	0.36	--	--

Notes:
1. Fish results from Scoping Risk Assessment (Geomatrix, 2004)
2. Exposure point concentration used in Scoping Risk Assessment

Abbreviations:
TEQ = toxic equivalent
UCL = upper confidence limit
ng/kg = nanograms per kilogram wet weight

TABLE 4
PROPOSED AND ACTUAL SEDIMENT SAMPLING LOCATIONS-SEPTEMBER 2004
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Sample Location ID	Sample Date	Previously Sampled Location ID	UTM_X (meters)	UTM_Y (meters)	NEW UTM_X (meters)	NEW UTM_Y (meters)
101-GSED-C09	9/14/2004	C-09	402871	4524804	402874	4524809
102-GSED-C08	9/14/2004	C-08	402837	4524777	402837	4524787
103-GSED-C07	9/14/2004	C-07	402836	4524718	402826	4524716
104-GSED-C06	9/15/2004	C-06	402854	4524649	402847	4524639
105-GSED-C05	9/15/2004	C-05	402897	4524599	402895	4524588
106-GSED-C31	9/15/2004	C-31	402934	4524544	402929	4524542
107-GSED-C32	9/15/2004	BETWEEN C-03 AND C-32	402963	4524513	402961	4524507
108-GSED-C02	9/16/2004	C-02	402991	4524483	402984	4524478
109-GSED-C01	9/16/2004	C-01	403025	4524451	403015	4524456
110-GSED-C01A	9/16/2004	-	403042	4524415	403057	4524409

Abbreviations:
UTM-X/Y - Universal Transverse Mercator coordinate system (NAD 83)

TABLE 5
SUMMARY OF FISH COLLECTION ACTIVITIES
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Date	Time	Sample ID	Laboratory ID	Sample Location		Location Description	Species	Weight	Length	Condition	Method	Photo #	Filet Weight	Analyzed[1]
				Latitude	Longitude			(g)	(mm)				(g)	
3/16/2005	1500	JST-SB-009	K250124-009	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	154	273	Good	Hook & Line	A12	83.73	Yes
3/16/2005	1500	JST-SB-010	K250124-010	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	74	205	Good	Hook & Line	A13	38.98	--
4/21/2005	830	JST-SB-016	K2502994-006	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	132	265	Good	Hook & Line	B20	9.47	--
4/21/2005	830	JST-SB-017	K2502994-007	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	198	293	Good	Hook & Line	B21	66.81	Yes
4/21/2005	830	JST-SB-018	K2502994-008	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	195	293	Good	Hook & Line	B22	22.58	Yes (composite with JST-SB-040)
4/21/2005	830	JST-SB-019	K2502994-009	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	202	299	Good	Hook & Line	B2	85.59	Yes
4/21/2005	830	JST-SB-020	K2502994-010	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	169	280	Good	Hook & Line	B3	10.49	--
4/21/2005	1530	LSK-SB-025	K2502994-022	40° 52.073'	124° 9.127'	North of Samoa Bridge	Leopard Shark	10400	1280	Good	Hook & Line	B13	742.04	--
4/22/2005	830	LSK-SB-031	K2502994-023	40° 52.073'	124° 9.127'	North of Samoa Bridge	Leopard Shark	11100	1350	Good	Hook & Line	B14	538.6	--
3/16/2005	1500	PSP-SB-001	K250124-001	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	979	350	Good	Hook & Line	A4	360.26	Yes
3/16/2005	1500	PSP-SB-002	K250124-002	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	1056	345	Good	Hook & Line	A5	431.96	Yes
3/16/2005	1500	PSP-SB-003	K250124-003	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	673	305	Good	Hook & Line	A6	320.25	Yes
3/16/2005	1500	PSP-SB-004	K250124-004	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	926	325	Good	Hook & Line	A7	371.46	Yes
3/16/2005	1500	PSP-SB-005	K250124-005	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	642	290	Good	Hook & Line	A8	265.7	Yes
4/21/2005	830	PSP-SB-011	K2502994-001	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	816	320	Good	Hook & Line	B15	174.5	--
4/21/2005	830	PSP-SB-012	K2502994-002	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	567	300	Good	Hook & Line	B16	134.16	--
4/21/2005	830	PSP-SB-013	K2502994-003	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	705	325	Good	Hook & Line	B17	134.16	--
4/21/2005	830	PSP-SB-014	K2502994-004	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	695	310	Good	Hook & Line	B18	180	--
4/21/2005	830	PSP-SB-015	K2502994-005	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Pile Surfperch	842	335	Good	Hook & Line	B19	158	--
4/22/2005	1100	RSP-SB-032	K2502994-020	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Redtail Surfperch	482	293	Good	Hook & Line	B12	58.07	--
4/21/2005	1700	SSP-SB-026	K2502994-015	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Shiner Surfperch	32	140	Good	Hook & Line	B7	11.79	--
4/21/2005	1700	SSP-SB-027	K2502994-016	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Shiner Surfperch	39	125	Good	Hook & Line	B8	9.95	--
4/21/2005	1700	SSP-SB-028	K2502994-017	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Shiner Surfperch	30	115	Subcutaneous hemorage at vent	Hook & Line	B9	10.66	--
4/21/2005	1700	SSP-SB-029	K2502994-018	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Shiner Surfperch	37	126	Good	Hook & Line	B10	10.41	--
4/21/2005	1700	SSP-SB-030	K2502994-019	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Shiner Surfperch	35	124	Irregular fin rays, dorsal caudal fin	Hook & Line	B11	12.5	--
3/16/2005	1500	WSP-SB-006	K250124-006	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	349	260	Good	Hook & Line	A9	136.29	Yes

TABLE 5
SUMMARY OF FISH COLLECTION ACTIVITIES
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Date	Time	Sample ID	Laboratory ID	Sample Location		Location Description	Species	Weight	Length	Condition	Method	Photo #	Filet Weight	Analyzed[1]
				Latitude	Longitude			(g)	(mm)				(g)	
3/16/2005	1500	WSP-SB-007	K250124-007	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	243	220	Good	Hook & Line	A10	99.21	Yes
3/16/2005	1500	WSP-SB-008	K250124-008	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	222	210	Good	Hook & Line	A11	88.69	Yes
4/22/2005	1100	WSP-SB-033	K2502994-021	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	184	220	Good	Hook & Line	B15	22.12	Yes (composite with WSP-SB-045)
4/21/2005	830	WHP-SB-021	K2502994-011	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	White Surfperch	200	223	Good	Hook & Line	--	26.06	--
4/21/2005	830	WHP-SB-022	K2502994-012	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	White Surfperch	303	227	Hook damage in mouth	Hook & Line	B4	70.07	--
4/21/2005	830	WHP-SB-023	K2502994-013	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	White Surfperch	249	239	Good	Hook & Line	B5	50.25	--
4/21/2005	830	WHP-SB-024	K2502994-014	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	White Surfperch	184	210	40 mm healed scar on left side	Hook & Line	B6	65.68	--
5/5/2005	2000	WSP-SB-034[a]	K2503303-1	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	220	223	No visible deformities	Hook & Line	2	40.72	--
5/5/2005	2005	WSP-SB-35[a]	K2503303-2	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	247	230	No visible deformities	Hook & Line	3	29.27	--
5/5/2005	2005	WSP-SB-36[a]	K2503303-3	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	269	230	No visible deformities	Hook & Line	4	54.16	--
5/5/2005	2010	WSP-SB-37[a]	K2503303-4	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	165	200	No visible deformities	Hook & Line	5	31.39	--
5/5/2005	2110	WSP-SB-38[a]	K2503303-5	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	169	195	No visible deformities	Hook & Line	6	32.01	--
5/9/2005	910	JST-SB-039	K2503359-001	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	135	265	No visible deformities	Hook & Line	7	20.5	--
5/9/2005	913	JST-SB-040	K2503359-002	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	106	249	Healed scar left side at pectoral fin	Hook & Line	8,9	23.79	Yes (composite with JST-SB-018)
5/9/2005	930	JST-SB-041	K2503359-003	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	120	255	No visible deformities	Hook & Line	11	17.26	--
5/9/2005	935	JST-SB-042	K2503359-004	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	171	285	No visible deformities	Hook & Line	12	31.53	Yes
5/10/2005	1300	JST-SB-043	K2503359-005	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Jacksmelt	184	300	No visible deformities	Hook & Line	13	28.74	--
5/10/2005	1130	WSP-SB-044	K2503359-006	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	122	183	No visible deformities	Hook & Line	14	24.41	Yes (composite with WSP-SB-046)
5/10/2005	1245	WSP-SB-045	K2503359-007	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	131	177	No visible deformities	Hook & Line	15,16	21.11	Yes (composite with WSP-SB-033)
5/10/2005	1338	WSP-SB-046	K2503359-008	40° 51.9309'	124° 9.0263'	North of Samoa Bridge	Walleye Surfperch	138	193	No visible deformities	Hook & Line	17	25.18	Yes (composite with WSP-SB-044)

Notes:
1. "Yes" analyze individual sample. Yes (composite with X) - analyze after compsotiting it with sample indicated
a. Gel-packs in cooler transferring thes samples were defrosted upon arrival at the laboratory. Cooler temperature was 17oC.

Abbreviations;
g = grams
mm = millimeters
-- = not available

TABLE 6

SUMMARY OF REPRESENTATIVE CONCENTRATIONS
IN BIOTA FROM MAD RIVER SLOUGH -- 2002 DATA

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Chemical	Fish Type	Species	Number of Samples (n)	Averge Concentration	Upperbound Representative Concentration[1]	Rationale	Representative Concentration[1]	
							Resident	Angler
2,3,7,8-TCDD TEQ (Mammal TEFs) (ng/kg)	Shellfish	Crab	9	0.78	1.76	95% Chebyshev (MVUE) UCL	0.78	1.76
		Oyster	3	0.85	2.22	Maximum Concentration	0.85	2.22
		Shrimp	3	0.15	0.25	Maximum Concentration	0.15	0.25
	Fin Fish	Sculpin	2	0.26	0.36	Maximum Concentration	0.26	0.38
		Shark	1	--	0.06	Maximum Concentration		
		Shiner	1	--	0.38	Maximum Concentration		
		Sole	7	0.21	0.30	H-UCL		
Zinc (mg/kg)	Shellfish	Crab	5	32	41.9	H-UCL	32	41.9
		Oyster	2	94	110	Maximum Concentration	94	110
		Shrimp	1	--	11	Maximum Concentration	11	11
	Fin Fish	Shark	1	--	4	Maximum Concentration	14	15
		Sole	2	14	15	Maximum Concentration		

Notes:
1. Concentration represents the 95% upper confidence limit (95% UCL) as calculated using ProUCL software or the maximum concentration, which ever is lower.

Abbreviations:
mg/kg = milligram per kilogram
ng/kg = nanograms per kilogram
TEF = Toxicity equivalency factors
2.3.7.8-TCDD TEQ = 2,3,7,8-tetrachloro dibenzo-p-dioxin toxicity equivalents
-- = insufficient number of samples to calculate value

TABLE 7

SUMMARY OF NONCANCER HAZARD INDEXES --
2002 DATA[1]
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California

Chemical	Exposure Pathway				
	Ingestion of Fin Fish	**Ingestion of Oysters**	**Ingestion of Shrimp**	**Ingestion of Crab**	**Total**
Resident					
Dioxins/Furans	0.0090	0.00024	0.00064	0.00038	0.01
Zinc	0.016	0.00088	0.0016	0.00053	0.02
Off-Site Exposure to Chemicals at the Mill[2]					0.00002
Total	0.03	0.001	0.002	0.0009	0.03
Angler					
Dioxins/Furans	0.10	0.0050	0.0085	0.0069	0.1
Zinc	0.13	0.0082	0.0125	0.0055	0.2
Off-Site Exposure to Chemicals at the Mill[2]					0.00002
Total	0.2	0.013	0.021	0.012	0.3

Notes:
1. Shell fish and fin fish data from 2002.

Geomatrix

TABLE 8

SUMMARY OF LIFETIME CANCER RISKS -- 2002 DATA[1]

Sierra Pacific Industries Arcata Division Sawmill
Arcata, California

Chemical	Exposure Pathway				
	Ingestion of Fin Fish	Ingestion of Oysters	Ingestion of Shrimp	Ingestion of Crab	Total
Resident					
Dioxins/Furans	4.2E-06	1.1E-07	3.0E-07	1.8E-07	5.E-06
Zinc	NA	NA	NA	NA	NA
Off-Site Exposure to Chemicals at the Mill[2]					4.0E-09
Total	4.2E-06	1.1E-07	3.0E-07	1.8E-07	5.E-06
Angler					
Dioxins/Furans	4.7E-05	2.3E-06	4.0E-06	3.2E-06	6.E-05
Zinc	NA	NA	NA	NA	NA
Off-Site Exposure to Chemicals at the Mill[2]					4.0E-09
Total	5.E-05	2.E-06	4.E-06	3.E-06	6.E-05

Notes:
1. Shell fish and fin fish data from 2002.
2. Includes potential lifetime cancer risks for off-site receptors predicted in the *Baseline Human Health Risk Assessment of On-Site Soil and Groundwater* (Geomatrix, 2003).

TABLE 9

SUMMARY OF REPRESENTATIVE CONCENTRATIONS
IN BIOTA FROM MAD RIVER SLOUGH -- 2002/2005 DATA[1]

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Chemical	Fish Type	Species	Number of Samples (n)	Averge Concentration	Upperbound Representative Concentration[1]	Rationale	Representative Concentration[1]	
							Resident	Angler
2,3,7,8-TCDD TEQ (Mammal TEFs) (ng/kg)	Shellfish	Crab	9	0.78	1.76	95% Chebyshev (MVUE) UCL	0.78	1.76
		Oyster	3	0.85	2.22	Maximum Concentration	0.85	2.22
		Shrimp	3	0.15	0.25	Maximum Concentration	0.15	0.25
	Fin Fish	Jacksmelt	5	0.06	0.07	Student's-t UCL	0.09	0.30
		Pile Sufperch	5	0.09	0.30	Maximum Concentration		
		Walleye Surfperch	5	0.06	0.07	Student's-t UCL		
Zinc (mg/kg)	Shellfish	Crab	5	32	41.9	H-UCL	32	41.9
		Oyster	2	94	110	Maximum Concentration	94	110
		Shrimp	1	--	11	Maximum Concentration	11	11
	Fin Fish	Shark	1	--	4	Maximum Concentration	14	15
		Sole	2	14	15	Maximum Concentration		

Notes:
1. All zinc data and dioxin/furan data for shellfish are from 2002. Dioxin/furan data for fin fish are from 2005.
2. Concentration represents the 95% upper confidence limit (95% UCL) as calculated using ProUCL software or the maximum concentration, which ever is lower.

Abbreviations:
mg/kg = milligram per kilogram
ng/kg = nanograms per kilogram
TEF = Toxicity equivalency factors
2.3.7.8-TCDD TEQ = 2,3,7,8-tetrachloro dibenzo-p-dioxin toxicity equivalents
-- = insufficient number of samples to calculate value

Geomatrix

TABLE 10

SUMMARY OF NONCANCER HAZARD INDEXES -- 2002/2005 DATA[1]

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Chemical	Exposure Pathway				Total
	Ingestion of Fin Fish	Ingestion of Oysters	Ingestion of Shrimp	Ingestion of Crab	
Resident					
Dioxins/Furans	0.0031	0.00024	0.00064	0.00038	0.004
Zinc	0.016	0.00088	0.0016	0.00053	0.02
Off-Site Exposure to Chemicals at the Mill[2]					0.00002
Total	0.02	0.001	0.002	0.001	0.02
Angler					
Dioxins/Furans	0.08	0.0050	0.0085	0.0069	0.1
Zinc	0.13	0.0082	0.013	0.0055	0.2
Off-Site Exposure to Chemicals at the Mill[2]					0.00002
Total	0.2	0.01	0.02	0.01	0.3

Notes:
1. Shell fish data from 2002; fin fish data for dioxins/furans from 2005, and fin fish data for zinc from 2002.

Geomatrix

TABLE 11

SUMMARY OF LIFETIME CANCER RISKS -- 2002/2005 DATA [1]

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Chemical	Exposure Pathway				Total
	Ingestion of Fin Fish	Ingestion of Oysters	Ingestion of Shrimp	Ingestion of Crab	
Resident					
Dioxins/Furans	1.4E-06	1.1E-07	3.0E-07	1.8E-07	2.E-06
Zinc	NA	NA	NA	NA	NA
Off-Site Exposure to Chemicals at the Mill[2]					4E-09
Total	1.4E-06	1.1E-07	3.0E-07	1.8E-07	2.E-06
Angler					
Dioxins/Furans	3.7E-05	2.3E-06	4.0E-06	3.2E-06	5.E-05
Zinc	NA	NA	NA	NA	NA
Off-Site Exposure to Chemicals at the Mill[2]					4E-09
Total	4.E-05	2.E-06	4.E-06	3.E-06	5.E-05

Notes:

1. Shell fish data from 2002; fin fish data for dioxins/furans from 2005, and fin fish data for zinc from 2002.
2. Includes potential lifetime cancer risks for off-site receptors predicted in the *Baseline Human Health Risk Assessment of On-Site Soil and Groundwater* (Geomatrix, 2003).

Geomatrix

TABLE 12

SUMMARY OF POTENTIAL HUMAN HEALTH RISKS[1]

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Receptor	Hazard Index		Lifetime Cancer Risk	
Year[2]	**2002/2005**	2002	**2002/2005**	2002
Resident	**0.02**	0.03	**2E-06**	5e-6
Angler	**0.3**	0.3	**5E-05**	6e-5

Notes:

1. Includes risks associated with ingestion of fish and shellfish and potential health risks to off-site receptors predicted in the *Baseline Human Health Risk Assessment of On-Site Soil and Groundwater* (Geomatrix, 2003).
2. 2002/2005 - Fin fish collected in 2005 for dioxin/furans and fin fish data for zinc and shell fish data for zinc and dioxins/furans collected in 2002
   2002 - Fin fish and shell fish collected in 2002.

"**Bold**" = Risks/hazard indexes calculated using the dioxin/furan fin fish data collected in 2005.

FIGURES

23-DEC-2003 N:\ARCPRJ2\030229\PLT\19-DEC-03\SPI-DTL-AIR2000.MXD

S:\93009329\task_2004_0607_spi_fig_01.ai

124°9'30"W 124°9'0"W 124°8'30"W 124°8'0"W 124°7'30"W

40°52'30"N

40°52'0"N

40°51'30"N

Sierra Pacific Industries
Arcata Division Sawmill

LEGEND

BASEMAP SOURCES:
September 18, 2000
Radman Aerial Photography

USGS 7.5' Quadrangle maps

N

0 1,000 2,000
Feet

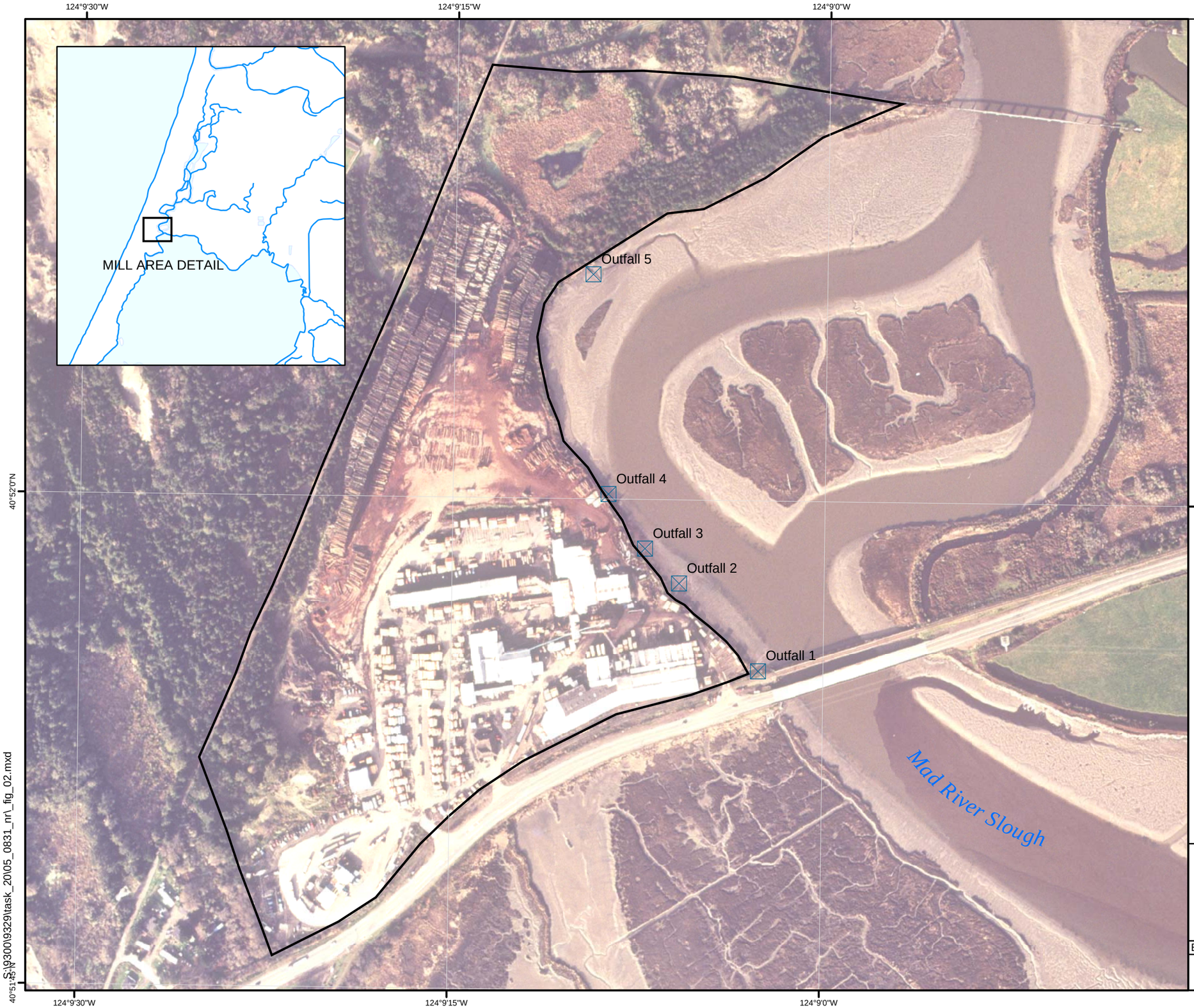
SIERRA PACIFIC INDUSTRIES
ARCATA DIVISION SAWMILL
ARCATA, CA

FIGURE1

SITE LOCATION MAP

PROJECT: 030275.20	DATE: DEC 23, 2003	
REV: 0	BY: MCP	CHECKED: MCL

GEOMATRIX



Explanation

Outfall Locations

Approximate Sawmill Boundary

N

0 300 600 Feet

ARCATA DIVISION SAWMILL
AND MAD RIVER SLOUGH

By: _____ Date: _____ Project No. 9329.000

Geomatrix

Figure **2**

S:\9300\9329\task_20\05_0831_nr_fig_02.mxd

124°9'15"W

124°9'0"W

40°52'0"N

MILL AREA DETAIL

Outfall 5
C-09
C-28
C-08
C-30
C-29
C-27-1
C-07
C-26
Mad River Slough
C-06
Outfall-4
C-23
C-24
C-05
Outfall 4
GSED-04
Lappe_OF4
C-25-1
C-25-2
C-15
Outfall-3
GSED-03
C-31
Outfall 3
C-16
C-14
C-17
Outfall-3A
GSED-02
C-18
C-04
Outfall 2
C-32
C-03
Outfall-2
Lappe_OF2
C-02
C-22
C-19
C-01
C-20
GSED-01
Outfall-1
Outfall 1
C-37
C-33

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Explanation

- Outfall Locations

Sampling Locations

- Previous Core Sediment Sample
- Previous Surface Sediment Sample
- April 2004 Surface Sediment Sample
- Proposed Sampling Locations
- Proposed Sample Transect

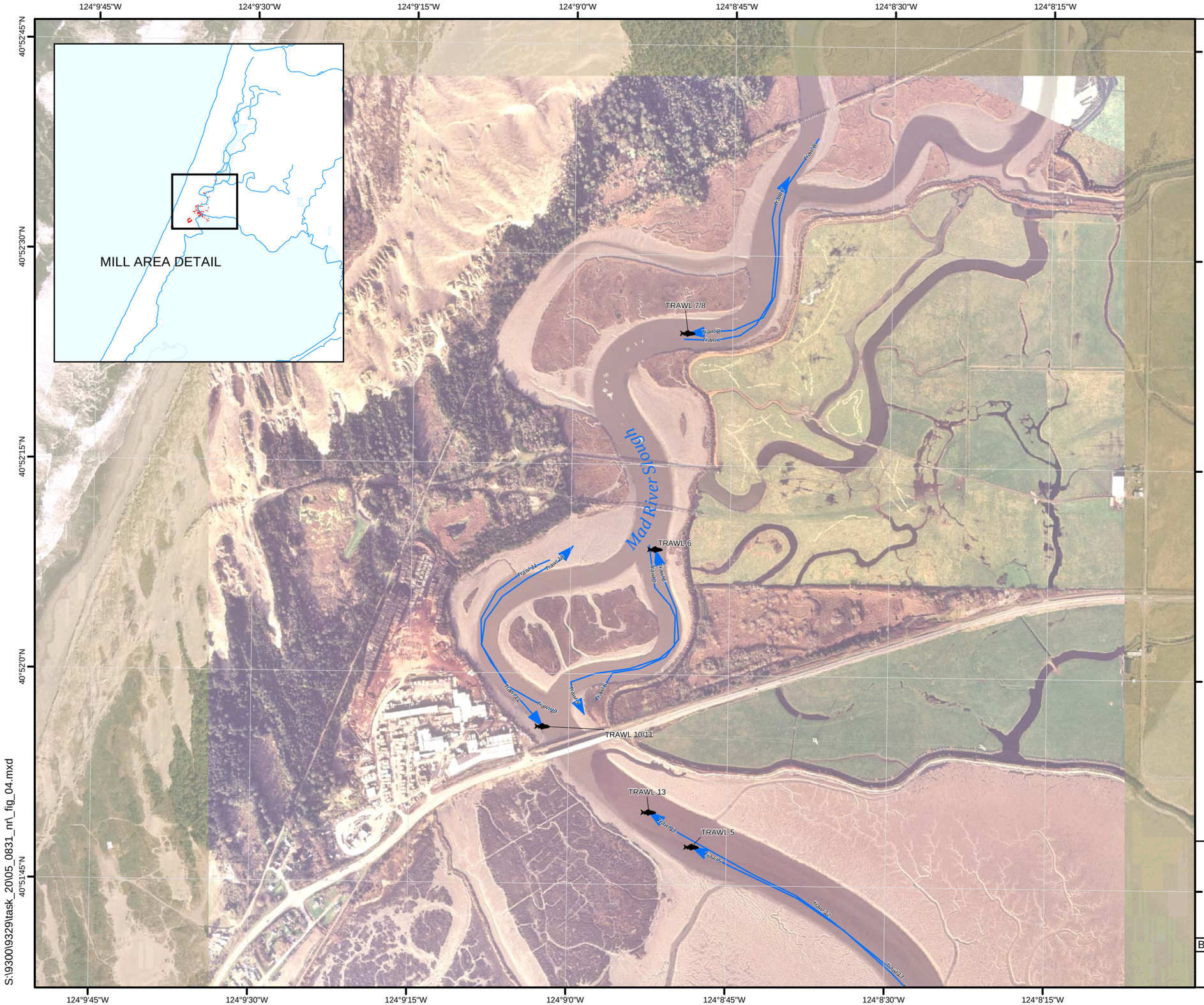
Note: PCP was analyzed at selected previous surface and core sediment sample locations.

N

0 150 300 Feet

EXISTING AND PROPOSED SEDIMENT SAMPLING LOCTIONS IN MAD RIVER SLOUGH IN THE VICINITY OF THE SAWMILL

By: _____	Date: _____	Project No. 9329.000
Geomatrix		Figure **3**



Explanation

Trawl track

Sampling Locations

Fish

N

0 700 1,400 Feet

EXISTING FIN FISH SAMPLING LOCATIONS IN MAD RIVER SLOUGH IN THE VICINITY OF THE SAWMILL

By: _____ Date: _____ Project No. 9329.000

Geomatrix

Figure **4**

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APPENDIX A

Core Logs

PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California		**Boring Log Explanation**			
BORING LOCATION:		ELEVATION AND DATUM:			
DRILLING CONTRACTOR:		DATE STARTED:		DATE FINISHED:	
DRILLING METHOD:		TOTAL DEPTH (ft.):		MEASURING POINT:	
DRILLING EQUIPMENT:		DEPTH TO WATER	FIRST	COMPL.	24 HRS.
SAMPLING METHOD:		LOGGED BY:			
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL:			REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:	REMARKS
1–15	SB-1-13.0				Notes 1. Soil described using visual-manual procedures of American Society of Testing and Materials (ASTM) Standard D 2488 for guidance; a Standard based on the Unified Soil Classification System. 2. Soil color described according to Munsell Color Chart. 3. Dashed lines separating soil strata represent inferred boundaries between sampled intervals that may be abrupt or gradual transitions. 4. Solid lines represent approximate boundaries observed within sample intervals. 5. OVM = organic vapor meter, reading in volumetric parts per million. 6. Odor, if noted is subjective and not necessarily indicative of specific compounds or concentrations. 7. NA = Not applicable. 8. ND = No data. Interval of recovered soil core collected with split-barrel sampler. Interval of no recovery. Sample collected for chemical analysis and sample identification.	

KEYFORM (REV. 7/99)

PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California	**Log of Boring No. 101-GSED-C09**	
BORING LOCATION: Mad River Slough	ELEVATION AND DATUM: Not surveyed; datum is ground surface	
DRILLING CONTRACTOR: Geomatrix/NewFields	DATE STARTED: 8/14/04	DATE FINISHED: 8/14/04
DRILLING METHOD: Direct push	TOTAL DEPTH (ft.): 5.3	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Slidehammer	DEPTH TO WATER (ft.) FIRST: NA	COMPL.: NA
SAMPLING METHOD: SS core slide hammer [3' x 2"]	LOGGED BY: M. Goerz	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: R. Steenson	REG. NO. R.G. 6592

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
					Surface Elevation: Not surveyed	
1					SILT with SAND (ML): dark greenish gray (10Y 3/1), wet, 80% fines, 20% fine sand, medium plasticity, low toughness, very soft [SEDIMENT] ~ 80% of sample consists of wood fragments	Four cores were collected at this location. Core recoveries were: (1) 25", (2) 20", (3) 11", (4) 29".
2					85% fines, 15% fine sand, no wood fragments	
3						
4						Composite samples were collected from: 4 cores at 0' to 0.5' and 0.5' to 1'; 3 cores at 1' to 2'. One sample was collected from 1 core at 2' to 2.5'.
5						
6					Bottom of boring at 5.3 feet	
7						
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California	**Boring Log 102-GSED-C08**			
BORING LOCATION: Mad River Slough	ELEVATION AND DATUM: Not surveyed; datum is ground surface			
DRILLING CONTRACTOR: Geomatrix/NewFields	DATE STARTED: 9/14/04	DATE FINISHED: 9/14/04		
DRILLING METHOD: Direct push	TOTAL DEPTH (ft.):	MEASURING POINT: Ground surface		
DRILLING EQUIPMENT: Slidehammer	DEPTH TO WATER	FIRST NA	COMPL. NA	24 HRS.
SAMPLING METHOD: SS core slide hammer [3' x 2"]	LOGGED BY: M. Goerz			
HAMMER WEIGHT: NA DROP: NA	RESPONSIBLE PROFESSIONAL: R. Steenson	REG. NO. R.G. 6592		

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: Not surveyed; datum is ground surface	REMARKS
1					SANDY SILT ("ML"): dark greenish gray ("10Y 3/1"), wet, 70% fines, 30% fine sand, low plasticity, low toughness, very soft, ~ 90% of sample consists of wood fragments [SEDIMENT]	Four cores were collected at this location. Core recoveries were: (1) 21", (2) 36", (3) 12.5", (4) 30".
2						
3					SILT with SAND ("ML"): very dark gray ("N 3/0"), wet, 80% fines, 20% fine sand, low plasticity, low toughness, very soft, ~ 10% of sample consists of wood fragments [SEDIMENT]	
4						Composite samples were collected from: 4 cores at 0' to 0.5' and 0.5' to 1'; 2 cores at 1' to 2'. One sample was collected from 1 core at 2' to 3'.
5					Bottom of boring at 5.0 feet	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California	**Log of Boring No. 103-GSED-C07**	
BORING LOCATION: Mad River Slough	ELEVATION AND DATUM: Not surveyed; datum is ground surface	
DRILLING CONTRACTOR: Geomatrix/NewFields	DATE STARTED: 9/14/04	DATE FINISHED: 9/14/04
DRILLING METHOD: Direct push	TOTAL DEPTH (ft.): 2.5	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Slidehammer	DEPTH TO WATER (ft.) FIRST: NA	COMPL.: NA
SAMPLING METHOD: SS core slide hammer [3' x 2"]	LOGGED BY: M. Goerz	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: R. Steenson	REG. NO. R.G. 6592

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
					Surface Elevation: Not surveyed	
1					SILT with SAND (ML): dark greenish gray (10Y 3/1), wet, 85% fines, 15% fine sand, low plasticity, low toughness, ~ 90% of sample consists of wood fragments [SEDIMENT] ~ 10% of sample consists of wood fragments	Location under 2' of slough water when sampled. Four cores were collected at this location. Core recoveries were: (1) 6", (2) 11", (3) 6", (4) 9.5". Composite samples were collected from: 4 cores at 0' to 0.5'; 2 cores at 0.5 to 1'.
2						
3					Bottom of boring at 2.5 feet	
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: SIERRA PACIFIC INDUSTRIES
Arcata, California

Log of Boring No. 104-GSED-C06

BORING LOCATION: Mad River Slough

ELEVATION AND DATUM: Not surveyed; datum is ground surface

DRILLING CONTRACTOR: Geomatrix/NewFields

DATE STARTED: 9/15/04 | DATE FINISHED: 9/15/04

DRILLING METHOD: Direct push

TOTAL DEPTH (ft.): 5.0 | MEASURING POINT: Ground surface

DRILLING EQUIPMENT: Slidehammer

DEPTH TO WATER (ft.) | FIRST: NA | COMPL.: NA

SAMPLING METHOD: SS core slide hammer [3' x 2"]

LOGGED BY: M. Goerz

HAMMER WEIGHT: NA | DROP: NA

RESPONSIBLE PROFESSIONAL: R. Steenson | REG. NO.: R.G. 6592

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: Not surveyed	REMARKS
1					SANDY SILT (ML): bluish black (5B 2.5/1), wet, 85% fines, 15% fine sand, low plasticity, low dry strength, very soft [SEDIMENT]	Four cores were collected at this location. Core recoveries were: (1) 24.5", (2) 12", (3) 15", (4) 15".
2					~ 70% of sample consists of wood fragments	
3					80% fines, 20% fine sand, ~ 50% of sample wood fragments	
4						Composite samples were collected from: 4 cores at 0' to 0.5' and 0.5' to 1'; 3 cores at 1' to 2'.
5					Bottom of boring at 5.0 feet	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California			**Boring Log 105-GSED-C05**		
BORING LOCATION: Mad River Slough			ELEVATION AND DATUM: Not surveyed; datum is ground surface		
DRILLING CONTRACTOR: Geomatrix/NewFields			DATE STARTED: 9/15/04	DATE FINISHED: 9/15/04	
DRILLING METHOD: Direct push			TOTAL DEPTH (ft.):	MEASURING POINT: Ground surface	
DRILLING EQUIPMENT: Slidehammer			DEPTH TO WATER: FIRST NA	COMPL. NA	24 HRS.
SAMPLING METHOD: SS core slide hammer [3' x 2"]			LOGGED BY: M. Goerz		
HAMMER WEIGHT: NA	DROP: NA		RESPONSIBLE PROFESSIONAL: R. Steenson		REG. NO. R.G. 6592

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: Not surveyed; datum is ground surface	REMARKS
0					SANDY SILT ("ML"): dark greenish gray ("10Y 3/1"), wet, 70% fines, 30% fine sand, nonplastic, low toughness [SEDIMENT]	
1						
2					POORLY GRADED SAND with SILT ("SP-SM"): dark gray ("N 4/0"), wet, 90% fine to medium sand, 10% fines, ~ 50% of sample contains wood fragments no wood fragments	Four cores were collected at this location. Core recoveries were: (1) 34", (2) 33", (3) 30", (4) 31".
3						
4						Composite samples were collected from: 4 cores at 0' to 0.5' and 0.5' to 1', 1' to 2', and 2' to 3'.
5					Bottom of boring at 5.3 feet	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

KEYFORM (REV. 7/99)

PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California	**Log of Boring No. 106-GSED-C31**	
BORING LOCATION: Mad River Slough	ELEVATION AND DATUM: Not surveyed; datum is ground surface	
DRILLING CONTRACTOR: Geomatrix/NewFields	DATE STARTED: 9/15/04	DATE FINISHED: 9/15/04
DRILLING METHOD: Direct push	TOTAL DEPTH (ft.): 5.3	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Slidehammer	DEPTH TO WATER (ft.) FIRST: NA	COMPL.: NA
SAMPLING METHOD: SS core slide hammer [3' x 2"]	LOGGED BY: M. Goerz	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: R. Steenson	REG. NO. R.G. 6592

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
					Surface Elevation: Not surveyed	
1					SANDY SILT (ML): dark greenish gray (5GY 3/1), wet, 85% fines, 15% fine sand, low plasticity, very soft, low toughness, low dry strength, ~ 15% of sample consists of organic fibers [SEDIMENT]	Location under 3' of slough water when sampled.
2					SILTY SAND (ML) ~ 60% of sample consists of wood fragments ~ 20% of sample consists of wood fragments	
3						Four cores were collected at this location. Core recoveries were: (1) 25", (2) 24", (3) 31", (4) 17".
4						
5						
6					Bottom of boring at 5.3 feet	Composite samples were collected from: 4 cores at 0' to 0.5', 0.5' to 1', and 1' to 2'. One sample was collected from 1 core at 2' to 2.5'.
7						
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California	**Log of Boring No. 107-GSED-C32**	
BORING LOCATION: Mad River Slough	ELEVATION AND DATUM: Not surveyed; datum is ground surface	
DRILLING CONTRACTOR: Geomatrix/NewFields	DATE STARTED: 9/15/04	DATE FINISHED: 9/15/04
DRILLING METHOD: Direct push	TOTAL DEPTH (ft.): 5.3	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Slidehammer	DEPTH TO WATER (ft.) FIRST: NA	COMPL.: NA
SAMPLING METHOD: SS core slide hammer [3' x 2"]	LOGGED BY: M. Goerz	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: R. Steenson	REG. NO. R.G. 6592

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: Not surveyed	REMARKS
1					SILT with SAND (ML): greenish black (10BG 2.5/1), wet, 75% fines, 25% fine sand, nonplastic, very soft [SEDIMENT]	Location under 1.3' of slough water when sampled.
2					ORGANIC SOIL (OL/OH) dark greenish gray (10Y 3/1), 85% fines, 15% fine sand ~ 60% of sample consists of wood fragments	
3						Four cores were collected at this location. Core recoveries were: (1) 36", (2) 29", (3) 29", (4) 32".
4						
5						
6					Bottom of boring at 5.3 feet	Composite samples were collected from: 4 cores at 0' to 0.5', 0.5' to 1', 1' to 2', and 2' to 3'.
7						
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: SIERRA PACIFIC INDUSTRIES
Arcata, California

Log of Boring No. 108-GSED-C02

BORING LOCATION: Mad River Slough

ELEVATION AND DATUM: Not surveyed; datum is ground surface

DRILLING CONTRACTOR: Geomatrix/NewFields

DATE STARTED: 9/16/04

DATE FINISHED: 9/16/04

DRILLING METHOD: Direct push

TOTAL DEPTH (ft.): 5.0

MEASURING POINT: Ground surface

DRILLING EQUIPMENT: Slidehammer

DEPTH TO WATER (ft.) FIRST: NA COMPL.: NA

SAMPLING METHOD: SS core slide hammer [3' x 2"]

LOGGED BY: M. Goerz

HAMMER WEIGHT: NA DROP: NA

RESPONSIBLE PROFESSIONAL: R. Steenson REG. NO.: R.G. 6592

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
					Surface Elevation: Not surveyed	
1					SILT with SAND (ML): black (N 2.5/0), wet, 80% fines, 20% fine sand, low plasticity, very soft, ~ 30% of sample consists of organic material [SEDIMENT] dark greenish gray (5GY 4/1)	Four cores were collected at this location. Core recoveries were: (1) 33", (2) 18", (3) 26", (4) 31".
2					wood fragment low toughness, low dry strength wood fragment	
3						
4						Composite samples were collected from: 4 cores at 0' to 0.5' and 0.5' to 1'; 3 cores at 1' to 2' and 2' to 3'.
5					Bottom of boring at 5.0 feet	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California	**Log of Boring No. 109-GSED-C01**	
BORING LOCATION: Mad River Slough	ELEVATION AND DATUM: Not surveyed; datum is ground surface	
DRILLING CONTRACTOR: Geomatrix/NewFields	DATE STARTED: 9/16/04	DATE FINISHED: 9/16/04
DRILLING METHOD: Direct push	TOTAL DEPTH (ft.): 5.0	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Slidehammer	DEPTH TO WATER (ft.) FIRST: NA	COMPL.: NA
SAMPLING METHOD: SS core slide hammer [3' x 2"]	LOGGED BY: M. Goerz	
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: R. Steenson	REG. NO. R.G. 6592

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
					Surface Elevation: Not surveyed	
1					SILT with SAND (ML): greenish black (10GY 2.5/1), wet, 85% fines, 15% fine sand, low plasticity, very soft , ~ 30% of sample consists of organic material [SEDIMENT]	Four cores were collected at this location. Core recoveries were: (1) 26", (2) 22.5", (3) 20", (4) 23".
2					dark greenish gray (10Y 3/1), low toughness, low dry strength trace coarse gravel wood fragment	
3						
4						Composite samples were collected from: 4 cores at 0' to 0.5', 0.5' to 1', and 1' to 2'.
5					Bottom of boring at 5.0 feet	
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PROJECT: SIERRA PACIFIC INDUSTRIES
Arcata, California

Boring Log 110-GSED-C01A

BORING LOCATION: Mad River Slough

ELEVATION AND DATUM: Not surveyed; datum is ground surface

DRILLING CONTRACTOR: Geomatrix/NewFields

DATE STARTED: 9/16/04

DATE FINISHED: 9/16/04

DRILLING METHOD: Direct push

TOTAL DEPTH (ft.):

MEASURING POINT: Ground surface

DRILLING EQUIPMENT: Slidehammer

DEPTH TO WATER: FIRST NA; COMPL. NA; 24 HRS.

SAMPLING METHOD: SS core slide hammer [3' x 2"]

LOGGED BY: M. Goerz

HAMMER WEIGHT: NA

DROP: NA

RESPONSIBLE PROFESSIONAL: R. Steenson

REG. NO. R.G. 6592

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/Foot	OVM READING (ppm)	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
					Surface Elevation: Not surveyed; datum is ground surface	
1					SILTY SAND ("SM"): bluish black ("5B 2.5/1"), wet, 60% fine to medium sand, 40% low plasticity fines [SEDIMENT]	
2					SILT with SAND ("ML"): dark greenish gray ("10BG 4/1"), wet, 80% fines, 20% fine sand, medium plasticity, very soft, low toughness, low dry strength [SEDIMENT]	Four cores were collected at this location. Core recoveries were: (1) 15", (2) 19", (3) 16", (4) 19".
3					POORLY GRADED SAND with SILT ("SP-SM"): greenish black ("5BG 2.5/1"), wet, 90% fine to medium sand, 10% low plasticity fines [SEDIMENT]	
4					Bottom of boring at 2.5 feet	Composite samples were collected from: 4 cores at 0' to 0.5', 0.5' to 1', and 1' to 2'.
5						
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15						

APPENDIX B

Laboratory Results for Sediment Samples

1317 South 13th Avenue P.O. Box 479 Kelso, Washington 98626 (360) 577-7222 ph (360) 636-1068 fax

Columbia Analytical Services INC.
An Employee - Owned Company

October 14, 2004 Service Request No: K2407209

Ann Holbrow
Geomatrix Consultants
2101 Webster St.
12th Floor
Oakland, CA 94612

RE: 9329.000

Dear Ann:

Enclosed are the results of the sample(s) submitted to our laboratory on September 17, 2004. For your reference, these analyses have been assigned our service request number K2407209.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) 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 3376.

Respectfully submitted,

Columbia Analytical Services, Inc.

Gregory Salata, Ph.D.
Project Chemist

GS/jeb

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
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.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
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 compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
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 has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

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.
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 estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
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 (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

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.

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Geomatrix Consultants	**Service Request No.:**	K2407209
Project:	9329.000	**Date Received:**	09/17/04
Sample Matrix:	Soil and Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty soil and three water samples were received for analysis at Columbia Analytical Services on 09/17/04. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

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

Semivolatile Organic Compounds by EPA Method 8270C

Holding Time Exceptions:
Samples RB-1, RB-2 and RB-3 were received with insufficient hold time remaining to complete the analysis within the recommended limit. The analysis was performed as soon as possible after receipt by the laboratory. The data is flagged to indicate the holding time violation.

Initial Calibration (ICAL) Exceptions:
The primary evaluation criterion was exceeded for Pentachlorophenol in ICAL ID CAL3872. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 7.6%. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

Elevated Method Reporting Limits:
The reporting limit is elevated for all analytes in various samples because the samples required dilution. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the reporting limit. The reporting limits are adjusted to reflect the dilution.

Surrogate Exceptions:
The control criteria were exceeded for the 2-Fluorophenol surrogate in LCS KWG0414855-1. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier is flagged accordingly. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the 2-Chlorophenol in the replicate matrix spike analyses of 107-GSED-C32-2.0 was outside control criteria. All spike recoveries in the MS, DMS, and associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

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

Approved by _____ **Date** 10/14/04

Chain of Custody Documentation

K2407209 19207

Chain-of Custody Record

Date: 9/15/04 | Page 1 of 2

Project No.: 9329.000

Samplers (Signature:)

Date	Time	Sample Number	EPA Method 8021 (Full Scan)	EPA Method 8021 (Hal. VOCs only)	EPA Method 8021 (BETX only)	EPA Method 8260	EPA Method 8270 (Full Scan)	EPA Method 8270 SIM (PAHS only)	Method 8015m (Gasoline)	Method 8015m (Diesel)	Method 8015m (Motor Oil)	Silica Gel Cleanup	①	MS/MSD	Soil (S), Water (W) Vapor (V), or Other (o)	Filtered	Preserved	Cooled	No. of Containers	Additional Comments
9/14/04	1520	RB-1											X		W	N	N	Y	1	① Analyze EPA 8270C plus TICS. LVI/GC/MS Chlorinated Solvents
9/15/04	1200	106-GSED-C31-2.0D											X		S	-	-	Y	1	MPG
9/15/04	1700	107-GSED-C32-0.5											X		S	-	-	Y	1	2
	1700	107-GSED-C32-1.0											X		S	-	-	Y	1	3
	1700	107-GSED-C32-2.0											X	X	S	-	-	Y	2	4
	1700	107-GSED-C32-3.0											X		S	-	-	Y	1	5
	1800	105-GSED-C05-0.5											X		S	-	-	Y	1	6
	1800	105-GSED-C05-1.0											X		S	-	-	Y	1	7
	1800	105-GSED-C05-2.0											X		S	-	-	Y	1	8
	1800	105-GSED-C05-3.0											X		S	-	-	Y	1	9
↓	1950	RB-2											X		W	N	N	Y	1	10
9/16/04	0830	108-GSED-C02-0.5											X		S	-	-	Y	1	11
	0830	108-GSED-C02-1.0											X		S	-	-	Y	1	12
	0830	108-GSED-C02-2.0											X		S	-	-	Y	1	13
↓	0830	108-GSED-C02-3.0											X		S	-	-	Y	1	14

Laboratory: Columbia Analytical

Turnaround Time: STANDARD

Results to: Ross Steenson

Total No. of Containers: 16/25

Relinquished by (Signature):	Date: 9/16/04	Relinquished by (Signature):	Date:	Relinquished by (Signature):	Date:
Printed Name: Matt Goerz	Time: 1500	Printed Name:	Time:	Printed Name:	Time:
Company: Geomatrix		Company:		Company:	
Received by: Tracy Blank	Date: 9/17/04	Received by:	Date:	Received by:	Date:
Printed Name: Blank	Time: 1800	Printed Name:	Time:	Printed Name:	Time:
Company: MG		Company:		Company:	

Method of Shipment: FED EX

Laboratory Comments and Log No.:

Geomatrix Consultants
2101 Webster Street, 12th Floor • Oakland, CA 94612
Phone: 510-663-4100 Fax: 510-663-4141

K2407209 19208

Chain-of Custody Record

Date: 9/16/04 Page 2 of 2

Project No.: 9329.000

Samplers (Signature:)

Date	Time	Sample Number	EPA Method 8021 (Full Scan)	EPA Method 8021 (Hal. VOCs only)	EPA Method 8021 (BETX only)	EPA Method 8260	EPA Method 8270 (Full Scan)	EPA Method 8270 SIM (PAHS only)	Method 8015m (Gasoline)	Method 8015m (Diesel)	Method 8015m (Motor Oil)	Silica Gel Cleanup	①	MS/MSD					Soil (S), Water (W) Vapor (V), or Other (o)	Filtered	Preserved	Cooled	No. of Containers	REMARKS
9/16/04	0830	108-GSED-C02-1.0D											X						S	-	-	Y	1	15
	0900	109-GSED-C01-0.5											X						S	-	-	Y	1	16
	0900	109-GSED-C01-1.0											X						S	-	-	Y	1	17
	0900	109-GSED-C01-2.0											X	X					S	-	-	Y	2	18
	1000	110-GSED-C01A-0.5											X						S	-	-	Y	1	19
	1000	110-GSED-C01A-1.0											X						S	-	-	Y	1	20
	1000	110-GSED-C01A-2.0											X						S	-	-	Y	1	21
	1330	RB-3											X						W	-	-	Y	1	22
9/14/04	0900	101-GSED-C09-2.0D											X						S	-	-	Y	1	23

MPG

MPG

8

Additional Comments: ① Analyze 8270C plus TICS, LVI/GC/MS Chlorinated Solvents

Laboratory:	Turnaround Time:	Results to:	Total No. of Containers
COLUMBIA ANALYTICAL	STANDARD	ROSS STEENSON	9/25

Relinquished by (Signature):	Date:	Relinquished by (Signature):	Date:	Relinquished by (Signature):	Date:	Method of Shipment:
Printed Name: MATT GOERZ	Time: 1500	Printed Name:	Time:	Printed Name:	Time:	Laboratory Comments and Log No.: K2407209
Company: GEOMATRIX		Company:		Company:		
Received by:	Date: 9/17/04	Received by:	Date:	Received by:	Date:	
Printed Name:	Time: 1800	Printed Name:	Time:	Printed Name:	Time:	
Company:		Company:		Company:		

Geomatrix Consultants
2101 Webster Street, 12th Floor • Oakland, CA 94612
Phone: 510-663-4100 Fax: 510-663-4141

Columbia Analytical Services Inc.
Cooler Receipt and Preservation Form

PC Greg

Project/Client Geomatrix Work Order K240 7209

Cooler received on 5bw 9-17-04 and opened on 9-17-04 by DW

1.	Were custody seals on outside of coolers? (If yes, how many and where? 1 Front)	(Y)	N
2.	Were custody seals intact?	(Y)	N
3.	Were signature and date present on the custody seals?	(Y)	N
4.	Is the shipper's airbill available and filed? If no, record airbill number: 8479-7539-0330	(Y)	N
5.	COC#		
	Temperature of cooler(s) upon receipt: (°C) 2.1		
	Temperature Blank: (°C)		
	Were samples hand delivered on the same day as collection?	~~Y~~	~~N~~
6.	Were custody papers properly filled out (ink, signed, etc.)?	(Y)	N
7.	Type of packing material present gel packs		
8.	**Did all bottles arrive in good condition (unbroken)?**	(Y)	N
9.	Were all bottle labels complete (i.e analysis, preservation, etc.)?	(Y)	N
10.	Did all bottle labels and tags agree with custody papers?	(Y)	N
11.	**Were the correct types of bottles used for the tests indicated?**	(Y)	N
12.	Were all of the preserved bottles received at the lab with the appropriate pH?	Y	~~N~~
13.	Were VOA vials checked for absence of air bubbles, and if present, noted below?	Y	~~N~~
14.	Did the bottles originate from CAS/K or a branch laboratory?	(Y)	N
15.	**Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?**	Y	~~N~~
16.	Was C12/Res negative?	~~Y~~	N

Explain any discrepancies:

RESOLUTION:

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

Total Solids

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209

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
107-GSED-C32-0.5	K2407209-002	09/15/2004	09/17/2004	09/23/2004	40.6	
107-GSED-C32-1.0	K2407209-003	09/15/2004	09/17/2004	09/23/2004	46.6	
107-GSED-C32-2.0	K2407209-004	09/15/2004	09/17/2004	09/23/2004	54.8	
107-GSED-C32-3.0	K2407209-005	09/15/2004	09/17/2004	09/23/2004	57.0	
105-GSED-C05-0.5	K2407209-006	09/15/2004	09/17/2004	09/23/2004	42.2	
105-GSED-C05-1.0	K2407209-007	09/15/2004	09/17/2004	09/23/2004	40.0	
105-GSED-C05-2.0	K2407209-008	09/15/2004	09/17/2004	09/23/2004	51.9	
105-GSED-C05-3.0	K2407209-009	09/15/2004	09/17/2004	09/23/2004	77.5	
108-GSED-C02-0.5	K2407209-011	09/16/2004	09/17/2004	09/23/2004	43.5	
108-GSED-C02-1.0	K2407209-012	09/16/2004	09/17/2004	09/23/2004	44.6	
108-GSED-C02-2.0	K2407209-013	09/16/2004	09/17/2004	09/23/2004	51.7	
108-GSED-C02-3.0	K2407209-014	09/16/2004	09/17/2004	09/23/2004	57.7	
108-GSED-C02-1.0D	K2407209-015	09/16/2004	09/17/2004	09/23/2004	46.3	
109-GSED-C01-0.5	K2407209-016	09/16/2004	09/17/2004	09/23/2004	43.4	
109-GSED-C01-1.0	K2407209-017	09/16/2004	09/17/2004	09/23/2004	46.0	
109-GSED-C01-2.0	K2407209-018	09/16/2004	09/17/2004	09/23/2004	54.5	
110-GSED-C01A-0.5	K2407209-019	09/16/2004	09/17/2004	09/23/2004	60.6	
110-GSED-C01A-1.0	K2407209-020	09/16/2004	09/17/2004	09/23/2004	64.7	
110-GSED-C01A-2.0	K2407209-021	09/16/2004	09/17/2004	09/23/2004	82.0	
101-GSED-C09-2.0D	K2407209-023	09/14/2004	09/17/2004	09/23/2004	46.9	

Client:	Geomatrix Consultants	**Service Request:**	K2407209
Project:	9329.000	**Date Collected:**	09/15/2004
Sample Matrix:	Soil	**Date Received:**	09/17/2004
		Date Analyzed:	09/23/2004

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
107-GSED-C32-0.5	K2407209-002	40.6	40.3	40.5	<1	

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004
Date Analyzed: 09/23/2004

Duplicate Sample Summary
Total Solids

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

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
108-GSED-C02-0.5	K2407209-011	43.5	43.5	43.5	<1	

Client:	Geomatrix Consultants	**Service Request:**	K2407209
Project:	9329.000	**Date Collected:**	09/16/2004
Sample Matrix:	Soil	**Date Received:**	09/17/2004
		Date Analyzed:	09/23/2004

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
110-GSED-C01A-1.0	K2407209-020	64.7	65.6	65.2	1	

Group ID:	KWG0414461		
Analyst:	RMcKee	**Reviewed By:**	MA FH
Date Acquired:	09/23/2004 17:09	**Oven TempStart:**	103 DEG C
Date Completed:	09/24/2004 07:49	**Oven TempEnd:**	104 DEG C
		Date Reviewed:	9/24/04

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
27	K2407206-010	WCP070	SOIL	1.24g	10.42g	9.02g	84.7		
28	K2407206-011	WCP071	SOIL	1.23g	7.89g	6.51g	79.3		
29	K2407206-012	WCP072	SOIL	1.23g	10.47g	9.81g	92.9		
30	K2407206-013	WCP073	SOIL	1.24g	12.05g	10.75g	88.0		
31	K2407206-016	WCP076	SOIL	1.23g	11.80g	11.12g	93.6		
32	K2407206-017	WCP077	SOIL	1.21g	14.00g	12.77g	90.4		
33	K2407206-018	WCP078	SOIL	1.21g	9.54g	8.35g	85.7		
34	K2407206-019	WCP079	SOIL	1.22g	13.97g	11.43g	80.1		
35	K2407206-020	WCP080	SOIL	1.21g	16.97g	14.26g	82.8		
36	K2407206-021	WCP081	SOIL	1.23g	12.88g	11.02g	84.0		
37	K2407206-022	WCP082	SOIL	1.24g	11.22g	10.55g	93.3		
38	K2407206-023	WCP083	SOIL	1.22g	13.85g	11.56g	81.9		
39	K2407206-024	WCP084	SOIL	1.23g	12.56g	11.92g	94.4		
40	K2407206-025	WCP085	SOIL	1.23g	13.37g	11.48g	84.4		
41	K2407209-002	107-GSED-C32-0.5	SOIL	1.21g	13.85g	6.34g	40.6		
42	K2407209-003	107-GSED-C32-1.0	SOIL	1.22g	11.22g	5.88g	46.6		
43	K2407209-004	107-GSED-C32-2.0	SOIL	1.23g	12.82g	7.58g	54.8		
44	K2407209-005	107-GSED-C32-3.0	SOIL	1.23g	14.93g	9.04g	57.0		
45	K2407209-006	105-GSED-C05-0.5	SOIL	1.22g	14.91g	7.00g	42.2		
46	K2407209-007	105-GSED-C05-1.0	SOIL	1.23g	17.89g	7.89g	40.0		
47	K2407209-008	105-GSED-C05-2.0	SOIL	1.23g	16.56g	9.18g	51.9		
48	K2407209-009	105-GSED-C05-3.0	SOIL	1.23g	19.18g	15.15g	77.5		
49	K2407209-011	108-GSED-C02-0.5	SOIL	1.23g	15.33g	7.37g	43.5		
50	K2407209-012	108-GSED-C02-1.0	SOIL	1.23g	13.50g	6.70g	44.6		
51	K2407209-013	108-GSED-C02-2.0	SOIL	1.24g	13.87g	7.77g	51.7		
52	K2407209-014	108-GSED-C02-3.0	SOIL	1.22g	14.86g	9.09g	57.7		
53	K2407209-015	108-GSED-C02-1.0D	SOIL	1.23g	13.98g	7.13g	46.3		
54	K2407209-016	109-GSED-C01-0.5	SOIL	1.23g	16.31g	7.78g	43.4		
55	K2407209-017	109-GSED-C01-1.0	SOIL	1.23g	16.25g	8.14g	46.0		
56	K2407209-018	109-GSED-C01-2.0	SOIL	1.22g	18.43g	10.60g	54.5		
57	K2407209-019	110-GSED-C01A-0.5	SOIL	1.22g	27.00g	16.84g	60.6		

Group ID:	KWG0414461		
Analyst:	RMcKee	**Reviewed By:**	MM FH
Date Acquired:	09/23/2004 17:09	**Oven TempStart:**	103 DEG C
Date Completed:	09/24/2004 07:49	**Oven TempEnd:**	104 DEG C
		Date Reviewed:	9/24/04

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
58	K2407209-020	110-GSED-C01A-1.0	SOIL	1.23g	13.40g	9.10g	64.7		
59	K2407209-021	110-GSED-C01A-2.0	SOIL	1.23g	13.63g	11.40g	82.0		
60	K2407209-023	101-GSED-C09-2.0D	SOIL	1.22g	13.45g	6.95g	46.9		
61	K2407236-001	ES3-16-0-PCBA	SOIL	1.21g	7.48g	7.38g	98.4		
62	K2407245-001	Compost (mixed 8-20)	SLUDGE	1.21g	4.91g	2.79g	42.7		
63	K2407248-001	S-1 Sediments I	SEDIMENT	1.23g	15.80g	11.03g	67.3		
64	K2407248-002	S-1 Sediments II	SEDIMENT	1.21g	20.89g	15.46g	72.4		
65	K2407248-003	S-1 Sediments III	SEDIMENT	1.22g	10.85g	7.25g	62.6		
66	K2407248-008	S-2 Sediments I	SEDIMENT	1.23g	23.06g	18.00g	76.8		
67	K2407248-009	S-2 Sediments II	SEDIMENT	1.23g	24.52g	19.12g	76.8		
68	K2407248-010	S-2 Sediments III	SEDIMENT	1.22g	25.88g	20.26g	77.2		
69	K2407248-017	S-3 Sediments I	SEDIMENT	1.23g	15.91g	8.66g	50.6		
70	K2407248-018	S-3 Sediments II	SEDIMENT	1.23g	15.71g	8.51g	50.3		
71	K2407248-019	S-3 Sediments III	SEDIMENT	1.24g	11.10g	6.24g	50.7		
72	K2407248-030	S-4 Sediments I	SEDIMENT	1.22g	35.09g	28.24g	79.8		
73	K2407248-031	S-4 Sediments II	SEDIMENT	1.22g	24.34g	19.62g	79.6		
74	K2407248-032	S-4 Sediments III	SEDIMENT	1.22g	28.42g	23.43g	81.7		
75	K2407248-035	S-5N Sediments I	SEDIMENT	1.23g	12.36g	8.47g	65.0		
76	K2407248-036	S-5N Sediments II	SEDIMENT	1.23g	17.33g	13.11g	73.8		
77	K2407248-037	S-5N Sediments III	SEDIMENT	1.23g	21.73g	15.98g	72.0		
78	K2407248-038	S-5S Sediments I	SEDIMENT	1.22g	18.04g	12.01g	64.1		
79	K2407248-039	S-5S Sediments II	SEDIMENT	1.23g	21.48g	14.53g	65.7		
80	K2407248-040	S-5S Sediments III	SEDIMENT	1.23g	15.04g	10.23g	65.2		
81	KWG0414461-1	Duplicate Client Sample	SOIL	1.23g	8.18g	7.23g	86.3	K2407206-001	
82	KWG0414461-10	Duplicate Client Sample	SEDIMENT	1.21g	33.35g	27.10g	80.6	K2407156-001	
83	KWG0414461-11	Triplicate Client Sample	SEDIMENT	1.21g	35.62g	29.30g	81.6	K2407156-001	
84	KWG0414461-12	Duplicate Client Sample	SEDIMENT	1.21g	23.09g	14.74g	61.8	K2407156-010	
85	KWG0414461-13	Triplicate Client Sample	SEDIMENT	1.21g	23.33g	14.87g	61.8	K2407156-010	
86	KWG0414461-2	Duplicate Client Sample	SOIL	1.23g	11.20g	9.66g	84.6	K2407206-010	
87	KWG0414461-3	Duplicate Client Sample	SOIL	1.23g	11.88g	10.09g	83.2	K2407206-020	
88	KWG0414461-4	Duplicate Client Sample	SOIL	1.23g	13.75g	6.28g	40.3	K2407209-002	

Group ID:	KWG0414461				
Analyst:	RMcKee			**Reviewed By:**	
Date Acquired:	09/23/2004 17:09	**Oven TempStart:**	103 DEG C	**Date Reviewed:**	9/24/04
Date Completed:	09/24/2004 07:49	**Oven TempEnd:**	104 DEG C		

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
89	KWG0414461-5	Duplicate Client Sample	SOIL	1.23g	14.94g	7.19g	43.5	K2407209-011	
90	KWG0414461-6	Duplicate Client Sample	SOIL	1.22g	12.55g	8.65g	65.6	K2407209-020	
91	KWG0414461-7	Duplicate Client Sample	SEDIMENT	1.22g	14.40g	10.02g	66.8	K2407248-001	
92	KWG0414461-8	Duplicate Client Sample	SEDIMENT	1.21g	13.63g	7.45g	50.2	K2407248-019	
93	KWG0414461-9	Duplicate Client Sample	SOIL	1.21g	7.47g	7.37g	98.4	K2407236-001	

COLUMBIA ANALYTICAL SERVICES, INC.

EPA Method 160.3 - Total Solids

Group ID:	KWG0414461				
Analyst:	RMcKee			**Reviewed By:**	MJ 5th
Date Acquired:	09/23/2004 17:09	**Oven TempStart:**	103 DEG C	**Date Reviewed:**	9/24/04
Date Completed:	09/24/2004 07:49	**Oven TempEnd:**	104 DEG C		

#	Lab Code	Client ID	Matrix	Tare	Tare+Wet	Tare+Dry	% Solids	QC Ref Sample	Comments
1	K2407143-018	106GSED-C31-2.0D	SOIL	1.22g	13.91g	7.93g	52.9		
2	K2407156-001	LW2-G217	SEDIMENT	1.20g	33.87g	28.75g	84.3		
3	K2407156-002	LW2-G233	SEDIMENT	1.21g	29.45g	17.54g	57.8		
4	K2407156-003	LW2-G249	SEDIMENT	1.21g	28.42g	19.03g	65.5		
5	K2407156-004	LW2-G520	SEDIMENT	1.21g	24.43g	10.87g	41.6		
6	K2407156-005	LW2-G260	SEDIMENT	1.21g	33.07g	23.94g	71.3		
7	K2407156-006	LW2-G268	SEDIMENT	1.21g	25.79g	12.98g	47.9		
8	K2407156-007	LW2-G318	SEDIMENT	1.20g	23.34g	14.62g	60.6		
9	K2407156-008	LW2-G320	SEDIMENT	1.20g	25.40g	16.38g	62.7		
10	K2407156-009	LW2-G323	SEDIMENT	1.21g	29.87g	22.73g	75.1		
11	K2407156-010	LW2-G327	SEDIMENT	1.21g	24.11g	15.35g	61.7		
12	K2407156-011	LW2-G331	SEDIMENT	1.23g	33.64g	24.26g	71.1		
13	K2407156-012	LW2-G333	SEDIMENT	1.21g	32.65g	20.07g	60.0		
14	K2407156-013	LW2-G335	SEDIMENT	1.22g	31.70g	22.70g	70.5		
15	K2407156-014	LW2-G336	SEDIMENT	1.21g	29.54g	20.30g	67.4		
16	K2407156-015	LW2-G348	SEDIMENT	1.21g	27.30g	17.52g	62.5		
17	K2407156-016	LW2-G350	SEDIMENT	1.21g	25.60g	13.42g	50.1		
18	K2407206-001	WCP061	SOIL	1.23g	7.57g	6.72g	86.6		
19	K2407206-002	WCP062	SOIL	1.23g	9.40g	8.43g	88.1		
20	K2407206-003	WCP063	SOIL	1.22g	10.18g	8.99g	86.7		
21	K2407206-004	WCP064	SOIL	1.23g	16.53g	11.56g	67.5		
22	K2407206-005	WCP065	SOIL	1.24g	11.95g	10.41g	85.6		
23	K2407206-006	WCP066	SOIL	1.23g	9.74g	8.98g	91.1		
24	K2407206-007	WCP067	SOIL	1.22g	12.11g	11.00g	89.8		
25	K2407206-008	WCP068	SOIL	1.23g	9.35g	7.48g	77.0		
26	K2407206-009	WCP069	SOIL	1.23g	9.83g	8.70g	86.9		

General Chemistry Parameters

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Geomatrix Consultants
Project Name : NA
Project Number : 9329.000
Sample Matrix : WATER

Service Request : K2407209
Date Collected : 09/14/04
Date Received : 09/17/04

Carbon, Total Organic

Units : mg/L (ppm)
Basis : NA

Analysis Method 415.1
Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
RB-1	K2407209-001	0.5	0.07	1	09/23/04	0.6	
Method Blank	K2407209-MB	0.5	0.07	1	09/23/04	ND	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Geomatrix Consultants
Project Name : NA
Project Number : 9329.000
Sample Matrix : WATER

Service Request : K2407209
Date Collected : 09/14/04
Date Received : 09/17/04
Date Extracted : NA
Date Analyzed : 09/23/04

Duplicate Summary
Inorganic Parameters

Sample Name : RB-1
Lab Code : K2407209-001DUP
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	415.1	0.5	0.6	0.6	0.6	<1	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Geomatrix Consultants
Project Name : NA
Project Number : 9329.000
Sample Matrix : WATER

Service Request : K2407209
Date Collected : 09/14/04
Date Received : 09/17/04
Date Extracted : NA
Date Analyzed : 09/23/04

Matrix Spike Summary
Inorganic Parameters

Sample Name : RB-1
Lab Code : K2407209-001MS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	415.1	0.5	25.0	0.6	25.4	99	76-121	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Geomatrix Consultants	**Service Request :**	K2407209
Project Name :	NA	**Date Collected :**	NA
Project Number :	9329.000	**Date Received :**	NA
Sample Matrix :	WATER	**Date Extracted :**	NA
		Date Analyzed :	09/23/04

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/L (ppm)
Lab Code :	K2407209-LCS	Basis :	NA
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	None	415.1	30.1	31.1	103	92-106	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Geomatrix Consultants
Project : NA

Service Request : K2407209
Date Collected : NA
Date Received : NA

Carbon, Total Organic
EPA Method 415.1
Units: mg/L (ppm)

CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CCV1 Result	09/23/04	25.0	26.3	105
CCV2 Result	09/23/04	25.0	26.0	104
CCV3 Result	09/23/04	25.0	25.4	102
CCV4 Result	09/23/04	25.0	25.2	101
CCV5 Result	09/23/04	25.0	25.8	103
CCV6 Result	09/23/04	25.0	24.8	99
CCV7 Result	09/23/04	25.0	24.9	100
CCV8 Result	09/23/04	25.0	26.0	104

CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CCB1 Result	09/23/04	0.5	ND
CCB2 Result	09/23/04	0.5	ND
CCB3 Result	09/23/04	0.5	ND
CCB4 Result	09/23/04	0.5	ND
CCB5 Result	09/23/04	0.5	ND
CCB6 Result	09/23/04	0.5	ND
CCB7 Result	09/23/04	0.5	ND
CCB8 Result	09/23/04	0.5	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Geomatrix Consultants
Project Name : NA
Project Number : 9329.000
Sample Matrix : SOIL

Service Request : K2407209
Date Collected : 09/14-16/04
Date Received : 09/17/04

Carbon, Total Organic

Units : Percent
Basis : Dry

Analysis Method ASTM D4129-82M
Test Notes :

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
107-GSED-C32-0.5	K2407209-002	0.05	0.02	1	09/28/04	9.21	
107-GSED-C32-1.0	K2407209-003	0.05	0.02	1	09/28/04	6.36	
107-GSED-C32-2.0	K2407209-004	0.05	0.02	1	09/28/04	4.18	
107-GSED-C32-3.0	K2407209-005	0.05	0.02	1	09/28/04	3.88	
105-GSED-C05-0.5	K2407209-006	0.05	0.02	1	09/28/04	10.1	
105-GSED-C05-1.0	K2407209-007	0.05	0.02	1	09/28/04	17.4	
105-GSED-C05-2.0	K2407209-008	0.05	0.02	1	09/28/04	9.47	
105-GSED-C05-3.0	K2407209-009	0.05	0.02	1	09/28/04	1.11	
108-GSED-C02-0.5	K2407209-011	0.05	0.02	1	09/28/04	7.25	
108-GSED-C02-1.0	K2407209-012	0.05	0.02	1	09/28/04	7.04	
108-GSED-C02-2.0	K2407209-013	0.05	0.02	1	09/28/04	4.67	
108-GSED-C02-3.0	K2407209-014	0.05	0.02	1	09/28/04	5.19	
108-GSED-C02-1.0D	K2407209-015	0.05	0.02	1	09/28/04	6.72	
109-GSED-C01-0.5	K2407209-016	0.05	0.02	1	09/28/04	6.73	
109-GSED-C01-1.0	K2407209-017	0.05	0.02	1	09/28/04	5.91	
109-GSED-C01-2.0	K2407209-018	0.05	0.02	1	09/28/04	4.57	
110-GSED-C01A-0.5	K2407209-019	0.05	0.02	1	09/28/04	2.51	
110-GSED-C01A-1.0	K2407209-020	0.05	0.02	1	09/28/04	1.03	
110-GSED-C01A-2.0	K2407209-021	0.05	0.02	1	09/28/04	0.28	
101-GSED-C09-2.0D	K2407209-023	0.05	0.02	1	09/28/04	13.7	
Method Blank	K2407209-MB	0.05	0.02	1	09/28/04	ND	

M Modified for analysis of soil.

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Geomatrix Consultants	**Service Request :**	K2407209
Project Name :	NA	**Date Collected :**	09/15/04
Project Number :	9329.000	**Date Received :**	09/17/04
Sample Matrix :	SOIL	**Date Extracted :**	NA
		Date Analyzed :	09/28/04

Duplicate Summary
Inorganic Parameters

Sample Name : 107-GSED-C32-2.0
Lab Code : K2407209-004DUP
Test Notes :

Units : Percent
Basis : Dry

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	4.18	3.82	4.00	9	

M Modified for analysis of soil.

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Geomatrix Consultants
Project Name : NA
Project Number : 9329.000
Sample Matrix : SOIL

Service Request : K2407209
Date Collected : 09/15/04
Date Received : 09/17/04
Date Extracted : NA
Date Analyzed : 09/28/04

Matrix Spike Summary
Inorganic Parameters

Sample Name : 107-GSED-C32-2.0
Lab Code : K2407209-004MS
Test Notes :

Units : Percent
Basis : Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Resul Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	5.73	4.18	10.0	102	75-125	

M Modified for analysis of soil.

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	Geomatrix Consultants	**Service Request :**	K2407209
Project Name :	NA	**Date Collected :**	NA
Project Number :	9329.000	**Date Received :**	NA
Sample Matrix :	SOIL	**Date Extracted :**	NA
		Date Analyzed :	09/28/04

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	Percent
Lab Code :	K2407209-LCS	Basis :	Dry
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	None	ASTM D4129-82M	0.75	0.80	107	85-115	

M Modified for analysis of soil.

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Geomatrix Consultants
Project Name : NA
Project Number : 9329.000
Sample Matrix : SOIL

Service Request : K2407209
Date Collected : NA
Date Received : NA
Date Extracted : NA
Date Analyzed : 09/28/04

Duplicate Summary
Inorganic Parameters

Sample Name : 109-GSED-C01-2.0
Lab Code : K2407209-018DUP
Test Notes :

Units : PERCENT
Basis : Dry

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	4.57	4.37	4.47	4	

M Modified for analysis of soil.

Report By:PWiest

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Geomatrix Consultants
Project Name : NA
Project Number : 9329.000
Sample Matrix : SOIL

Service Request : K2407209
Date Collected : NA
Date Received : NA
Date Extracted : NA
Date Analyzed : 09/28/04

Matrix Spike Summary
Inorganic Parameters

Sample Name : 109-GSED-C01-2.0
Lab Code : K2407209-018MS
Test Notes :

Units : PERCENT
Basis : Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	7.56	4.57	12.2	101	75-125	

M Modified for analysis of soil.

Report By:PWiest

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Geomatrix Consultants
Project : NA

Service Request : K2407209
Date Collected : NA
Date Received : NA

Carbon, Total Organic
ASTM D4129-82M
Units: Percent

CONTINUING CALIBRATION VERIFICATION (CCV)

	Date Analyzed	True Value	Measured Value	Percent Recovery
CCV1 Result	09/28/04	20.0	19.1	96
CCV2 Result	09/28/04	20.0	19.3	97
CCV3 Result	09/28/04	20.0	19.4	97
CCV4 Result	09/28/04	20.0	19.1	96
CCV5 Result	09/28/04	20.0	19.6	98
CCV6 Result	09/28/04	20.0	19.7	99

CONTINUING CALIBRATION BLANK (CCB)

	Date Analyzed	MRL	Blank Value
CCB1 Result	09/28/04	0.05	ND
CCB2 Result	09/28/04	0.05	ND
CCB3 Result	09/28/04	0.05	ND
CCB4 Result	09/28/04	0.05	ND
CCB5 Result	09/28/04	0.05	ND
CCB6 Result	09/28/04	0.05	ND

Work Request #: Original 7267 7209 7160 7253 7252 7219

Tier: III III IIA IIA IIA II

Date Analyzed: 9/23/04

Analyst: SP

Analysis: TOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.		Is the method name and number correct and appropriate?	(yes)/no/NA
2.		Holding times met for all analyses and for all samples?	(yes)/no/NA
3.		Are calculations correct?	(yes)/no/NA
4.		Is the reporting basis correct? (Dry Weight)	yes/no/(NA)
5.		All quality control criteria met?	(yes)/no/NA
	a.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/(NA)
	b.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	(yes)/no/NA
	c.	Are ICVs, CCVs, and CCBs all within acceptance limits?	(yes)/no/NA
	d.	Are results for methods blanks all ND?	(yes)/no/NA
	e.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	(yes)/no/NA
	f.	Are all exceptions explained?	yes/no/(NA)
6.		Are all service requests that apply attached?	(yes)/no/NA
7.		Are all samples labelled correctly?	(yes)/no/NA
8.		Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample)	(yes)/no/NA
9.		Are detection limits and units reported correctly?	(yes)/no/NA
10.		Are proper Analysis/Extraction stickers included on report?	(yes)/no/NA
11.		Is the unused space on the benchsheet crossed out?	(yes)/no/NA
12.		Was analysis turned in by the due date? (n-2) (If not record SR#)	(yes)/no/NA

COMMENTS:

Final Approved by: [signature] Date: 9/23/04

DQREPORT

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Batch
KA0404215

Service Request #:
Analysis For: Total Organic Carbon
Instrument: A B

Matrix: Water
Method:Oxidation EPA 415.1/9060

Printout SPL#	CBA	2	3	4	5
Sample Number	RB	ICV	ICB	CCV-1	CCB-1
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	0.00100	21.65400	0.12000	26.45300	0.09900
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	-0.15245	21.50055	-0.03345	26.29955	-0.05445
TOC mg/L	**<0.5**	**21.5**	**<0.5**	**26.3**	**<0.5**
		%REC=108 ✓		%REC=105 ✓	

Printout SPL#	6	7	8	9	10
Sample Number	MB-1	LCS-1	7267-1	7267-2	7267-3
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	0.10100	31.20600	2.44700	11.07100	6.37200
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	-0.05245	31.05255	2.29355	10.91755	6.21855
TOC mg/L	**<0.5**	**31.1**	**2.3**	**10.9**	**6.2**
		%REC=103 ✓			

Printout SPL#	11	12	13	14	15
Sample Number	7267-4	7267-5	7267-6	RB	RB
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	8.23200	8.53600	2.45300	0.19400	0.12500
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	8.07855	8.38255	2.29955	0.04055	-0.02845
TOC mg/L	**8.1**	**8.4**	**2.3**	**<0.5**	**<0.5**

ICV = 20.0 (Ref.#TOC1-55-L)
LCS =30.1 ppm APG 4012 Lot #37720 (REF#TOC1-06-D)
CCV = 25.0 (Ref.#TOC1-45-Y)
Spike: 0.05 ml if 5000 ppm stock ---> 10.0 mls solution =25.0 x Dilution Factor (Ref.# TOC1-21-J)

Comments:

Analyst SR
Approved by

Date Analyzed 9/23/04
Date 9/24/04
Date 9/25/04

9-24-04

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request #:
Analysis For: Total Organic Carbon
Instrument: A B

Matrix: Water
Method: Oxidation EPA 415.1

Printout SPL#	16	17	18	19	20
Sample Number	CCV-2	CCB-2	7267-7	7267-7D	7267-7MS
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	26.11700	0.14300	2.08400	2.03100	27.89000
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	25.96355	-0.01045	1.93055	1.87755	27.73655
TOC mg/L	**26.0**	**<0.5**	**1.9**	**1.9**	**27.7**
	%REC=104		X=1.9 RPD=<1		%REC=103

Printout SPL#	21	22	23	24	25
Sample Number	RB	RB	7267-8	7267-9	7267-10
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	0.15500	0.14200	2.29500	6.81600	7.49100
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	0.00155	-0.01145	2.14155	6.66255	7.33755
TOC mg/L	**<0.5**	**<0.5**	**2.1**	**6.7**	**7.3**

Printout SPL#	26	27	28	29	30
Sample Number	7267-11	RB	CCV-3	CCB-3	7267-12
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	2.43400	0.17700	25.52500	0.18000	2.06900
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	2.28055	0.02355	25.37155	0.02655	1.91555
TOC mg/L	**2.3**	**<0.5**	**25.4**	**<0.5**	**1.9**
			%REC=102		

Printout SPL#	31	32	33	34	35
Sample Number	RB	7209-1	7209-1D	7209-1MS	RB
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	0.12000	0.75500	0.75700	25.54000	0.16200
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	-0.03345	0.60155	0.60355	25.38655	0.00855
TOC mg/L	**<0.5**	**0.6**	**0.6**	**25.4**	**<0.5**
		X=0.6 RPD=<1		%REC=99	

Printout SPL#	36	37	38	39	40
Sample Number	RB	7160-1	7160-1D	RB	CCV-4
Dilution Factor	1	2	2	1	1
Solution Conc., mg/L	0.12300	4.23200	4.38800	0.16200	25.33700
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	-0.03045	4.07855	4.23455	0.00855	25.18355
TOC mg/L	**<0.5**	**8.2**	**8.5**	**<0.5**	**25.2**
		X=8.4 RPD=4			%REC=101

Comments:

Analyst SP	Date Analyzed 9/23/04
Approved by	Date 9/24/04
	Date 9/25/04

9-24-04

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request #: 0 Matrix: Water

Analysis For: Total Organic Carbon Method:Oxidation EPA 415.1

Instrument: A B

Printout SPL#	41	42	43	44	45
Sample Number	CCB-4	MB-2	LCS-2	7160-1MS	RB
Dilution Factor	1	1	1	2	1
Solution Conc., mg/L	0.13500	0.17000	31.30600	29.82700	0.14400
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	-0.01845	0.01655	31.15255	29.67355	-0.00945
TOC mg/L	**<0.5**	**<0.5**	**31.2**	**59.3**	**<0.5**
			%REC=104	%REC=102	

Printout SPL#	46	47	48	49	50
Sample Number	RB	7160-2	7160-3	7160-4	7160-5
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	0.12400	3.57000	3.55500	8.21800	6.20500
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	-0.02945	3.41655	3.40155	8.06455	6.05155
TOC mg/L	**<0.5**	**3.4**	**3.4**	**8.1**	**6.1**

Printout SPL#	51	52	53	54	55
Sample Number	RB	CCV-5	CCB-5	7160-6	7160-7
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	0.16100	25.97300	0.12700	5.48200	4.59900
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	0.00755	25.81955	-0.02645	5.32855	4.44555
TOC mg/L	**<0.5**	**25.8**	**<0.5**	**5.3**	**4.4**
		%REC=103			

Printout SPL#	56	57	58	59	60
Sample Number	7160-10	RB	7219-1	7219-1D	7219-1MS
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	3.50800	0.18400	1.75700	1.72800	27.90500
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	3.35455	0.03055	1.60355	1.57455	27.75155
TOC mg/L	**3.4**	**<0.5**	**1.6**	**1.6**	**27.8**
			X=1.6 RPD=<1		%REC=105

Printout SPL#	61	62	63	64	65
Sample Number	RB	RB	RB	CCV-6	CCB-6
Dilution Factor	1	1	1	1	1
Solution Conc., mg/L	0.16100	0.16000	0.12700	24.96300	0.13500
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	0.00755	0.00655	-0.02645	24.80955	-0.01845
TOC mg/L	**<0.5**	**<0.5**	**<0.5**	**24.8**	**<0.5**
				%REC=99	

Comments:

Analyst SP	Date Analyzed 9/23/04
Approved by	Date 9/24/04
	Date 9/23/04

9-24-04

COLUMBIA ANALYTICAL SERVICES, INC.

Service Request #: 0 Matrix: Water

Analysis For: Total Organic Carbon Method:Oxidation EPA 415.1 / 9060

Instrument: A B

Printout SPL#	66	67	68	69	70
Sample Number	7219-2	7219-3	7219-4	7219-5	7219-6
Dilution Factor	1	1	1	1	1
Solution Conc. , mg/L	1.63700	1.22800	0.88100	0.88700	0.87500
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	1.48355	1.07455	0.72755	0.73355	0.72155
TOC mg/L	**1.5**	**1.1**	**0.7**	**0.7**	**0.7**

Printout SPL#	71	72	73	74	75
Sample Number	RB	7253-1	7253-1D	RB	RB
Dilution Factor	1	2	2	1	1
Solution Conc. , mg/L	0.11700	7.90400	7.92700	0.21900	0.19300
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	-0.03645	7.75055	7.77355	0.06555	0.03955
TOC mg/L	**<0.5**	**15.5**	**15.5**	**<0.5**	**<0.5**

X=15.5 RPD=<1

Printout SPL#	76	77	78	79	80
Sample Number	CCV-7	CCB-7	7253-1MS	RB	RB
Dilution Factor	1	1	2	1	1
Solution Conc. , mg/L	25.08300	0.13100	33.67100	0.18600	0.16900
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	24.92955	-0.02245	33.51755	0.03255	0.01555
TOC mg/L	**24.9**	**<0.5**	**67.0**	**<0.5**	**<0.5**

%REC=100 %REC=103

Printout SPL#	81	82	83	84	85
Sample Number	7253-2	7252-1	7252-1D	7252-1MS	RB
Dilution Factor	2	1	1	1	1
Solution Conc., mg/L	6.77900	5.58900	5.63300	31.06700	0.31700
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	6.62555	5.43555	5.47955	30.91355	0.16355
TOC mg/L	**13.3**	**5.4**	**5.5**	**30.9**	**<0.5**

X=5.5 RPD=2 %REC=102

Printout SPL#	86	87	88	89	90
Sample Number	RB	CCV-8	CCB-8		
Dilution Factor	1	1	1	1	1
Solution Conc. , mg/L	0.17900	26.14000	0.14800		
Blank Correction, mg/L	0.15345	0.15345	0.15345	0.15345	0.15345
Net mg/L	0.02555	25.98655	-0.00545	-0.15345	-0.15345
TOC mg/L	**<0.5**	**26.0**	**<0.5**	**<0.5**	**<0.5**

%REC=104

Comments:

Analyst SP	Date Analyzed 9/23/04
Approved by	Date 9/24/04
	Date 9/25/04

9-24-04

Pos/ Vial	Run Type	Rep #	Run Date	Run Time	Data Filename	TIC Area (cts)	TIC Mass (ugC)	TIC Conc (ppm)	TOC Area (cts)	TOC Mass (ugC)	TOC Conc (ppm)	TC Area (cts)	TC Mass (ugC)	TC Conc (ppm)
1	Spl	1	23Sep2004	13:41	92304000	B	-	-	236	0.003	0.002	-	-	-
2	Spl	1	23Sep2004	13:51	92304001	ICV	-	-	33696	43.092	21.604	-	-	-
3	Spl	1	23Sep2004	14:02	92304002	ICB	-	-	419	0.238	0.120	-	-	-
4	Chk1	1	23Sep2004	14:13	92304003	CCV-1	-	-	41752	52.042	26.454	-	-	-
5	Spl	1	23Sep2004	14:23	92304004	CCB-1	-	-	387	0.197	0.099	-	-	-
6	Spl	1	23Sep2004	14:34	92304005	MB-1	-	-	390	0.201	0.101	-	-	-
7	Spl	1	23Sep2004	14:44	92304006	LCS-1	-	-	48455	62.099	31.206	-	-	-
8	Spl	1	23Sep2004	14:55	92304007	72607-1	-	-	4016	4.870	2.447	-	-	-
9	Spl	1	23Sep2004	15:06	92304008	72607-2	-	-	17341	22.030	11.071	-	-	-
10	Spl	1	23Sep2004	15:16	92304009	72607-3	-	-	10080	12.680	6.372	-	-	-
11	Spl	1	23Sep2004	15:27	92304010	72607-4	-	-	12954	16.381	8.233	-	-	-
12	Spl	1	23Sep2004	15:38	92304011	72607-5	-	-	13425	16.987	8.538	-	-	-
13	Spl	1	23Sep2004	15:48	92304012	72607-6	-	-	4024	4.881	2.453	-	-	-
14	Spl	1	23Sep2004	15:59	92304013	B	-	-	534	0.386	0.194	-	-	-
15	Spl	1	23Sep2004	16:09	92304014	B	-	-	427	0.249	0.125	-	-	-
16	Chk1	1	23Sep2004	16:20	92304015	CCV-2	-	-	41233	51.973	26.117	-	-	-
17	Spl	1	23Sep2004	16:31	92304016	CCB-2	-	-	455	0.285	0.143	-	-	-
18	Spl	1	23Sep2004	16:41	92304017	72607-7	-	-	3455	4.143	2.084	-	-	-
19	Spl	1	23Sep2004	16:52	92304018	72607-7D	-	-	3373	4.042	2.031	-	-	-
20	Spl	1	23Sep2004	17:03	92304019	72607-7MS	-	-	43331	55.500	27.890	-	-	-
21	Spl	1	23Sep2004	17:13	92304020	B	-	-	474	0.309	0.155	-	-	-
22	Spl	1	23Sep2004	17:24	92304021	B	-	-	453	0.282	0.142	-	-	-
23	Spl	1	23Sep2004	17:34	92304022	72607-8	-	-	3781	4.568	2.296	-	-	-
24	Spl	1	23Sep2004	17:45	92304023	72607-9	-	-	10767	13.564	6.816	-	-	-
25	Spl	1	23Sep2004	17:56	92304024	72607-10	-	-	11810	14.908	7.491	-	-	-
26	Spl	1	23Sep2004	18:06	92304025	72607-11	-	-	3995	4.843	2.434	-	-	-
27	Spl	1	23Sep2004	18:17	92304026	B	-	-	508	0.353	0.177	-	-	-
28	Chk1	1	23Sep2004	18:28	92304027	CCV-3	-	-	40318	50.795	25.525	-	-	-
29	Spl	1	23Sep2004	18:38	92304028	CCB-3	-	-	512	0.358	0.180	-	-	-
30	Spl	1	23Sep2004	18:49	92304029	72607-12	-	-	3432	4.118	2.069	-	-	-
31	Spl	1	23Sep2004	18:59	92304030	B	-	-	426	0.248	0.125	-	-	-

32	Spl	1	23Sep2004	19:10	92304031	7209-1	-	-	1400	1.502	0.755	-	-	-
33	Spl	1	23Sep2004	19:21	92304032	7209-1D	-	-	1404	1.507	0.757	-	-	-
34	Spl	1	23Sep2004	19:31	92304033	7209-1MS	-	-	39700	50.824	25.540	-	-	-
35	Spl	1	23Sep2004	19:42	92304034	B	-	-	-	484	0.322	0.162	-	-	-
36	Spl	1	23Sep2004	19:52	92304035	B	-	-	-	424	0.245	0.123	-	-	-
37	Spl	1	23Sep2004	20:03	92304036	7160-1	5/10	-	6774	8.422	4.232	-	-	-
38	Spl	1	23Sep2004	20:14	92304037	7160-1D	5/10	-	7014	8.731	4.388	-	-	-
39	Spl	1	23Sep2004	20:24	92304038	B	-	-	-	484	0.322	0.162	-	-	-
40	Chkl	1	23Sep2004	20:35	92304039	CCV-4	-	-	40028	50.422	25.337	-	-	-
41	Spl	1	23Sep2004	20:45	92304040	CCB-4	-	-	442	0.268	0.135	-	-	-
42	Spl	1	23Sep2004	20:56	92304041	MB-2	-	-	497	0.339	0.170	-	-	-
43	Spl	1	23Sep2004	21:07	92304042	LCS-2	-	-	48610	62.299	31.306	-	-	-
44	Spl	1	23Sep2004	21:17	92304043	7160-1MS	5/10	-	46325	59.356	29.827	-	-	-
45	Spl	1	23Sep2004	21:28	92304044	B	-	-	-	457	0.287	0.144	-	-	-
46	Spl	1	23Sep2004	21:39	92304045	B	-	-	-	426	0.247	0.124	-	-	-
47	Spl	1	23Sep2004	21:49	92304046	7160-2	-	-	5751	7.105	3.570	-	-	-
48	Spl	1	23Sep2004	22:00	92304047		-3	-	5728	7.075	3.555	-	-	-
49	Spl	1	23Sep2004	22:10	92304048		-4	-	12933	16.354	8.218	-	-	-
50	Spl	1	23Sep2004	22:21	92304049		-5	-	9823	12.349	6.205	-	-	-
51	Spl	1	23Sep2004	22:31	92304050	B	-	-	-	483	0.321	0.161	-	-	-
52	Chkl	1	23Sep2004	22:42	92304051	CCV-5	-	-	41010	51.686	25.973	-	-	-
53	Spl	1	23Sep2004	22:53	92304052	CCB-5	-	-	431	0.254	0.127	-	-	-
54	Spl	1	23Sep2004	23:03	92304053	7160-6	-	-	8705	10.909	5.482	-	-	-
55	Spl	1	23Sep2004	23:14	92304054		-7	-	7341	9.102	4.599	-	-	-
56	Spl	1	23Sep2004	23:24	92304055		-10	-	5655	6.981	3.508	-	-	-
57	Spl	1	23Sep2004	23:35	92304056	B	-	-	-	519	0.367	0.184	-	-	-
58	Spl	1	23Sep2004	23:46	92304057	7219-1	-	-	2949	3.496	1.757	-	-	-
59	Spl	1	23Sep2004	23:56	92304058	7219-1D	-	-	2904	3.438	1.728	-	-	-
60	Spl	1	24Sep2004	00:07	92304059	7219-1MS	-	-	43355	55.531	27.905	-	-	-
61	Spl	1	24Sep2004	00:18	92304060	B	-	-	-	482	0.319	0.161	-	-	-
62	Spl	1	24Sep2004	00:28	92304061	B	-	-	-	481	0.318	0.160	-	-	-
63	Spl	1	24Sep2004	00:39	92304062	B	-	-	-	431	0.254	0.127	-	-	-

64	Chkl	1	24Sep2004	00:49	92304063	CCV-6	-	-	39449	49.676	24.962	-	-	-
65	Spl	1	24Sep2004	01:00	92304064	CCB-6	-	-	443	0.269	0.135	-	-	-
66	Spl	1	24Sep2004	01:11	92304065	7219-2	-	-	2764	3.258	1.637	-	-	-
67	Spl	1	24Sep2004	01:21	92304066	-3	-	-	2131	2.443	1.228	-	-	-
68	Spl	1	24Sep2004	01:32	92304067	-4	-	-	1595	1.753	0.881	-	-	-
69	Spl	1	24Sep2004	01:42	92304068	-5	-	-	1605	1.766	0.887	-	-	-
70	Spl	1	24Sep2004	01:53	92304069	-6	-	-	1586	1.741	0.875	-	-	-
71	Spl	1	24Sep2004	02:04	92304070	B	-	-	415	0.233	0.117	-	-	-
72	Spl	1	24Sep2004	02:14	92304071	7253-1 5/10	-	-	12448	15.729	7.904	-	-	-
73	Spl	1	24Sep2004	02:25	92304072	7253-1D 5/10	-	-	12483	15.774	7.927	-	-	-
74	Spl	1	24Sep2004	02:36	92304073	B	-	-	573	0.437	0.219	-	-	-
75	Spl	1	24Sep2004	02:46	92304074	B	-	-	532	0.384	0.193	-	-	-
76	Chkl	1	24Sep2004	02:57	92304075	CCV-7	-	-	39634	49.914	25.083	-	-	-
77	Spl	1	24Sep2004	03:07	92304076	CCB-7	7253-1MS	-	436	0.260	0.131	-	-	-
78	Spl	1	24Sep2004	03:18	92304077	~~7253-1MS~~ 5/10	-	-	52264	67.004	33.671	-	-	-
79	Spl	1	24Sep2004	03:29	92304078	B	-	-	521	0.370	0.186	-	-	-
80	Spl	1	24Sep2004	03:39	92304079	B	-	-	495	0.336	0.169	-	-	-
81	Spl	1	24Sep2004	03:50	92304080	7253-2 5/10	-	-	10710	13.491	6.779	-	-	-
82	Spl	1	24Sep2004	04:00	92304081	7252-1	-	-	8870	11.121	5.589	-	-	-
83	Spl	1	24Sep2004	04:11	92304082	-1D	-	-	8939	11.210	5.633	-	-	-
84	Spl	1	24Sep2004	04:22	92304083	-1MS	-	-	48241	61.823	31.067	-	-	-
85	Spl	1	24Sep2004	04:32	92304084	B	-	-	724	0.631	0.317	-	-	-
86	Spl	1	24Sep2004	04:43	92304085	B	-	-	511	0.357	0.179	-	-	-
87	Chkl	1	24Sep2004	04:54	92304086	CCV-8	-	-	41268	52.018	26.140	-	-	-
88	Spl	1	24Sep2004	05:04	92304087	CCB-8	-	-	463	0.295	0.148	-	-	-

DSP 9/24/04

		1st	2nd	3rd		
1	0.00100				OBSERVATIONS	35
2	0.12000	0.12000			STD Deviation	0.04728
3	0.09900				AVERAGE	0.15031
4	0.10100				ULC	0.19760
5	0.19400	0.19400			LCL	0.10303
6	0.12500	0.12500				
7	0.14300	0.14300	0.14300	0.14300		
8	0.15500	0.15500	0.15500	0.15500	OBSERVATIONS	30
9	0.14200	0.14200	0.14200	0.14200	STD Deviation	0.02359
10	0.17700	0.17700			AVERAGE	0.15080
11	0.15000	0.15000	0.15000	0.15000	ULC	0.17439
12	0.12000	0.12000			LCL	0.12721
13	0.16200	0.16200	0.16200	0.16200		
14	0.12300	0.12300				
15	0.16200	0.16200	0.16200	0.16200	OBSERVATIONS	16
16	0.13500	0.13500	0.13500		STD Deviation	0.01247
17	0.17000	0.17000	0.17000		AVERAGE	0.15175
18	0.14400	0.14400	0.14400	0.14400	ULC	0.16422
19	0.12400	0.12400			LCL	0.13928
20	0.16100	0.16100	0.16100	0.16100		
21	0.12700	0.12700				
22	0.18400	0.18400			OBSERVATIONS	11
23	0.16100	0.16100	0.16100	0.16100	STD Deviation	0.00823
24	0.16000	0.16000	0.16000	0.16000	AVERAGE	0.15345
25	0.12700	0.12700				
26	0.13500	0.13500	0.13500			
27	0.11700	0.11700				
28	0.21900					
29	0.19300	0.19300				
30	0.13100	0.13100	0.13100			
31	0.18600	0.18600				
32	0.16900	0.16900	0.16900			
33	0.31700					
34	0.17900	0.17900				
35	0.14800	0.14800	0.14800	0.14800		
36						
37						
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47						
48						

****
** CONFIGURATION **
****

Analysis Mode: TOC Spl Intro: Autosampler 88
Remote Start : OFF

Loop Size: 1 mL

Actual Volume	1mL	5mL	10mL	25mL
Loop A (uL):	990	4950	10060	24700
Loop B (uL):	1000	4970	10050	24600

Tray Type: 88 Vial Vial Option: Neither
Needle Depth: 95 % Preacid Volume (uL): 100
Wash Needle Depth: 94 % Preacid Purge Time (min:sec): 0:30

	TIC	TOC	TC
Blank Average:	44	234	158

Linearization Coeff: 60000

Sample Transfer Times (sec)

	Initial Fill			Loop Fill			Sample Inject
	Non-AS	AS	AS w/Sep	Non-AS	AS	AS w/Sep	(all)
1mL:	6.0	4.5	3.5	1.2	1.2	1.0	4.5
5mL:	8.1	7.2	6.8	5.1	5.1	4.2	9.3
10mL:	14.2	12.2	11.0	10.5	10.5	11.0	16.5
25mL:	35.0	35.0	32.0	n/a	n/a	n/a	38.0

****

** SEQUENCE **

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REG. RUN Thu Sep 23 13:29:23 2004

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Vol (mL)	# Blk	Dil Fact	Ovr Rng	Remarks
1	RB	TOC	Sample	1	2.000	0	1.00	No	
2	ICV	TOC	Sample	1	2.000	0	1.00	No	
3	ICB	TOC	Sample	1	2.000	0	1.00	No	
4	CCV-1	TOC	Chk. 1	1	2.000	0	1.00	No	
5	CCB-1	TOC	Sample	1	2.000	0	1.00	No	
6	MB	TOC	Sample	1	2.000	0	1.00	No	
7	LCS	TOC	Sample	1	2.000	0	1.00	No	
8	7267-1	TOC	Sample	1	2.000	0	1.00	No	
9	7267-2	TOC	Sample	1	2.000	0	1.00	No	
10	7267-3	TOC	Sample	1	2.000	0	1.00	No	
11	7267-4	TOC	Sample	1	2.000	0	1.00	No	
12	7267-5	TOC	Sample	1	2.000	0	1.00	No	
13	7267-6	TOC	Sample	1	2.000	0	1.00	No	
14	RB	TOC	Sample	1	2.000	0	1.00	No	
15	RB	TOC	Sample	1	2.000	0	1.00	No	
16	CCV-2	TOC	Chk. 1	1	2.000	0	1.00	No	
17	CCB-2	TOC	Sample	1	2.000	0	1.00	No	
18	7267-7	TOC	Sample	1	2.000	0	1.00	No	
19	7267-7D	TOC	Sample	1	2.000	0	1.00	No	
20	7267-7MS	TOC	Sample	1	2.000	0	1.00	No	
21	RB	TOC	Sample	1	2.000	0	1.00	No	
22	RB	TOC	Sample	1	2.000	0	1.00	No	
23	7267-8	TOC	Sample	1	2.000	0	1.00	No	
24	7267-9	TOC	Sample	1	2.000	0	1.00	No	
25	7267-10	TOC	Sample	1	2.000	0	1.00	No	
26	7267-11	TOC	Sample	1	2.000	0	1.00	No	
27	RB	TOC	Sample	1	2.000	0	1.00	No	
28	CCV-3	TOC	Chk. 1	1	2.000	0	1.00	No	
29	CCB-3	TOC	Sample	1	2.000	0	1.00	No	
30	7267-12	TOC	Sample	1	2.000	0	1.00	No	
31	RB	TOC	Sample	1	2.000	0	1.00	No	
32	7209-1	TOC	Sample	1	2.000	0	1.00	No	
33	7209-1D	TOC	Sample	1	2.000	0	1.00	No	
34	7209-1MS	TOC	Sample	1	2.000	0	1.00	No	
35	RB	TOC	Sample	1	2.000	0	1.00	No	
36	RB	TOC	Sample	1	2.000	0	1.00	No	
37	7160-1 5/10	TOC	Sample	1	2.000	0	1.00	No	
38	7160-1D 5/10	TOC	Sample	1	2.000	0	1.00	No	
39	RB	TOC	Sample	1	2.000	0	1.00	No	
40	CCV-4	TOC	Chk. 1	1	2.000	0	1.00	No	
41	CCB-4	TOC	Sample	1	2.000	0	1.00	No	
42	MB-2	TOC	Sample	1	2.000	0	1.00	No	
43	LCS-2	TOC	Sample	1	2.000	0	1.00	No	
44	7160-1MS 5/10	TOC	Sample	1	2.000	0	1.00	No	

****
** SEQUENCE **
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REG. RUN Thu Sep 23 13:29:23 2004

Pos/ Vial	Sample Name	Method	Run Type	# Rep	Vol (mL)	# Blk	Dil Fact	Ovr Rng	Remarks
45	RB	TOC	Sample	1	2.000	0	1.00	No	
46	RB	TOC	Sample	1	2.000	0	1.00	No	
47	7160-2	TOC	Sample	1	2.000	0	1.00	No	
48	7160-3	TOC	Sample	1	2.000	0	1.00	No	
49	7160-4	TOC	Sample	1	2.000	0	1.00	No	
50	7160-5	TOC	Sample	1	2.000	0	1.00	No	
51	RB	TOC	Sample	1	2.000	0	1.00	No	
52	CCV-5	TOC	Chk. 1	1	2.000	0	1.00	No	
53	CCB-5	TOC	Sample	1	2.000	0	1.00	No	
54	7160-6	TOC	Sample	1	2.000	0	1.00	No	
55	7160-7	TOC	Sample	1	2.000	0	1.00	No	
56	7160-10	TOC	Sample	1	2.000	0	1.00	No	
57	RB	TOC	Sample	1	2.000	0	1.00	No	
58	7219-1	TOC	Sample	1	2.000	0	1.00	No	
59	7219-1D	TOC	Sample	1	2.000	0	1.00	No	
60	7219-1MS	TOC	Sample	1	2.000	0	1.00	No	
61	RB	TOC	Sample	1	2.000	0	1.00	No	
62	RB	TOC	Sample	1	2.000	0	1.00	No	
63	RB	TOC	Sample	1	2.000	0	1.00	No	
64	CCV-6	TOC	Chk. 1	1	2.000	0	1.00	No	
65	CCB-6	TOC	Sample	1	2.000	0	1.00	No	
66	7219-2	TOC	Sample	1	2.000	0	1.00	No	
67	7219-3	TOC	Sample	1	2.000	0	1.00	No	
68	7219-4	TOC	Sample	1	2.000	0	1.00	No	
69	7219-5	TOC	Sample	1	2.000	0	1.00	No	
70	7219-6	TOC	Sample	1	2.000	0	1.00	No	
71	RB	TOC	Sample	1	2.000	0	1.00	No	
72	7253-1 5/10	TOC	Sample	1	2.000	0	1.00	No	
73	7253-1D 5/10	TOC	Sample	1	2.000	0	1.00	No	
74	RB	TOC	Sample	1	2.000	0	1.00	No	
75	RB	TOC	Sample	1	2.000	0	1.00	No	
76	CCV-7	TOC	Chk. 1	1	2.000	0	1.00	No	
77	CCB-7	TOC	Sample	1	2.000	0	1.00	No	
78	7253-1MS 5/10	TOC	Sample	1	2.000	0	1.00	No	
79	RB	TOC	Sample	1	2.000	0	1.00	No	
80	RB	TOC	Sample	1	2.000	0	1.00	No	
81	7253-2 5/10	TOC	Sample	1	2.000	0	1.00	No	
82	7252-1	TOC	Sample	1	2.000	0	1.00	No	
83	7252-1D	TOC	Sample	1	2.000	0	1.00	No	
84	7252-1MS	TOC	Sample	1	2.000	0	1.00	No	
85	RB	TOC	Sample	1	2.000	0	1.00	No	
86	RB	TOC	Sample	1	2.000	0	1.00	No	
87	CCV-8	TOC	Chk. 1	1	2.000	0	1.00	No	
88	CCB-8	TOC	Sample	1	2.000	0	1.00	No	

****
** CALIBRATION **
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10/2003 Fri Oct 24 15:38:52 2003

Std. #	Used	Conc. (ppm)	Volume (mL)
1	Yes	0.000	2.000
2	Yes	0.500	2.000
3	Yes	5.000	2.000
4	Yes	25.000	2.000
5	Yes	50.000	2.000

RF (ugC/k-cts):	1.288
R-Squared:	0.9995
Offset (cts):	874
Offset (ugC):	-1.127
Calibration Mode:	TOC
Allow Editing:	No

Rep	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5
1	349	1096	9326	40402	77595
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-

(* = unused)

Work Request #: Original (7143) 7209

Tier: III III

Date Analyzed: 9/28/04

Analyst: Cholster/Grant

Analysis: TOC - Soils

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no/NA
	a. Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
	b. MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
	c. Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
	d. Are results for methods blanks all ND?	yes/no/NA
	e. Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
	f. Are all exceptions explained?	yes/no/NA
6.	Are all service requests that apply attached?	yes/no/NA
7.	Are all samples labelled correctly?	yes/no/NA
8.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample)	yes/no/NA
9.	Are detection limits and units reported correctly?	yes/no/NA
10.	Are proper Analysis/Extraction stickers included on report?	yes/no/NA
11.	Is the unused space on the benchsheet crossed out?	yes/no/NA
12.	Was analysis turned in by the due date? (n-2) (If not record SR#)	*yes/no/NA

COMMENTS:

* SR 7143 due 9/30/04

Final Approved by: [signature] Date: 9/29/04

DQREPORT

Columbia Analytical Services, Inc.

Analytical Batch
KA0404647

Service Request #: 7143, 7209
Analysis For: Total Organic Carbon (TOC)
Method: ASTM D4129-82 (Combustion/Coulometric)
Matrix: Soil / Dry Weight Basis

Sample Number	mg Sample Injected	Sample Reading, µg C	Baseline Reading, µg C	Net µg C	% Carbon
CCV-1	9.7	1865.0	12.3	1852.7	19.1
CCB-1	50.0	11.5	12.3	-0.8	< 0.05
LCS	55.2	436.1	12.3	423.8	0.77
MB	50.0	13.0	12.3	0.7	< 0.05
7143-1	48.0	2707.6	12.3	2695.3	5.62
7143-2	48.4	3405.6	12.3	3393.3	7.01
7143-3	47.8	5681.3	12.3	5669.0	11.9
7143-4	49.0	1264.2	12.3	1251.9	2.55
7143-5	46.3	3549.1	12.3	3536.8	7.64
7143-6	46.3	5614.8	12.3	5602.5	12.1
7143-7	44.7	6512.8	12.3	6500.5	14.5
7143-8	20.2	3974.8	12.3	3962.5	19.6
CCV-2	9.6	1861.5	12.3	1849.2	19.3
CCB-2	50.0	5.8	12.3	-6.5	< 0.05
7143-9	45.7	3910.0	12.3	3897.7	8.53
7143-9d	47.3	4541.8	12.3	4529.5	9.58
7143-9ms	21.0	3827.2	12.3	3814.9	18.2
7143-10	26.4	5457.6	12.3	5445.3	20.6
7143-11	47.0	2102.4	12.3	2090.1	4.45
7143-12	45.3	2598.3	12.3	2586.0	5.71
7143-13	46.1	3786.2	12.3	3773.9	8.19
7143-14	45.3	4640.9	12.3	4628.6	10.2
7143-15	47.3	4866.6	12.3	4854.3	10.3
7143-16	47.0	3824.4	12.3	3812.1	8.11
CCV-3	10.3	2010.5	12.3	1998.2	19.4
CCB-3	50.0	4.1	12.3	-8.2	< 0.05
7143-17	47.0	2077.0	12.3	2064.7	4.39
7143-18	46.0	3444.8	12.3	3432.5	7.46

Acid Purge Time: 1 minute **Reading Time:** 5 minutes **TOC % =** (Net Reading)(µg 0.1) / mg Sample Injected

CCV : Urea Baker (lot #A17584) ID#: TOCS/1-10-J TV = 20.0%C

CCV1 = 96 CCV2 = 97 CCV3 = 97 CCV4 = 96 CCV5 = 98 CCV6 = 99

LCS: ERA Cat#: 542 Lot#: DO41542 ID#: TOCS/1-10-I TV = 0.75% %Rec = 103, 107

Comments :

7143-9ms = 9.8 mg x20 / 21.0 mg = 9.33	x = 9.06	RPD = 12	REC = 104
7209-4ms = 6.1 mg x20 / 21.3 mg = 5.73	x = 4.00	RPD = 9	REC = 102
7209-18ms = 8.5 mg x20 / 22.5 mg = 7.56	x = 4.47	RPD = 4	REC = 101

Analyzed By: [signature] 9/28/04 Date: 9/28/2004 Time: 8:50
Reveiwed By: [signature] Date: 9/29/04

TOC.XLT

Columbia Analytical Services, Inc.

Service Request #: 7143, 7209 Method: ASTM D4129-82 (Combustion/Coulometric)

Analysis For: Total Organic Carbon (TOC) Matrix: Soil / Dry Weight Basis

Sample Number	mg Sample Injected	Sample Reading, µg C	Baseline Reading, µg C	Net µg C	% Carbon
LSC2	44.2	366.7	12.3	354.4	0.80
MB2	50.0	2.2	12.3	-10.1	< 0.05
7209-2	19.9	1845.9	12.3	1833.6	9.21
7209-3	24.0	1538.1	12.3	1525.8	6.36
7209-4	20.7	876.7	12.3	864.4	4.18
7209-4d	22.5	870.7	12.3	858.4	3.82
7209-4ms	21.3	2150.4	12.3	2138.1	10.0
7209-5	18.9	744.8	12.3	732.5	3.88
CCV-4	10.7	2060.8	12.3	2048.5	19.1
CCB-4	50.0	4.4	12.3	-7.9	< 0.05
7209-6	17.6	1797.0	12.3	1784.7	10.14
7209-7	16.7	2922.2	12.3	2909.9	17.4
7209-8	21.1	2009.8	12.3	1997.5	9.47
7209-9	41.1	467.2	12.3	454.9	1.11
7209-11	22.8	1666.1	12.3	1653.8	7.25
7209-12	24.3	1722.7	12.3	1710.4	7.04
7209-13	23.7	1119.8	12.3	1107.5	4.67
7209-14	27.3	1429.8	12.3	1417.5	5.19
7209-15	21.5	1456.6	12.3	1444.3	6.72
7209-16	19.6	1331.2	12.3	1318.9	6.73
CCV-5	9.3	1837.2	12.3	1824.9	19.6
CCB-5	50.0	3.7	12.3	-8.6	< 0.05
7209-17	21.7	1293.9	12.3	1281.6	5.91
7209-18	26.3	1215.4	12.3	1203.1	4.57
7209-18d	23.2	1026.7	12.3	1014.4	4.37
7209-18ms	22.5	2754.6	12.3	2742.3	12.2

Acid Purge Time: 1 minute **Reading Time:** 5 minutes **TOC % =** $\frac{\text{(Net Reading)(µg 0.1}}{\text{mg Sample Injected}}$

CCV : Urea

Comments :

Analyzed By: *cbolster GBenting* Date: 9/28/2004 Time: 8:50

Reveiwed By: *[signature]* Date: 9/29/04

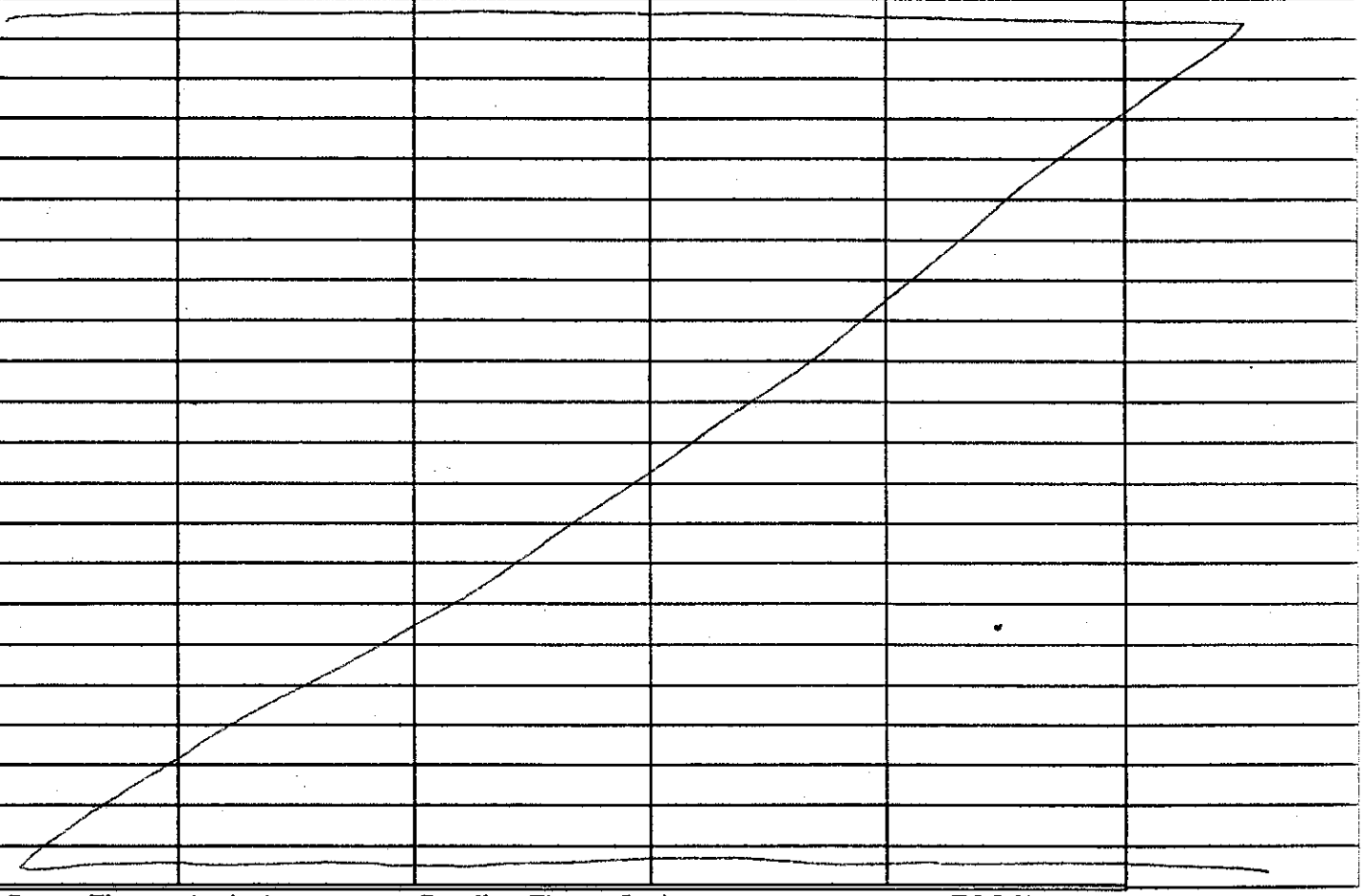
TOC.XLT

Columbia Analytical Services, Inc.

Service Request #: 7143, 7209
Analysis For: Total Organic Carbon (TOC)

Method: ASTM D4129-82 (Combustion/Coulometric)
Matrix: Soil / Dry Weight Basis

Sample Number	mg Sample Injected	Sample Reading, µg C	Baseline Reading, µg C	Net µg C	% Carbon
7209-19	33.6	855.2	12.3	842.9	2.51
7209-20	24.1	260.6	12.3	248.3	1.03
7209-21	50.1	152.0	12.3	139.7	0.28
7209-23	15.7	2165.6	12.3	2153.3	13.7
CCV-6	10.6	2101.7	12.3	2089.4	19.7
CCB-6	50.0	3.3	12.3	-9.0	< 0.05



Acid Purge Time: 1 minute **Reading Time:** 5 minutes **TOC % =** (Net Reading)(µg 0.1) / mg Sample Injected

CCV : Urea Baker (lot #A17584) ID#: TOCS/1-10-J TV = 20.0%C

Comments :

Analyzed By: abolster
Reveiwed By: MM Fitt

Date: 9/28/2004 Time: 8:50
Date: 9/29/04

TOC.XLT

TOC Soil Benchsheet

Sample #	mg Sample	Reading	Date Baked	Baseline
CCV-1	9.7	1865.0		11.7
CCB-1	50.0	11.5		13.9
LCS	55.2	436.1		11.4
MB	50.0	13.0		**Avg**
7143-1	48.0	2707.6	9/21/2004	12.3
7143-2	48.4	3405.6	9/21/2004	
7143-3	47.8	5681.3	9/21/2004	
7143-4	49.0	1264.2	9/21/2004	
7143-5	46.3	3549.1	9/21/2004	
7143-6	46.3	5614.8	9/21/2004	
7143-7	44.7	6512.8	9/21/2004	
7143-8	20.2	3974.8	9/21/2004	
CCV-2	9.6	1861.5		
CCB-2	50.0	5.8		
7143-9	45.7	3910.0	9/21/2004	
7143-9d	47.3	4541.8	9/21/2004	
7143-9ms	21.0	3827.2	9/21/2004	
7143-10	26.4	5457.6	9/21/2004	
7143-11	47.0	2102.4	9/21/2004	
7143-12	45.3	2598.3	9/21/2004	
7143-13	46.1	3786.2	9/21/2004	
7143-14	45.3	4640.9	9/21/2004	
7143-15	47.3	4866.6	9/21/2004	
7143-16	47.0	3824.4	9/21/2004	
CCV-3	10.3	2010.5		
CCB-3	50.0	4.1		
7143-17	47.0	2077.0	9/21/2004	
7143-18	46.0	3444.8	9/21/2004	
LSC2	44.2	366.7		
MB2	50.0	2.2		
7209-2	19.9	1845.9	9/23/2004	
7209-3	24.0	1538.1	9/23/2004	
7209-4	20.7	876.7	9/23/2004	
7209-4d	22.5	870.7	9/23/2004	
7209-4ms	21.3	2150.4	9/23/2004	
7209-5	18.9	744.8	9/23/2004	
CCV-4	10.7	2060.8		
CCB-4	50.0	4.4		
7209-6	17.6	1797.0	9/23/2004	
7209-7	16.7	2922.2	9/23/2004	
7209-8	21.1	2009.8	9/23/2004	
7209-9	41.1	467.2	9/23/2004	
7209-11	22.8	1666.1	9/23/2004	
7209-12	24.3	1722.7	9/23/2004	
7209-13	23.7	1119.8	9/23/2004	
7209-14	27.3	1429.8	9/23/2004	
7209-15	21.5	1456.6	9/23/2004	
7209-16	19.6	1331.2	9/23/2004	
CCV-5	9.3	1837.2		
CCB-5	50.0	3.7		
7209-17	21.7	1293.9	9/23/2004	
7209-18	26.3	1215.4	9/23/2004	
7209-18d	23.2	1026.7	9/23/2004	
7209-18ms	22.5	2754.6	9/23/2004	

MS, 9/29/04

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TOC Soil Benchsheet

Sample #	mg Sample	Reading	Date Baked
7209-19	33.6	855.2	9/23/2004
7209-20	24.1	260.6	9/23/2004
7209-21	50.1	152.0	9/23/2004
7209-23	15.7	2165.6	9/23/2004
CCV-6	10.6	2101.7	
CCB-6	50.0	3.3	

Baseline
11.7
13.9
11.4
Avg
12.3

MLP
9/29/04

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7143 III
7209 III

Sample #	mg Sample	Reading	Date Baked
CCV-1	9.7	1865.0 (19.1)	
CCB-1	50.0	11.5 (<0.05)	
LCS	55.2	436.1 (0.77)	
MB	50.0	13.0 (<0.05)	
7143-1	48.0	2707.6 (5.62)	9/21/04
-2	48.4	3405.6 (7.01)	
-3	47.8	5681.3 (11.9)	
-4	49.0	1264.2 (2.55)	
-5	46.3	3549.1 (7.64)	
-6	46.3	5614.8 (12.1)	
-7	44.7	6512.8 (14.5)	
-8	20.2	3974.8 (19.6)	
CCV-2	9.6	1861.5 (19.3)	
CCB-2	50.0	5.8 (<0.05)	
7143-9	45.7	3910.0 (8.53)	9/21/04
-9d	47.3	4541.8 (9.58)	
-9ms	21.0	3827.2 (18.2)	
-10	26.4	5457.6 (20.6)	
-11	47.0	2102.4 (4.45)	
-12	45.3	2598.3 (5.71)	
-13	46.1	3786.2 (8.19)	
-14	45.3	4640.9 (10.2)	
-15	47.3	4866.6 (10.3)	
-16	47.0	3824.4 (8.11)	
CCV-3	10.3	2010.5 (19.4)	
CCB-3	50.0	4.1 (<0.05)	
7143-17	47.0	(4.39) 2077.0	9/21/04
-18	46.0	(7.46) 3444.8	
LCS2	44.2	366.7 (0.80)	
MB2	50	2.2 (<0.05)	
7209-2	19.4	1845.9 (9.21)	9/23/04
-3	24.0	1538.1 (6.36)	
-4	20.7	876.7 (4.18)	
-4d	22.5	870.7 (3.82)	
-4ms	21.3	2150.4 (10.0)	
-5	18.9	744.8 (3.88)	
CCV-4	10.7	2060.8 (19.1)	
CCB-4	50	4.4 (<0.05)	
7209-6	17.6	1797.0 (10.1)	9/23/04
-7	16.7	2922.2 (17.4)	
-8	21.1	2009.8 (9.47)	
-9	41.1	467.2 (1.11)	
-11	22.8	1666.1 (7.25)	
-12	24.3	1722.7 (7.04)	
-13	23.7	1119.8 (4.67)	
-14	27.3	1429.8 (5.19)	
-15	21.5	1456.6 (6.72)	
-16	19.6	1331.2 (6.73)	
CCV-5	9.3	1837.2 (19.6)	
CCB-5	50.0	3.7 (<0.05)	
7209-17	21.7	1293.9 (5.91)	9/23/04
-18	26.3	1215.4 (4.57)	
-18d	23.2	1026.7 (4.37)	
-18ms	22.5	2754.6 (12.2)	

Baseline	
11.7	
13.9	
11.4	
12.3	Avg

CCV-1 96%
CCB-1 <0.05
LCS 103%
MB <0.05

CCV-2 97%
CCB-2 <0.05

7143-9/9d
$\bar{x}$ = 9.06 RPD = 12

7143-9ms
9.8 mg × 20 / 21.0 mg = 9.33
% Rec = 104

CCV-3 97%
CCB-3 <0.05

LCS2 107%
MB2 <0.05

CCV-4 98%
CCB-4 <0.05

7209-4/4d
$\bar{x}$ = 4.00 RPD =

7209-4ms
6.1 mg × 20 / 21.3 mg = 5.
% Rec =

7209-4ms = 6.1 mg

CCV-5 98%
CCB-5 <0.05

7209-18/18d
$\bar{x}$ = 4.47 RPD = 4

7209-18ms
8.5 mg × 20 / 22.5 mg = 7.5
% Rec = 10

CCV-6 99%
CCB-6 <0.05

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Sample #	mg Sample	Reading	Date Baked
~~CCV-1~~ ① 7209-19	33.6	855.2 (2.51)	9/23/04
~~CCB-1~~ ① -20	24.1	260.6 (1.03)	↓
~~LCS~~ ① -21	50.1	1520 (0.28)	
~~MB~~ ① -23	15.7	2165.6 (13.7)	
CCV-6	10.6	2101.7 (19.7)	
CCB-6	50.0	3.3 (<0.05)	
CCV-2			
CCB-2			
CCV-3			
CCB-3			
CCV-4			
CCB-4			
CCV-5			
CCB-5			

Baseline	
11.7	
13.9	
11.4	
12.3	Avg

M.F. 9/29/04

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Semi-Volatile Organic Compounds
EPA Method 8270C

Organic Analysis:
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
RB-1	K2407209-001	09/14/2004	09/17/2004
107-GSED-C32-0.5	K2407209-002	09/15/2004	09/17/2004
107-GSED-C32-1.0	K2407209-003	09/15/2004	09/17/2004
107-GSED-C32-2.0	K2407209-004	09/15/2004	09/17/2004
107-GSED-C32-3.0	K2407209-005	09/15/2004	09/17/2004
105-GSED-C05-0.5	K2407209-006	09/15/2004	09/17/2004
105-GSED-C05-1.0	K2407209-007	09/15/2004	09/17/2004
105-GSED-C05-2.0	K2407209-008	09/15/2004	09/17/2004
105-GSED-C05-3.0	K2407209-009	09/15/2004	09/17/2004
RB-2	K2407209-010	09/15/2004	09/17/2004
108-GSED-C02-0.5	K2407209-011	09/16/2004	09/17/2004
108-GSED-C02-1.0	K2407209-012	09/16/2004	09/17/2004
108-GSED-C02-2.0	K2407209-013	09/16/2004	09/17/2004
108-GSED-C02-3.0	K2407209-014	09/16/2004	09/17/2004
108-GSED-C02-1.0D	K2407209-015	09/16/2004	09/17/2004
109-GSED-C01-0.5	K2407209-016	09/16/2004	09/17/2004
109-GSED-C01-1.0	K2407209-017	09/16/2004	09/17/2004
109-GSED-C01-2.0	K2407209-018	09/16/2004	09/17/2004
110-GSED-C01A-0.5	K2407209-019	09/16/2004	09/17/2004
110-GSED-C01A-1.0	K2407209-020	09/16/2004	09/17/2004
110-GSED-C01A-2.0	K2407209-021	09/16/2004	09/17/2004
RB-3	K2407209-022	09/16/2004	09/17/2004
101-GSED-C09-2.0D	K2407209-023	09/14/2004	09/17/2004
107-GSED-C32-2.0MS	KWG0414674-1	09/15/2004	09/17/2004
107-GSED-C32-2.0DMS	KWG0414674-2	09/15/2004	09/17/2004
109-GSED-C01-2.0MS	KWG0414674-6	09/16/2004	09/17/2004
109-GSED-C01-2.0DMS	KWG0414674-7	09/16/2004	09/17/2004

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature]

Name: Jeff Grindstaff

Date: 10/14/04

Title: GC/MS Manager

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Water

Service Request: K2407209
Date Collected: 09/14/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: RB-1
Lab Code: K2407209-001

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	UJ	2.8	0.081	1	09/29/04	10/04/04	KWG0414855	*
2,4-Dichlorophenol	ND	U	UJ	2.8	0.14	1	09/29/04	10/04/04	KWG0414855	*
2,4,6-Trichlorophenol	ND	U	UJ	2.8	0.21	1	09/29/04	10/04/04	KWG0414855	*
2,4,5-Trichlorophenol	ND	U	UJ	2.8	0.14	1	09/29/04	10/04/04	KWG0414855	*
Pentachlorophenol	ND	U	UJ	12	0.16	1	09/29/04	10/04/04	KWG0414855	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	99	33-109	10/04/04	Acceptable
2,4,6-Tribromophenol	110	34-130	10/04/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geomatrix Consultants	**Service Request:**	K2407209
Project:	9329	**Date Collected:**	9/14-15/04
Sample Matrix:	Water	**Date Received:**	9/17/2004
		Date Extracted:	9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Method 3520/8270C
Units: ug/L (ppb)

		Sample Name:	**RB-1**
		Lab Code:	K2407209-001
		Date Analyzed:	10/4/2004
Analyte	**MRL***		
2,3,4,5-Tetrachlorophenol	10		ND
2,3,4,6-Tetrachlorophenol	10		ND
2,3,5,6-Tetrachlorophenol	10		ND
2,3,4-Trichlorophenol	10		ND
2,3,5-Trichlorophenol	10		ND
2,3,6-Trichlorophenol	10		ND
3,4,5-Trichlorophenol	10		ND
2,3-Dichlorophenol	10		ND
2,5-Dichlorophenol	10		ND
2,6-Dichlorophenol	10		ND
3,4-Dichlorophenol	10		ND
3,5-Dichlorophenol	10		ND
3-Chlorophenol	10		ND
4-Chlorophenol	10		ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Water

Service Request: K2407209
Date Collected: 09/15/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: RB-2
Lab Code: K2407209-010

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	UJ	2.2	0.064	1	09/29/04	10/04/04	KWG0414855	*
2,4-Dichlorophenol	ND	U	UJ	2.2	0.11	1	09/29/04	10/04/04	KWG0414855	*
2,4,6-Trichlorophenol	ND	U	UJ	2.2	0.16	1	09/29/04	10/04/04	KWG0414855	*
2,4,5-Trichlorophenol	ND	U	UJ	2.2	0.11	1	09/29/04	10/04/04	KWG0414855	*
Pentachlorophenol	ND	U	UJ	8.7	0.13	1	09/29/04	10/04/04	KWG0414855	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	87	33-109	10/04/04	Acceptable
2,4,6-Tribromophenol	100	34-130	10/04/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Water

Service Request: K2407209
Date Collected: 9/15-16/04
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Method 3520/8270C
Units: ug/L (ppb)

	Sample Name:	RB-2
	Lab Code:	K2407209-010
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	10	ND
2,3,4,6-Tetrachlorophenol	10	ND
2,3,5,6-Tetrachlorophenol	10	ND
2,3,4-Trichlorophenol	10	ND
2,3,5-Trichlorophenol	10	ND
2,3,6-Trichlorophenol	10	ND
3,4,5-Trichlorophenol	10	ND
2,3-Dichlorophenol	10	ND
2,5-Dichlorophenol	10	ND
2,6-Dichlorophenol	10	ND
3,4-Dichlorophenol	10	ND
3,5-Dichlorophenol	10	ND
meta-chlorophenol	10	ND
para-chlorophenol	10	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Water

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: RB-3
Lab Code: K2407209-022

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U UJ	2.2	0.064	1	09/29/04	10/04/04	KWG0414855	*
2,4-Dichlorophenol	ND	U UJ	2.2	0.11	1	09/29/04	10/04/04	KWG0414855	*
2,4,6-Trichlorophenol	ND	U UJ	2.2	0.16	1	09/29/04	10/04/04	KWG0414855	*
2,4,5-Trichlorophenol	ND	U UJ	2.2	0.11	1	09/29/04	10/04/04	KWG0414855	*
Pentachlorophenol	ND	U UJ	8.7	0.13	1	09/29/04	10/04/04	KWG0414855	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	90	33-109	10/04/04	Acceptable
2,4,6-Tribromophenol	106	34-130	10/04/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Water

Service Request: K2407209
Date Collected: 9/16/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Method 3520/8270C
Units: ug/L (ppb)

	Sample Name:	RB-3
	Lab Code:	K2407209-022
	Date Analyzed:	10/7/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	10	ND
2,3,4,6-Tetrachlorophenol	10	ND
2,3,5,6-Tetrachlorophenol	10	ND
2,3,4-Trichlorophenol	10	ND
2,3,5-Trichlorophenol	10	ND
2,3,6-Trichlorophenol	10	ND
3,4,5-Trichlorophenol	10	ND
2,3-Dichlorophenol	10	ND
2,5-Dichlorophenol	10	ND
2,6-Dichlorophenol	10	ND
3,4-Dichlorophenol	10	ND
3,5-Dichlorophenol	10	ND
meta-chlorophenol	10	ND
para-chlorophenol	10	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Water

Service Request: K2407209
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0414855-3

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	0.48	0.015	1	09/29/04	10/04/04	KWG0414855	
2,4-Dichlorophenol	ND	U	0.48	0.024	1	09/29/04	10/04/04	KWG0414855	
2,4,6-Trichlorophenol	ND	U	0.48	0.037	1	09/29/04	10/04/04	KWG0414855	
2,4,5-Trichlorophenol	ND	U	0.48	0.026	1	09/29/04	10/04/04	KWG0414855	
Pentachlorophenol	ND	U	2.0	0.029	1	09/29/04	10/04/04	KWG0414855	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	102	33-109	10/04/04	Acceptable
2,4,6-Tribromophenol	103	34-130	10/04/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Water

Service Request: K2407209
Date Collected: NA
Date Received: NA
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Method 3520/8270C
Units: ug/L (ppb)

	Sample Name:	**Method Blank**
	Lab Code:	KWG0414855-3
	Date Analyzed:	10/4/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	10	ND
2,3,4,6-Tetrachlorophenol	10	ND
2,3,5,6-Tetrachlorophenol	10	ND
2,3,4-Trichlorophenol	10	ND
2,3,5-Trichlorophenol	10	ND
2,3,6-Trichlorophenol	10	ND
3,4,5-Trichlorophenol	10	ND
2,3-Dichlorophenol	10	ND
2,5-Dichlorophenol	10	ND
2,6-Dichlorophenol	10	ND
3,4-Dichlorophenol	10	ND
3,5-Dichlorophenol	10	ND
meta-chlorophenol	10	ND
para-chlorophenol	10	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/15/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 107-GSED-C32-0.5
Lab Code: K2407209-002

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	62	21	5	09/27/04	10/04/04	KWG0414674	
2,4-Dichlorophenol	ND	U	62	23	5	09/27/04	10/04/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	62	23	5	09/27/04	10/04/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	62	37	5	09/27/04	10/04/04	KWG0414674	
Pentachlorophenol	ND	U	620	110	5	09/27/04	10/04/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	80	28-109	10/04/04	Acceptable
2,4,6-Tribromophenol	104	35-138	10/04/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geomatrix Consultants	**Service Request:**	K2407209
Project:	9329	**Date Collected:**	9/14-15/04
Sample Matrix:	Sediment	**Date Received:**	9/17/2004
		Date Extracted:	9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		107-GSED-C32-
	Sample Name:	0.5
	Lab Code:	K2407209-002
	Date Analyzed:	10/4/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
3-Chlorophenol	50	ND
4-Chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/15/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 107-GSED-C32-1.0
Lab Code: K2407209-003

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	54	19	5	09/27/04	10/04/04	KWG0414674	
2,4-Dichlorophenol	ND	U	54	20	5	09/27/04	10/04/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	54	20	5	09/27/04	10/04/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	54	33	5	09/27/04	10/04/04	KWG0414674	
Pentachlorophenol	ND	U	540	92	5	09/27/04	10/04/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	68	28-109	10/04/04	Acceptable
2,4,6-Tribromophenol	69	35-138	10/04/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geomatrix Consultants	**Service Request:**	K2407209
Project:	9329	**Date Collected:**	9/14-15/04
Sample Matrix:	Sediment	**Date Received:**	9/17/2004
		Date Extracted:	9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

	107-GSED-C32-
Sample Name:	1.0
Lab Code:	K2407209-003
Date Analyzed:	10/4/2004

Analyte	MRL*	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
3-Chlorophenol	50	ND
4-Chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/15/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 107-GSED-C32-2.0
Lab Code: K2407209-004

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	49	16	5	09/27/04	10/04/04	KWG0414674	
2,4-Dichlorophenol	ND	U	49	17	5	09/27/04	10/04/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	49	17	5	09/27/04	10/04/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	49	28	5	09/27/04	10/04/04	KWG0414674	
Pentachlorophenol	ND	U	490	78	5	09/27/04	10/04/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	73	28-109	10/04/04	Acceptable
2,4,6-Tribromophenol	93	35-138	10/04/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geomatrix Consultants	**Service Request:**	K2407209
Project:	9329	**Date Collected:**	9/15/2004
Sample Matrix:	Sediment	**Date Received:**	9/17/2004
		Date Extracted:	9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		107-GSED-C32-
	Sample Name:	2.0
	Lab Code:	K2407209-004
	Date Analyzed:	10/4/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
meta-chlorophenol	50	ND
para-chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/15/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 107-GSED-C32-3.0
Lab Code: K2407209-005

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	8.8	3.0	1	09/27/04	10/04/04	KWG0414674	
2,4-Dichlorophenol	ND	U	8.8	3.2	1	09/27/04	10/04/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	8.8	3.2	1	09/27/04	10/04/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	8.8	5.3	1	09/27/04	10/04/04	KWG0414674	
Pentachlorophenol	ND	U	88	15	1	09/27/04	10/04/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	63	28-109	10/04/04	Acceptable
2,4,6-Tribromophenol	85	35-138	10/04/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/15/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		107-GSED-C32-
	Sample Name:	3.0
	Lab Code:	K2407209-005
	Date Analyzed:	10/4/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	10	ND
2,3,4,6-Tetrachlorophenol	10	ND
2,3,5,6-Tetrachlorophenol	10	ND
2,3,4-Trichlorophenol	10	ND
2,3,5-Trichlorophenol	10	ND
2,3,6-Trichlorophenol	10	ND
3,4,5-Trichlorophenol	10	ND
2,3-Dichlorophenol	10	ND
2,5-Dichlorophenol	10	ND
2,6-Dichlorophenol	10	ND
3,4-Dichlorophenol	10	ND
3,5-Dichlorophenol	10	ND
meta-chlorophenol	10	ND
para-chlorophenol	10	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/15/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 105-GSED-C05-0.5
Lab Code: K2407209-006

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	59	21	5	09/27/04	10/04/04	KWG0414674	
2,4-Dichlorophenol	ND	U	59	22	5	09/27/04	10/04/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	59	22	5	09/27/04	10/04/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	59	36	5	09/27/04	10/04/04	KWG0414674	
Pentachlorophenol	ND	U	590	110	5	09/27/04	10/04/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	63	28-109	10/04/04	Acceptable
2,4,6-Tribromophenol	80	35-138	10/04/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/15/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		105-GSED-C05-
	Sample Name:	0.5
	Lab Code:	K2407209-006
	Date Analyzed:	10/4/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
meta-chlorophenol	50	ND
para-chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/15/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 105-GSED-C05-1.0
Lab Code: K2407209-007

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	63	22	5	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	63	23	5	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	63	23	5	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	63	38	5	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	630	110	5	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	66	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	87	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/15/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		105-GSED-C05-
	Sample Name:	1.0
	Lab Code:	K2407209-007
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
3-Chlorophenol	50	ND
4-Chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/15/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 105-GSED-C05-2.0
Lab Code: K2407209-008

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	20	6.6	2	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	20	7.0	2	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	20	7.0	2	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	20	12	2	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	200	33	2	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	58	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	82	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/15/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		105-GSED-C05-
	Sample Name:	2.0
	Lab Code:	K2407209-008
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	20	ND
2,3,4,6-Tetrachlorophenol	20	ND
2,3,5,6-Tetrachlorophenol	20	ND
2,3,4-Trichlorophenol	20	ND
2,3,5-Trichlorophenol	20	ND
2,3,6-Trichlorophenol	20	ND
3,4,5-Trichlorophenol	20	ND
2,3-Dichlorophenol	20	ND
2,5-Dichlorophenol	20	ND
2,6-Dichlorophenol	20	ND
3,4-Dichlorophenol	20	ND
3,5-Dichlorophenol	20	ND
3-Chlorophenol	20	ND
4-Chlorophenol	20	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/15/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 105-GSED-C05-3.0
Lab Code: K2407209-009

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	9.7	2.2	1	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	9.7	2.4	1	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	9.7	2.4	1	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	9.7	3.9	1	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	97	11	1	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	57	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	89	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/15/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		105-GSED-C05-
	Sample Name:	3.0
	Lab Code:	K2407209-009
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	10	ND
2,3,4,6-Tetrachlorophenol	10	ND
2,3,5,6-Tetrachlorophenol	10	ND
2,3,4-Trichlorophenol	10	ND
2,3,5-Trichlorophenol	10	ND
2,3,6-Trichlorophenol	10	ND
3,4,5-Trichlorophenol	10	ND
2,3-Dichlorophenol	10	ND
2,5-Dichlorophenol	10	ND
2,6-Dichlorophenol	10	ND
3,4-Dichlorophenol	10	ND
3,5-Dichlorophenol	10	ND
3-Chlorophenol	10	ND
4-Chlorophenol	10	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 108-GSED-C02-0.5
Lab Code: K2407209-011

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	57	20	5	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	57	21	5	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	57	21	5	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	57	35	5	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	570	98	5	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	60	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	90	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/15-16/04
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		108-GSED-C02-
	Sample Name:	0.5
	Lab Code:	K2407209-011
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
meta-chlorophenol	50	ND
para-chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 108-GSED-C02-1.0
Lab Code: K2407209-012

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	22	7.7	2	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	22	8.1	2	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	22	8.1	2	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	22	14	2	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	220	39	2	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	52	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	82	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/15-16/04
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		108-GSED-C02-
	Sample Name:	1.0
	Lab Code:	K2407209-012
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	20	ND
2,3,4,6-Tetrachlorophenol	20	ND
2,3,5,6-Tetrachlorophenol	20	ND
2,3,4-Trichlorophenol	20	ND
2,3,5-Trichlorophenol	20	ND
2,3,6-Trichlorophenol	20	ND
3,4,5-Trichlorophenol	20	ND
2,3-Dichlorophenol	20	ND
2,5-Dichlorophenol	20	ND
2,6-Dichlorophenol	20	ND
3,4-Dichlorophenol	20	ND
3,5-Dichlorophenol	20	ND
meta-chlorophenol	20	ND
para-chlorophenol	20	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 108-GSED-C02-2.0
Lab Code: K2407209-013

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	50	17	5	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	50	18	5	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	50	18	5	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	50	30	5	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	500	83	5	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	70	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	90	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/16/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		108-GSED-C02-
	Sample Name:	**2.0**
	Lab Code:	K2407209-013
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
3-Chlorophenol	50	ND
4-Chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 108-GSED-C02-3.0
Lab Code: K2407209-014

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	19	5.9	2	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	19	6.3	2	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	19	6.3	2	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	19	11	2	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	190	30	2	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	60	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	77	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/16/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		108-GSED-C02-
	Sample Name:	3.0
	Lab Code:	K2407209-014
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
3-Chlorophenol	50	ND
4-Chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 108-GSED-C02-1.0D
Lab Code: K2407209-015

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	54	19	5	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	54	20	5	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	54	20	5	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	54	33	5	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	540	92	5	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	66	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	82	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/16/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		108-GSED-C02-
	Sample Name:	**1.0D**
	Lab Code:	K2407209-015
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
3-Chlorophenol	50	ND
4-Chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 109-GSED-C01-0.5
Lab Code: K2407209-016

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	58	20	5	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	58	21	5	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	58	21	5	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	58	35	5	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	580	98	5	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	76	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	88	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/16/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		109-GSED-C01-
	Sample Name:	0.5
	Lab Code:	K2407209-016
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
meta-chlorophenol	50	ND
para-chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 109-GSED-C01-1.0
Lab Code: K2407209-017

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	22	7.4	2	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	22	7.9	2	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	22	7.9	2	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	22	14	2	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	220	37	2	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	66	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	86	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/16/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		109-GSED-C01-
	Sample Name:	**1.0**
	Lab Code:	K2407209-017
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	20	ND
2,3,4,6-Tetrachlorophenol	20	ND
2,3,5,6-Tetrachlorophenol	20	ND
2,3,4-Trichlorophenol	20	ND
2,3,5-Trichlorophenol	20	ND
2,3,6-Trichlorophenol	20	ND
3,4,5-Trichlorophenol	20	ND
2,3-Dichlorophenol	20	ND
2,5-Dichlorophenol	20	ND
2,6-Dichlorophenol	20	ND
3,4-Dichlorophenol	20	ND
3,5-Dichlorophenol	20	ND
meta-chlorophenol	20	ND
para-chlorophenol	20	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 109-GSED-C01-2.0
Lab Code: K2407209-018

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	20	6.3	2	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	20	6.7	2	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	20	6.7	2	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	20	12	2	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	200	32	2	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	63	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	76	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Geomatrix Consultants	**Service Request:**	K2407209
Project:	9329	**Date Collected:**	9/16/2004
Sample Matrix:	Sediment	**Date Received:**	9/17/2004
		Date Extracted:	9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

Sample Name:	**109-GSED-C01-2.0**
Lab Code:	K2407209-018
Date Analyzed:	10/5/2004

Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	20	ND
2,3,4,6-Tetrachlorophenol	20	ND
2,3,5,6-Tetrachlorophenol	20	ND
2,3,4-Trichlorophenol	20	ND
2,3,5-Trichlorophenol	20	ND
2,3,6-Trichlorophenol	20	ND
3,4,5-Trichlorophenol	20	ND
2,3-Dichlorophenol	20	ND
2,5-Dichlorophenol	20	ND
2,6-Dichlorophenol	20	ND
3,4-Dichlorophenol	20	ND
3,5-Dichlorophenol	20	ND
meta-chlorophenol	20	ND
para-chlorophenol	20	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 110-GSED-C01A-0.5
Lab Code: K2407209-019

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	50	15	5	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	50	15	5	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	50	15	5	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	50	25	5	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	500	71	5	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	89	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	68	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/14-15/04
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		110-GSED-C01A-
	Sample Name:	**0.5**
	Lab Code:	K2407209-019
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	50	ND
2,3,4,6-Tetrachlorophenol	50	ND
2,3,5,6-Tetrachlorophenol	50	ND
2,3,4-Trichlorophenol	50	ND
2,3,5-Trichlorophenol	50	ND
2,3,6-Trichlorophenol	50	ND
3,4,5-Trichlorophenol	50	ND
2,3-Dichlorophenol	50	ND
2,5-Dichlorophenol	50	ND
2,6-Dichlorophenol	50	ND
3,4-Dichlorophenol	50	ND
3,5-Dichlorophenol	50	ND
3-Chlorophenol	50	ND
4-Chlorophenol	50	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 110-GSED-C01A-1.0
Lab Code: K2407209-020

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	10	2.7	1	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	10	2.8	1	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	10	2.8	1	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	10	4.7	1	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	100	14	1	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	57	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	69	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/14-15/04
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		110-GSED-C01A-
	Sample Name:	1.0
	Lab Code:	K2407209-020
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	10	ND
2,3,4,6-Tetrachlorophenol	10	ND
2,3,5,6-Tetrachlorophenol	10	ND
2,3,4-Trichlorophenol	10	ND
2,3,5-Trichlorophenol	10	ND
2,3,6-Trichlorophenol	10	ND
3,4,5-Trichlorophenol	10	ND
2,3-Dichlorophenol	10	ND
2,5-Dichlorophenol	10	ND
2,6-Dichlorophenol	10	ND
3,4-Dichlorophenol	10	ND
3,5-Dichlorophenol	10	ND
3-Chlorophenol	10	ND
4-Chlorophenol	10	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/16/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 110-GSED-C01A-2.0
Lab Code: K2407209-021

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	9.9	2.1	1	09/27/04	10/07/04	KWG0414674	
2,4-Dichlorophenol	ND	U	9.9	2.2	1	09/27/04	10/07/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	9.9	2.2	1	09/27/04	10/07/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	9.9	3.7	1	09/27/04	10/07/04	KWG0414674	
Pentachlorophenol	ND	U	99	11	1	09/27/04	10/07/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	46	28-109	10/07/04	Acceptable
2,4,6-Tribromophenol	69	35-138	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/14-15/04
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		110-GSED-C01A-
	Sample Name:	2.0
	Lab Code:	K2407209-021
	Date Analyzed:	10/7/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	10	ND
2,3,4,6-Tetrachlorophenol	10	ND
2,3,5,6-Tetrachlorophenol	10	ND
2,3,4-Trichlorophenol	10	ND
2,3,5-Trichlorophenol	10	ND
2,3,6-Trichlorophenol	10	ND
3,4,5-Trichlorophenol	10	ND
2,3-Dichlorophenol	10	ND
2,5-Dichlorophenol	10	ND
2,6-Dichlorophenol	10	ND
3,4-Dichlorophenol	10	ND
3,5-Dichlorophenol	10	ND
3-Chlorophenol	10	ND
4-Chlorophenol	10	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: 09/14/2004
Date Received: 09/17/2004

Semi-Volatile Organic Compounds by GC/MS

Sample Name: 101-GSED-C09-2.0D
Lab Code: K2407209-023

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	11	3.7	1	09/27/04	10/07/04	KWG0414674	
2,4-Dichlorophenol	ND	U	11	3.9	1	09/27/04	10/07/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	11	3.9	1	09/27/04	10/07/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	11	6.4	1	09/27/04	10/07/04	KWG0414674	
Pentachlorophenol	ND	U	110	19	1	09/27/04	10/07/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	47	28-109	10/07/04	Acceptable
2,4,6-Tribromophenol	73	35-138	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: 9/16/2004
Date Received: 9/17/2004
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

		101-GSED-C09-
	Sample Name:	**2.0D**
	Lab Code:	K2407209-023
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	10	ND
2,3,4,6-Tetrachlorophenol	10	ND
2,3,5,6-Tetrachlorophenol	10	ND
2,3,4-Trichlorophenol	10	ND
2,3,5-Trichlorophenol	10	ND
2,3,6-Trichlorophenol	10	ND
3,4,5-Trichlorophenol	10	ND
2,3-Dichlorophenol	10	ND
2,5-Dichlorophenol	10	ND
2,6-Dichlorophenol	10	ND
3,4-Dichlorophenol	10	ND
3,5-Dichlorophenol	10	ND
meta-chlorophenol	10	ND
para-chlorophenol	10	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0414674-5

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2-Chlorophenol	ND	U	5.0	1.7	1	09/27/04	10/05/04	KWG0414674	
2,4-Dichlorophenol	ND	U	5.0	1.8	1	09/27/04	10/05/04	KWG0414674	
2,4,6-Trichlorophenol	ND	U	5.0	1.8	1	09/27/04	10/05/04	KWG0414674	
2,4,5-Trichlorophenol	ND	U	5.0	3.0	1	09/27/04	10/05/04	KWG0414674	
Pentachlorophenol	ND	U	50	8.5	1	09/27/04	10/05/04	KWG0414674	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	71	28-109	10/05/04	Acceptable
2,4,6-Tribromophenol	72	35-138	10/05/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants
Project: 9329
Sample Matrix: Sediment

Service Request: K2407209
Date Collected: NA
Date Received: NA
Date Extracted: 9/27/2004

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3541/8270C
Units: ug/Kg (ppb)
Dry Weight Basis

	Sample Name:	**Method Blank**
	Lab Code:	KWG0414674-5
	Date Analyzed:	10/5/2004
Analyte	**MRL***	
2,3,4,5-Tetrachlorophenol	10	ND
2,3,4,6-Tetrachlorophenol	10	ND
2,3,5,6-Tetrachlorophenol	10	ND
2,3,4-Trichlorophenol	10	ND
2,3,5-Trichlorophenol	10	ND
2,3,6-Trichlorophenol	10	ND
3,4,5-Trichlorophenol	10	ND
2,3-Dichlorophenol	10	ND
2,5-Dichlorophenol	10	ND
2,6-Dichlorophenol	10	ND
3,4-Dichlorophenol	10	ND
3,5-Dichlorophenol	10	ND
meta-chlorophenol	10	ND
para-chlorophenol	10	ND

* MRL's have been estimated.

Approved By: _____ Date: 10/14/04

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Water

Service Request: K2407209

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1		Sur2
RB-1	K2407209-001	99		110
RB-2	K2407209-010	87		100
RB-3	K2407209-022	90		106
Method Blank	KWG0414855-3	102		103
Lab Control Sample	KWG0414855-1	114	*	127
Duplicate Lab Control Sample	KWG0414855-2	105		121

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	33-109
Sur2 = 2,4,6-Tribromophenol	34-130

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
107-GSED-C32-0.5	K2407209-002	80 D	104 D
107-GSED-C32-1.0	K2407209-003	68 D	69 D
107-GSED-C32-2.0	K2407209-004	73 D	93 D
107-GSED-C32-3.0	K2407209-005	63	85
105-GSED-C05-0.5	K2407209-006	63 D	80 D
105-GSED-C05-1.0	K2407209-007	66 D	87 D
105-GSED-C05-2.0	K2407209-008	58 D	82 D
105-GSED-C05-3.0	K2407209-009	57	89
108-GSED-C02-0.5	K2407209-011	60 D	90 D
108-GSED-C02-1.0	K2407209-012	52 D	82 D
108-GSED-C02-2.0	K2407209-013	70 D	90 D
108-GSED-C02-3.0	K2407209-014	60 D	77 D
108-GSED-C02-1.0D	K2407209-015	66 D	82 D
109-GSED-C01-0.5	K2407209-016	76 D	88 D
109-GSED-C01-1.0	K2407209-017	66 D	86 D
109-GSED-C01-2.0	K2407209-018	63 D	76 D
110-GSED-C01A-0.5	K2407209-019	89 D	68 D
110-GSED-C01A-1.0	K2407209-020	57	69
110-GSED-C01A-2.0	K2407209-021	46	69
101-GSED-C09-2.0D	K2407209-023	47	73
Method Blank	KWG0414674-5	71	72
107-GSED-C32-2.0MS	KWG0414674-1	103 D	76 D
107-GSED-C32-2.0DMS	KWG0414674-2	58 D	93 D
109-GSED-C01-2.0MS	KWG0414674-6	69 D	82 D
109-GSED-C01-2.0DMS	KWG0414674-7	72 D	86 D
Lab Control Sample	KWG0414674-3	82	88
Duplicate Lab Control Sample	KWG0414674-4	66	73

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	28-109
Sur2 = 2,4,6-Tribromophenol	35-138

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Date Analyzed: 10/07/2004
Time Analyzed: 13:30

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS10\DATA\100704\1007F002.D
Instrument ID: MS10
Analysis Method: 8270C

Lab Code: KWG0415478-2
Analysis Lot: KWG0415478

		1,4-Dichlorobenzene-d4		Naphthalene-d8		Acenaphthene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	76,845	9.67	302,289	11.64	170,060	14.46
	Upper Limit ==>	153,690	10.17	604,578	12.14	340,120	14.96
	Lower Limit ==>	38,423	9.17	151,145	11.14	85,030	13.96
	ICAL Result ==>	90,024	9.66	325,259	11.64	184,072	14.46
Associated Analyses							
110-GSED-C01A-2.0	K2407209-021	74,019	9.67	323,772	11.63	157,120	14.46
101-GSED-C09-2.0D	K2407209-023	93,068	9.67	330,716	11.64	153,390	14.46

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

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Date Analyzed: 10/07/2004
Time Analyzed: 13:30

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS10\DATA\100704\1007F002.D
Instrument ID: MS10
Analysis Method: 8270C

Lab Code: KWG0415478-2
Analysis Lot: KWG0415478

		Phenanthrene-d10	
		Area	RT
	Results ==>	255,655	16.86
	Upper Limit ==>	511,310	17.36
	Lower Limit ==>	127,828	16.36
	ICAL Result ==>	288,631	16.87
Associated Analyses			
110-GSED-C01A-2.0	K2407209-021	243,743	16.86
101-GSED-C09-2.0D	K2407209-023	241,460	16.86

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/AC Report

Client: Geomatrix Consultants
Project: 9329

Service Request: K2407209
Date Analyzed: 10/4/2004
Time Analyzed: 1629

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\100404\1004F012.D
Instrument ID: MS06
Analysis Method: 8270C

Lab Code: KWG0415229-2
Analysis Lot: KWG0415229

	1,4-Dichlorobenzene-d4		Naphthalene-d8		Acenaphthalene-d10	
	Area	**RT**	**Area**	**RT**	**Area**	**RT**
Results==>	33507	8.57	121668	10.53	59505	13.34
Upper Limit==>	67014	9.07	243336	10.58	119010	13.84
Lower Limit==>	16753	9.57	60834	10.03	39752	12.84
ICAL Result==>	36220	8.56	129097	10.53	63991	13.33
Associated Analyses						
Method Blank	33094	8.57	122795	10.53	59283	13.33
Lab Control Sample	33246	8.57	124387	10.54	60796	13.33
Duplicate Lab Control Sample	36274	8.57	131243	10.53	64479	13.34
RB-1	32778	8.58	126514	10.53	56798	13.33
RB-2	33654	8.58	127090	10.54	59553	13.33
RB-3	32124	8.57	125917	10.53	60225	13.33
107-GSED-C32-0.5	40763	8.58	145910	10.54	71445	13.34
107-GSED-C32-1.0	29482	8.59	156099	10.54	74571	13.34
107-GSED-C32-2.0	39023	8.58	144284	10.54	72859	13.34
107-GSED-C32-3.0	38220	8.58	132043	10.54	66776	13.34
105-GSED-C05-0.5	41250	8.58	148715	10.54	74217	13.34
105-GSED-C05-1.0	42670	8.58	152984	10.54	78186	13.35
105-GSED-C05-2.0	44457	8.58	159110	10.55	79481	13.35
105-GSED-C05-3.0	44016	8.58	153063	10.55	77143	13.35
108-GSED-C02-0.5	50068	8.58	176398	10.55	90241	13.35
108-GSED-C02-1.0	52000	8.59	181988	10.55	91402	13.35
108-GSED-C02-2.0	50848	8.60	181635	10.55	83178	13.35

Approved By: _____ Date: 10/14/04

COLUMBIA ANALYTICAL SERVICES, INC.

QA/AC Report

Client: Geomatrix Consultants
Project: 9329

Service Request: K2407209
Date Analyzed: 10/4/2004
Time Analyzed: 1629

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\100404\1004F012.D
Instrument ID: MS06
Analysis Method: 8270C

Lab Code: KWG0415229-2
Analysis Lot: KWG0415229

Phenanthrene-d10

	Area	RT
Results==>	96067	15.67
Upper Limit==>	192134	16.17
Lower Limit==>	48033	15.17
ICAL Result==>	106834	15.67

Associated Analyses

Method Blank	98063	15.67
Lab Control Sample	99555	15.68
Duplicate Lab Control Sample	103417	15.67
RB-1	95196	15.67
RB-2	102054	15.67
RB-3	104235	15.67
107-GSED-C32-0.5	124101	15.68
107-GSED-C32-1.0	116697	15.68
107-GSED-C32-2.0	129251	15.68
107-GSED-C32-3.0	117481	15.68
105-GSED-C05-0.5	127453	15.68
105-GSED-C05-1.0	134571	15.68
105-GSED-C05-2.0	138226	15.69
105-GSED-C05-3.0	148602	15.69
108-GSED-C02-0.5	153900	15.69
108-GSED-C02-1.0	162270	15.69
108-GSED-C02-2.0	155440	15.69

Approved By: _____ Date: 10/14/04

COLUMBIA ANALYTICAL SERVICES, INC.

QA/AC Report

Client: Geomatrix Consultants
Project: 9329

Service Request: K2407209
Date Analyzed: 10/5/2004
Time Analyzed: 1622

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\100504\1005F001.D
Instrument ID: MS06
Analysis Method: 8270C

Lab Code: KWG0415302-2
Analysis Lot: KWG0415302

	1,4-Dichlorobenzene-d4		Naphthalene-d8		Acenaphthalene-d10	
	Area	**RT**	**Area**	**RT**	**Area**	**RT**
Results==>	45689	8.50	161612	10.43	78965	13.19
Upper Limit==>	91378	9.00	323224	10.93	157930	13.69
Lower Limit==>	22844	8.00	80806	9.93	39482	12.69
ICAL Result==>	36220	8.56	129097	10.53	63991	13.33
Associated Analyses						
Method Blank	48018	8.50	176534	10.43	80949	13.18
Lab Control Sample	76377	8.50	175593	10.43	85071	13.19
Duplicate Lab Control Sample	48877	8.50	179459	10.43	82219	13.19
107-GSED-C32-2.0MS	37665	8.51	197706	10.43	93023	13.19
107-GSED-C32-2.0DMS	49436	8.50	174696	1043	87507	13.19
108-GSED-C02-3.0	51303	8.50	183607	10.43	90246	13.19
108-GSED-C02-1.0D	51611	8.50	179821	10.43	88691	13.19
109-GSED-C01-0.5	53176	8.50	190216	10.44	91157	13.19
109-GSED-C01-1.0	56349	8.51	196625	10.43	96814	13.20
109-GSED-C01-2.0	57499	8.51	205714	10.43	104523	13.20
109-GSED-C01-2.0MS	57731	8.51	204787	10.44	102146	13.20
109-GSED-C01-2.0DMS	45866	8.51	257189	10.44	140433	13.20
110-GSED-C01A-0.5	55589	8.51	301425	10.44	142233	13.20
110-GSED-C01A-1.0	71420	8.51	248141	10.44	121629	13.20

Approved By: _____ Date: 10/6/04

COLUMBIA ANALYTICAL SERVICES, INC.

QA/AC Report

Client: Geomatrix Consultants
Project: 9329

Service Request: K2407209
Date Analyzed: 10/5/2004
Time Analyzed: 1622

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\100504\1005F001.D
Instrument ID: MS06
Analysis Method: 8270C

Lab Code: KWG0415302-2
Analysis Lot: KWG0415302

Phenanthrene-d10

	Area	RT
Results==>	133881	15.51
Upper Limit==>	267762	16.01
Lower Limit==>	66940	15.01
ICAL Result==>	106834	15.67

Associated Analyses

Method Blank	133867	15.49
Lab Control Sample	137291	15.49
Duplicate Lab Control Sample	140828	15.50
107-GSED-C32-2.0MS	131447	15.50
107-GSED-C32-2.0DMS	164382	15.49
108-GSED-C02-3.0	160141	15.50
108-GSED-C02-1.0D	163727	15.50
109-GSED-C01-0.5	159031	15.50
109-GSED-C01-1.0	179289	15.50
109-GSED-C01-2.0	202143	15.51
109-GSED-C01-2.0MS	198051	15.51
109-GSED-C01-2.0DMS	249651	15.51
110-GSED-C01A-0.5	219305	15.51
110-GSED-C01A-1.0	216402	15.50

Approved By: _____ Date: 10/4/04

Client:	Geomatrix Consultants	**Service Request:**	K2407209
Project:	9329.000	**Date Extracted:**	09/27/2004
Sample Matrix:	Soil	**Date Analyzed:**	10/05/2004

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	107-GSED-C32-2.0	**Units:**	ug/Kg
Lab Code:	K2407209-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C	**Extraction Lot:**	KWG0414674

Analyte Name	Sample Result	107-GSED-C32-2.0MS KWG0414674-1 Matrix Spike			107-GSED-C32-2.0DMS KWG0414674-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
2-Chlorophenol	ND	278	246	113	162	246	66	35-115	53 *	40
2,4-Dichlorophenol	ND	191	246	78	199	246	81	39-123	4	40
2,4,6-Trichlorophenol	ND	202	246	82	227	246	92	38-129	12	40
2,4,5-Trichlorophenol	ND	198	246	81	227	246	92	34-138	14	40
Pentachlorophenol	ND	145	246	59	121	246	49	10-150	18	40

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: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Extracted: 09/27/2004
Date Analyzed: 10/05/2004

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name: 109-GSED-C01-2.0
Lab Code: K2407209-018

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry

Level: Low
Extraction Lot: KWG0414674

Analyte Name	Sample Result	109-GSED-C01-2.0MS KWG0414674-6 Matrix Spike			109-GSED-C01-2.0DMS KWG0414674-7 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
2-Chlorophenol	ND	176	243	72	219	249	88	35-115	22	40
2,4-Dichlorophenol	ND	191	243	78	210	249	84	39-123	9	40
2,4,6-Trichlorophenol	ND	197	243	81	209	249	84	38-129	6	40
2,4,5-Trichlorophenol	ND	199	243	82	201	249	81	34-138	1	40
Pentachlorophenol	ND	166	243	68	138	249	55	10-150	18	40

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.

QA/QC Report

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Water

Service Request: K2407209
Date Extracted: 09/29/2004
Date Analyzed: 10/04/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0414855

Analyte Name	Lab Control Sample KWG0414855-1 Lab Control Spike Result	Expected	%Rec	Duplicate Lab Control Sample KWG0414855-2 Duplicate Lab Control Spike Result	Expected	%Rec	%Rec Limits	RPD	RPD Limit
2-Chlorophenol	5.59	4.76	117	5.16	4.76	108	43-120	8	30
2,4-Dichlorophenol	5.44	4.76	114	5.10	4.76	107	43-120	7	30
2,4,6-Trichlorophenol	5.54	4.76	116	5.19	4.76	109	48-116	7	30
2,4,5-Trichlorophenol	5.50	4.76	115	5.41	4.76	114	46-120	2	30
Pentachlorophenol	4.71	4.76	99	4.66	4.76	98	23-125	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.
Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Extracted: 09/27/2004
Date Analyzed: 10/05/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG0414674

	Lab Control Sample KWG0414674-3 Lab Control Spike			Duplicate Lab Control Sample KWG0414674-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2-Chlorophenol	211	250	84	177	250	71	39-119	17	40
2,4-Dichlorophenol	206	250	82	170	250	68	42-120	19	40
2,4,6-Trichlorophenol	211	250	84	187	250	75	40-124	12	40
2,4,5-Trichlorophenol	209	250	84	185	250	74	44-122	13	40
Pentachlorophenol	209	250	84	177	250	71	29-130	16	40

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

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

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Water

Service Request: K2407209
Date Extracted: 09/29/2004
Date Analyzed: 10/04/2004
Time Analyzed: 16:42

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0414855-3

Extraction Method: EPA 3520C
Analysis Method: 8270C

File ID: J:\MS06\DATA\100404\1004F013.D
Instrument ID: MS06

Level: Low
Extraction Lot: KWG0414855

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG0414855-1	J:\MS06\DATA\100404\1004F014.D	10/04/04	17:21
Duplicate Lab Control Sample	KWG0414855-2	J:\MS06\DATA\100404\1004F015.D	10/04/04	18:00
RB-1	K2407209-001	J:\MS06\DATA\100404\1004F016.D	10/04/04	18:39
RB-2	K2407209-010	J:\MS06\DATA\100404\1004F017.D	10/04/04	19:18
RB-3	K2407209-022	J:\MS06\DATA\100404\1004F018.D	10/04/04	19:57

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Extracted: 09/27/2004
Date Analyzed: 10/05/2004
Time Analyzed: 15:09

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0414674-5

Extraction Method: EPA 3541
Analysis Method: 8270C

File ID: J:\MS06\DATA\100504\1005F002.D
Instrument ID: MS06

Level: Low
Extraction Lot: KWG0414674

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
107-GSED-C32-0.5	K2407209-002	J:\MS06\DATA\100404\1004F020.D	10/04/04	21:15
107-GSED-C32-1.0	K2407209-003	J:\MS06\DATA\100404\1004F021.D	10/04/04	21:54
107-GSED-C32-2.0	K2407209-004	J:\MS06\DATA\100404\1004F022.D	10/04/04	22:33
107-GSED-C32-3.0	K2407209-005	J:\MS06\DATA\100404\1004F023.D	10/04/04	23:12
105-GSED-C05-0.5	K2407209-006	J:\MS06\DATA\100404\1004F024.D	10/04/04	23:51
105-GSED-C05-1.0	K2407209-007	J:\MS06\DATA\100404\1004F025.D	10/05/04	00:30
105-GSED-C05-2.0	K2407209-008	J:\MS06\DATA\100404\1004F026.D	10/05/04	01:09
105-GSED-C05-3.0	K2407209-009	J:\MS06\DATA\100404\1004F027.D	10/05/04	01:48
108-GSED-C02-0.5	K2407209-011	J:\MS06\DATA\100404\1004F028.D	10/05/04	02:26
108-GSED-C02-1.0	K2407209-012	J:\MS06\DATA\100404\1004F029.D	10/05/04	03:06
108-GSED-C02-2.0	K2407209-013	J:\MS06\DATA\100404\1004F030.D	10/05/04	03:44
Lab Control Sample	KWG0414674-3	J:\MS06\DATA\100504\1005F003.D	10/05/04	15:43
Duplicate Lab Control Sample	KWG0414674-4	J:\MS06\DATA\100504\1005F004.D	10/05/04	16:17
107-GSED-C32-2.0MS	KWG0414674-1	J:\MS06\DATA\100504\1005F005.D	10/05/04	16:50
107-GSED-C32-2.0DMS	KWG0414674-2	J:\MS06\DATA\100504\1005F006.D	10/05/04	17:24
108-GSED-C02-3.0	K2407209-014	J:\MS06\DATA\100504\1005F007.D	10/05/04	17:57
108-GSED-C02-1.0D	K2407209-015	J:\MS06\DATA\100504\1005F008.D	10/05/04	18:31
109-GSED-C01-0.5	K2407209-016	J:\MS06\DATA\100504\1005F009.D	10/05/04	19:04
109-GSED-C01-1.0	K2407209-017	J:\MS06\DATA\100504\1005F010.D	10/05/04	19:38
109-GSED-C01-2.0	K2407209-018	J:\MS06\DATA\100504\1005F011.D	10/05/04	20:11
109-GSED-C01-2.0MS	KWG0414674-6	J:\MS06\DATA\100504\1005F012.D	10/05/04	20:45
109-GSED-C01-2.0DMS	KWG0414674-7	J:\MS06\DATA\100504\1005F013.D	10/05/04	21:19
110-GSED-C01A-0.5	K2407209-019	J:\MS06\DATA\100504\1005F014.D	10/05/04	21:52
110-GSED-C01A-1.0	K2407209-020	J:\MS06\DATA\100504\1005F015.D	10/05/04	22:26
110-GSED-C01A-2.0	K2407209-021	J:\MS10\DATA\100704\1007F009.D	10/07/04	19:06
101-GSED-C09-2.0D	K2407209-023	J:\MS10\DATA\100704\1007F010.D	10/07/04	19:47

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Water

Service Request: K2407209

Lab Control Sample/Duplicate Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Sample Name:**	Duplicate Lab Control Sample
Lab Code:	KWG0414855-1	**Lab Code:**	KWG0414855-2
File ID:	J:\MS06\DATA\100404\1004F014.D	**File ID:**	J:\MS06\DATA\100404\1004F015.D
Instrument ID:	MS06	**Instrument ID:**	MS06
Date Extracted:	09/29/2004	**Date Extracted:**	09/29/2004
Date Analyzed:	10/04/2004	**Date Analyzed:**	10/04/2004
Time Analyzed:	17:21	**Time Analyzed:**	18:00

Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C	**Extraction Lot:**	KWG0414855

These Lab Control Samples apply to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG0414855-3	J:\MS06\DATA\100404\1004F013.D	10/04/04	16:42
RB-1	K2407209-001	J:\MS06\DATA\100404\1004F016.D	10/04/04	18:39
RB-2	K2407209-010	J:\MS06\DATA\100404\1004F017.D	10/04/04	19:18
RB-3	K2407209-022	J:\MS06\DATA\100404\1004F018.D	10/04/04	19:57

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209

Lab Control Sample/Duplicate Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Sample Name:**	Duplicate Lab Control Sample
Lab Code:	KWG0414674-3	**Lab Code:**	KWG0414674-4
File ID:	J:\MS06\DATA\100504\1005F003.D	**File ID:**	J:\MS06\DATA\100504\1005F004.D
Instrument ID:	MS06	**Instrument ID:**	MS06
Date Extracted:	09/27/2004	**Date Extracted:**	09/27/2004
Date Analyzed:	10/05/2004	**Date Analyzed:**	10/05/2004
Time Analyzed:	15:43	**Time Analyzed:**	16:17

Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C	**Extraction Lot:**	KWG0414674

These Lab Control Samples apply to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
107-GSED-C32-0.5	K2407209-002	J:\MS06\DATA\100404\1004F020.D	10/04/04	21:15
107-GSED-C32-1.0	K2407209-003	J:\MS06\DATA\100404\1004F021.D	10/04/04	21:54
107-GSED-C32-2.0	K2407209-004	J:\MS06\DATA\100404\1004F022.D	10/04/04	22:33
107-GSED-C32-3.0	K2407209-005	J:\MS06\DATA\100404\1004F023.D	10/04/04	23:12
105-GSED-C05-0.5	K2407209-006	J:\MS06\DATA\100404\1004F024.D	10/04/04	23:51
105-GSED-C05-1.0	K2407209-007	J:\MS06\DATA\100404\1004F025.D	10/05/04	00:30
105-GSED-C05-2.0	K2407209-008	J:\MS06\DATA\100404\1004F026.D	10/05/04	01:09
105-GSED-C05-3.0	K2407209-009	J:\MS06\DATA\100404\1004F027.D	10/05/04	01:48
108-GSED-C02-0.5	K2407209-011	J:\MS06\DATA\100404\1004F028.D	10/05/04	02:26
108-GSED-C02-1.0	K2407209-012	J:\MS06\DATA\100404\1004F029.D	10/05/04	03:06
108-GSED-C02-2.0	K2407209-013	J:\MS06\DATA\100404\1004F030.D	10/05/04	03:44
Method Blank	KWG0414674-5	J:\MS06\DATA\100504\1005F002.D	10/05/04	15:09
107-GSED-C32-2.0MS	KWG0414674-1	J:\MS06\DATA\100504\1005F005.D	10/05/04	16:50
107-GSED-C32-2.0DMS	KWG0414674-2	J:\MS06\DATA\100504\1005F006.D	10/05/04	17:24
108-GSED-C02-3.0	K2407209-014	J:\MS06\DATA\100504\1005F007.D	10/05/04	17:57
108-GSED-C02-1.0D	K2407209-015	J:\MS06\DATA\100504\1005F008.D	10/05/04	18:31
109-GSED-C01-0.5	K2407209-016	J:\MS06\DATA\100504\1005F009.D	10/05/04	19:04
109-GSED-C01-1.0	K2407209-017	J:\MS06\DATA\100504\1005F010.D	10/05/04	19:38
109-GSED-C01-2.0	K2407209-018	J:\MS06\DATA\100504\1005F011.D	10/05/04	20:11
109-GSED-C01-2.0MS	KWG0414674-6	J:\MS06\DATA\100504\1005F012.D	10/05/04	20:45
109-GSED-C01-2.0DMS	KWG0414674-7	J:\MS06\DATA\100504\1005F013.D	10/05/04	21:19
110-GSED-C01A-0.5	K2407209-019	J:\MS06\DATA\100504\1005F014.D	10/05/04	21:52
110-GSED-C01A-1.0	K2407209-020	J:\MS06\DATA\100504\1005F015.D	10/05/04	22:26
110-GSED-C01A-2.0	K2407209-021	J:\MS10\DATA\100704\1007F009.D	10/07/04	19:06
101-GSED-C09-2.0D	K2407209-023	J:\MS10\DATA\100704\1007F010.D	10/07/04	19:47

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Date Analyzed: 10/04/2004
Time Analyzed: 16:03

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\100404\1004F012.D
Instrument ID: MS06
Column:

Analysis Method: 8270C
Analysis Lot: KWG0415229

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	63.4	16047	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	65.7	16625	PASS
70	69	0	2	0.5	87	PASS
127	198	25	75	55.0	13913	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	25298	PASS
199	198	5	9	6.3	1582	PASS
275	198	10	30	22.0	5564	PASS
365	198	1	100	4.6	1163	PASS
441	443	0	100	31.5	1019	PASS
442	198	40	110	67.9	17169	PASS
443	442	15	24	18.8	3235	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG0415229-2	J:\MS06\DATA\100404\1004F012.D	10/04/2004	16:03	
Method Blank	KWG0414855-3	J:\MS06\DATA\100404\1004F013.D	10/04/2004	16:42	
Lab Control Sample	KWG0414855-1	J:\MS06\DATA\100404\1004F014.D	10/04/2004	17:21	
Duplicate Lab Control Sample	KWG0414855-2	J:\MS06\DATA\100404\1004F015.D	10/04/2004	18:00	
RB-1	K2407209-001	J:\MS06\DATA\100404\1004F016.D	10/04/2004	18:39	
RB-2	K2407209-010	J:\MS06\DATA\100404\1004F017.D	10/04/2004	19:18	
RB-3	K2407209-022	J:\MS06\DATA\100404\1004F018.D	10/04/2004	19:57	
107-GSED-C32-0.5	K2407209-002	J:\MS06\DATA\100404\1004F020.D	10/04/2004	21:15	
107-GSED-C32-1.0	K2407209-003	J:\MS06\DATA\100404\1004F021.D	10/04/2004	21:54	
107-GSED-C32-2.0	K2407209-004	J:\MS06\DATA\100404\1004F022.D	10/04/2004	22:33	
107-GSED-C32-3.0	K2407209-005	J:\MS06\DATA\100404\1004F023.D	10/04/2004	23:12	
105-GSED-C05-0.5	K2407209-006	J:\MS06\DATA\100404\1004F024.D	10/04/2004	23:51	
105-GSED-C05-1.0	K2407209-007	J:\MS06\DATA\100404\1004F025.D	10/05/2004	00:30	
105-GSED-C05-2.0	K2407209-008	J:\MS06\DATA\100404\1004F026.D	10/05/2004	01:09	
105-GSED-C05-3.0	K2407209-009	J:\MS06\DATA\100404\1004F027.D	10/05/2004	01:48	
108-GSED-C02-0.5	K2407209-011	J:\MS06\DATA\100404\1004F028.D	10/05/2004	02:26	
108-GSED-C02-1.0	K2407209-012	J:\MS06\DATA\100404\1004F029.D	10/05/2004	03:06	
108-GSED-C02-2.0	K2407209-013	J:\MS06\DATA\100404\1004F030.D	10/05/2004	03:44	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Date Analyzed: 10/05/2004
Time Analyzed: 14:36

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS06\DATA\100504\1005F001.D
Instrument ID: MS06
Column:

Analysis Method: 8270C
Analysis Lot: KWG0415302

Target Mass	Relative to Mass	Lower Limit %	Upper Limit %	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	54.3	17367	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	58.3	18650	PASS
70	69	0	2	0.4	75	PASS
127	198	25	75	50.7	16211	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	31999	PASS
199	198	5	9	6.8	2175	PASS
275	198	10	30	20.6	6582	PASS
365	198	1	100	3.8	1220	PASS
441	443	0	100	37.4	1654	PASS
442	198	40	110	69.3	22163	PASS
443	442	15	24	19.9	4418	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG0415302-2	J:\MS06\DATA\100504\1005F001.D	10/05/2004	14:36	
Method Blank	KWG0414674-5	J:\MS06\DATA\100504\1005F002.D	10/05/2004	15:09	
Lab Control Sample	KWG0414674-3	J:\MS06\DATA\100504\1005F003.D	10/05/2004	15:43	
Duplicate Lab Control Sample	KWG0414674-4	J:\MS06\DATA\100504\1005F004.D	10/05/2004	16:17	
107-GSED-C32-2.0MS	KWG0414674-1	J:\MS06\DATA\100504\1005F005.D	10/05/2004	16:50	
107-GSED-C32-2.0DMS	KWG0414674-2	J:\MS06\DATA\100504\1005F006.D	10/05/2004	17:24	
108-GSED-C02-3.0	K2407209-014	J:\MS06\DATA\100504\1005F007.D	10/05/2004	17:57	
108-GSED-C02-1.0D	K2407209-015	J:\MS06\DATA\100504\1005F008.D	10/05/2004	18:31	
109-GSED-C01-0.5	K2407209-016	J:\MS06\DATA\100504\1005F009.D	10/05/2004	19:04	
109-GSED-C01-1.0	K2407209-017	J:\MS06\DATA\100504\1005F010.D	10/05/2004	19:38	
109-GSED-C01-2.0	K2407209-018	J:\MS06\DATA\100504\1005F011.D	10/05/2004	20:11	
109-GSED-C01-2.0MS	KWG0414674-6	J:\MS06\DATA\100504\1005F012.D	10/05/2004	20:45	
109-GSED-C01-2.0DMS	KWG0414674-7	J:\MS06\DATA\100504\1005F013.D	10/05/2004	21:19	
110-GSED-C01A-0.5	K2407209-019	J:\MS06\DATA\100504\1005F014.D	10/05/2004	21:52	
110-GSED-C01A-1.0	K2407209-020	J:\MS06\DATA\100504\1005F015.D	10/05/2004	22:26	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Date Analyzed: 10/07/2004
Time Analyzed: 13:30

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS10\DATA\100704\1007F002.D
Instrument ID: MS10
Column:

Analysis Method: 8270C
Analysis Lot: KWG0415478

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	30	80	41.2	18904	PASS
68	69	0	2	0.1	28	PASS
69	198	0	100	51.9	23824	PASS
70	69	0	2	0.9	222	PASS
127	198	25	75	46.1	21152	PASS
197	198	0	1	0.0	0	PASS
198	198	100	100	100.0	45922	PASS
199	198	5	9	6.8	3108	PASS
275	198	10	30	18.5	8477	PASS
365	198	1	100	2.4	1121	PASS
441	443	0	100	80.7	3562	PASS
442	198	40	110	51.6	23691	PASS
443	442	15	24	18.6	4414	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG0415478-2	J:\MS10\DATA\100704\1007F002.D	10/07/2004	13:30	
110-GSED-C01A-2.0	K2407209-021	J:\MS10\DATA\100704\1007F009.D	10/07/2004	19:06	
101-GSED-C09-2.0D	K2407209-023	J:\MS10\DATA\100704\1007F010.D	10/07/2004	19:47	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Calibration Date: 10/04/2004

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL3872
Instrument ID: MS06

Column: MS

Level ID	File ID
A	J:\MS06\DATA\100404\1004F004.D
B	J:\MS06\DATA\100404\1004F005.D
C	J:\MS06\DATA\100404\1004F006.D
D	J:\MS06\DATA\100404\1004F007.D
E	J:\MS06\DATA\100404\1004F008.D
F	J:\MS06\DATA\100404\1004F009.D
G	J:\MS06\DATA\100404\1004F010.D
H	J:\MS06\DATA\100404\1004F011.D

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2-Chlorophenol	A	100	1.27	B	500	1.34	C	1000	1.30	D	2000	1.33	E	4000	1.32
	F	6000	1.31	G	8000	1.43	H	10000	1.47						
‡ 2,4-Dichlorophenol	A	100	0.276	B	500	0.260	C	1000	0.274	D	2000	0.287	E	4000	0.279
	F	6000	0.273	G	8000	0.276	H	10000	0.298						
‡ 2,4,6-Trichlorophenol	A	100	0.388	B	500	0.385	C	1000	0.396	D	2000	0.411	E	4000	0.415
	F	6000	0.413	G	8000	0.427	H	10000	0.442						
2,4,5-Trichlorophenol	A	100	0.375	B	500	0.411	C	1000	0.414	D	2000	0.435	E	4000	0.464
	F	6000	0.455	G	8000	0.470	H	10000	0.498						
‡ Pentachlorophenol							C	1000	0.0826	D	2000	0.120	E	4000	0.148
	F	6000	0.149	G	8000	0.159	H	10000	0.170						
2-Fluorophenol	A	100	1.24	B	200	1.17	C	500	1.20	D	1000	1.20	E	2000	1.18
	F	3000	1.22	G	4000	1.29	H	5000	1.30						
2,4,6-Tribromophenol	A	100	0.212	B	200	0.204	C	500	0.220	D	1000	0.211	E	2000	0.226
	F	3000	0.225	G	4000	0.234	H	5000	0.238						
† 4-Nitrophenol				B	500	0.289	C	1000	0.306	D	2000	0.331	E	4000	0.342
	F	6000	0.331	G	8000	0.332	H	10000	0.345						
‡ Phenol	A	100	1.38	B	500	1.31	C	1000	1.39	D	2000	1.41	E	4000	1.37
	F	6000	1.38	G	8000	1.49	H	10000	1.51						
† 2,4-Dinitrophenol				B	500	0.128	C	1000	0.167	D	2000	0.205	E	4000	0.241
	F	6000	0.243	G	8000	0.254	H	10000	0.271						
‡ 4-Chloro-3-methylphenol	A	100	0.320	B	500	0.300	C	1000	0.294	D	2000	0.312	E	4000	0.317
	F	6000	0.307	G	8000	0.301	H	10000	0.331						

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

† SPCC Compound

‡ CCC Compound

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Calibration Date: 10/04/2004

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL3872
Instrument ID: MS06

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2-Chlorophenol	MS	AverageRF	% RSD	5.1		≤ 15	1.35		0.01
‡ 2,4-Dichlorophenol	MS	AverageRF	% RSD	4.0		≤ 15	0.278		0.01
‡ 2,4,6-Trichlorophenol	MS	AverageRF	% RSD	4.8		≤ 15	0.410		0.01
2,4,5-Trichlorophenol	MS	AverageRF	% RSD	8.9		≤ 15	0.440		0.01
‡ Pentachlorophenol	MS	AverageRF	% RSD	23.1	*	≤ 15	0.138		0.01
2-Fluorophenol	SURR	AverageRF	% RSD	3.9		≤ 15	1.23		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	5.3		≤ 15	0.221		0.01
† 4-Nitrophenol	MS	AverageRF	% RSD	6.3		≤ 15	0.325		0.05
‡ Phenol	MS	AverageRF	% RSD	4.6		≤ 15	1.40		0.01
† 2,4-Dinitrophenol	TRG	Linear	R2	0.997		≥ 0.990	0.216		0.05
‡ 4-Chloro-3-methylphenol	MS	AverageRF	% RSD	3.9		≤ 15	0.310		0.01

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

† SPCC Compound **‡ CCC Compound**

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Calibration Date: 10/04/2004
Date Analyzed: 10/04/2004

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270C

Calibration ID: CAL3872
Units: ng/ml

File ID: J:\MS06\DATA\100404\1004F012.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
2-Chlorophenol	3000	3300	1.35	1.50	11	NA	± 30 %	AverageRF
‡ 2,4-Dichlorophenol	3000	3200	0.278	0.301	8	NA	± 20 %	AverageRF
‡ 2,4,6-Trichlorophenol	3000	3100	0.410	0.430	5	NA	± 20 %	AverageRF
2,4,5-Trichlorophenol	3000	3300	0.440	0.487	11	NA	± 30 %	AverageRF
‡ Pentachlorophenol	3000	3000	0.138	0.140	2	NA	± 20 %	AverageRF
† 2,4-Dinitrophenol	3000	3100	0.216	0.240	NA	2	± 30 %	Linear
‡ 4-Chloro-3-methylphenol	3000	3300	0.310	0.345	11	NA	± 20 %	AverageRF
† 4-Nitrophenol	3000	3200	0.325	0.345	6	NA	± 30 %	AverageRF
‡ Phenol	3000	3400	1.40	1.61	15	NA	± 20 %	AverageRF

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

† **SPCC Compound** ‡ **CCC Compound**

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Calibration Date: 10/06/2004

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL3878
Instrument ID: MS10

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS10\DATA\100604\1006F004.D	F	J:\MS10\DATA\100604\1006F009.D
B	J:\MS10\DATA\100604\1006F005.D	G	J:\MS10\DATA\100604\1006F010.D
C	J:\MS10\DATA\100604\1006F006.D	H	J:\MS10\DATA\100604\1006F011.D
D	J:\MS10\DATA\100604\1006F007.D	I	J:\MS10\DATA\100604\1006F012.D
E	J:\MS10\DATA\100604\1006F008.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
2-Chlorophenol				B	100	1.57	C	500	1.46	D	1000	1.60	E	2000	1.41
	F	4000	1.36	G	6000	1.18	H	8000	1.30	I	10000	1.19			
‡ 2,4-Dichlorophenol				B	100	0.282	C	500	0.276	D	1000	0.301	E	2000	0.327
	F	4000	0.309	G	6000	0.269	H	8000	0.266	I	10000	0.265			
‡ 2,4,6-Trichlorophenol				B	100	0.420	C	500	0.405	D	1000	0.418	E	2000	0.416
	F	4000	0.405	G	6000	0.398	H	8000	0.390	I	10000	0.388			
2,4,5-Trichlorophenol				B	100	0.445	C	500	0.451	D	1000	0.427	E	2000	0.447
	F	4000	0.424	G	6000	0.385	H	8000	0.394	I	10000	0.409			
‡ Pentachlorophenol							C	500	0.151	D	1000	0.159	E	2000	0.168
	F	4000	0.168	G	6000	0.159	H	8000	0.163	I	10000	0.162			
2-Fluorophenol				B	100	1.29	C	200	1.31	D	500	1.37	E	1000	1.26
	F	2000	1.29	G	3000	1.14	H	4000	1.26	I	5000	1.21			
2,4,6-Tribromophenol				B	100	0.0979	C	200	0.114	D	500	0.113	E	1000	0.115
	F	2000	0.116	G	3000	0.114	H	4000	0.115	I	5000	0.113			
† 4-Nitrophenol							C	500	0.198	D	1000	0.201	E	2000	0.210
	F	4000	0.222	G	6000	0.205	H	8000	0.218	I	10000	0.228			
‡ 1,4-Dichlorobenzene	A	50	1.55	B	100	1.41	C	200	1.35	D	500	1.31	E	1000	1.40
	F	2000	1.36	G	3000	1.26	H	4000	1.29	I	5000	1.27			
‡ Phenol				B	100	1.77	C	500	1.60	D	1000	1.88	E	2000	1.61
	F	4000	1.61	G	6000	1.26	H	8000	1.39	I	10000	1.25			
‡ Di-n-octyl Phthalate				B	100	1.64	C	200	2.02	D	500	2.15	E	1000	2.21
	F	2000	2.15	G	3000	2.15	H	4000	2.12	I	5000	2.12			
‡ Fluoranthene	A	50	1.19	B	100	1.10	C	200	1.12	D	500	1.13	E	1000	1.18
	F	2000	1.10	G	3000	1.04	H	4000	1.04	I	5000	0.990			
‡ Benzo(a)pyrene	A	50	1.25	B	100	1.18	C	200	1.28	D	500	1.25	E	1000	1.28
	F	2000	1.23	G	3000	1.26	H	4000	1.23	I	5000	1.25			
† 2,4-Dinitrophenol							C	500	0.120	D	1000	0.151	E	2000	0.195
	F	4000	0.232	G	6000	0.215	H	8000	0.223	I	10000	0.229			

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

† **SPCC Compound** ‡ **CCC Compound**

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Calibration Date: 10/06/2004

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL3878
Instrument ID: MS10

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
‡ 4-Chloro-3-methylphenol				B	100	0.283	C	500	0.260	D	1000	0.268	E	2000	0.298
	F	4000	0.269	G	6000	0.260	H	8000	0.244	I	10000	0.243			
† N-Nitrosodi-n-propylamine	A	50	0.890	B	100	0.838	C	200	0.818	D	500	0.905	E	1000	0.833
	F	2000	0.821	G	3000	0.706	H	4000	0.819	I	5000	0.751			
† Hexachlorocyclopentadiene							C	200	0.222	D	500	0.277	E	1000	0.284
	F	2000	0.316	G	3000	0.302	H	4000	0.312	I	5000	0.302			
‡ Acenaphthene	A	50	1.21	B	100	1.05	C	200	1.03	D	500	1.01	E	1000	1.02
	F	2000	0.955	G	3000	0.904	H	4000	0.904	I	5000	0.889			
‡ N-Nitrosodiphenylamine	A	50	0.926	B	100	0.820	C	200	0.833	D	500	0.831	E	1000	0.828
	F	2000	0.799	G	3000	0.756	H	4000	0.749	I	5000	0.753			
‡ Hexachlorobutadiene	A	50	0.215	B	100	0.206	C	200	0.202	D	500	0.203	E	1000	0.208
	F	2000	0.200	G	3000	0.195	H	4000	0.192	I	5000	0.194			
‡ 2-Nitrophenol				B	100	0.181	C	500	0.173	D	1000	0.204	E	2000	0.210
	F	4000	0.186	G	6000	0.190	H	8000	0.177	I	10000	0.183			

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† **SPCC Compound** ‡ **CCC Compound**

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Calibration Date: 10/06/2004

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL3878
Instrument ID: MS10

Column: MS

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
2-Chlorophenol	MS	AverageRF	% RSD	11.4		≤ 15	1.38		0.01
‡ 2,4-Dichlorophenol	MS	AverageRF	% RSD	8.0		≤ 15	0.287		0.01
‡ 2,4,6-Trichlorophenol	MS	AverageRF	% RSD	3.0		≤ 15	0.405		0.01
2,4,5-Trichlorophenol	MS	AverageRF	% RSD	5.9		≤ 15	0.423		0.01
‡ Pentachlorophenol	MS	AverageRF	% RSD	3.7		≤ 15	0.161		0.01
2-Fluorophenol	SURR	AverageRF	% RSD	5.6		≤ 15	1.27		0.01
2,4,6-Tribromophenol	SURR	AverageRF	% RSD	5.2		≤ 15	0.112		0.01
† 4-Nitrophenol	MS	AverageRF	% RSD	5.3		≤ 15	0.211		0.05
‡ 1,4-Dichlorobenzene	MS	AverageRF	% RSD	6.6		≤ 15	1.36		0.01
‡ Phenol	MS	AverageRF	% RSD	14.7		≤ 15	1.54		0.01
‡ Di-n-octyl Phthalate	TRG	AverageRF	% RSD	8.8		≤ 15	2.07		0.01
‡ Fluoranthene	TRG	AverageRF	% RSD	6.0		≤ 15	1.10		0.01
‡ Benzo(a)pyrene	TRG	AverageRF	% RSD	2.6		≤ 15	1.25		0.01
† 2,4-Dinitrophenol	TRG	Linear	R2	0.998		≥ 0.990	0.195		0.05
‡ 4-Chloro-3-methylphenol	MS	AverageRF	% RSD	7.1		≤ 15	0.266		0.01
† N-Nitrosodi-n-propylamine	MS	AverageRF	% RSD	7.5		≤ 15	0.820		0.05
† Hexachlorocyclopentadiene	TRG	AverageRF	% RSD	11.2		≤ 15	0.288		0.05
‡ Acenaphthene	MS	AverageRF	% RSD	10.2		≤ 15	0.997		0.01
‡ N-Nitrosodiphenylamine	TRG	AverageRF	% RSD	6.9		≤ 15	0.811		0.01
‡ Hexachlorobutadiene	TRG	AverageRF	% RSD	3.7		≤ 15	0.202		0.01
‡ 2-Nitrophenol	TRG	AverageRF	% RSD	6.8		≤ 15	0.188		0.01

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

† SPCC Compound **‡ CCC Compound**

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Calibration Date: 10/06/2004
Date Analyzed: 10/07/2004

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270C

Calibration ID: CAL3878
Units: ng/ml

File ID: J:\MS10\DATA\100604\1006F013.D
J:\MS10\DATA\100604\1006F014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D		%Drift	Criteria	Curve Fit
2-Chlorophenol	3000	3300	1.38	1.52	10		NA	± 30 %	AverageRF
‡ 2,4-Dichlorophenol	3000	3500	0.287	0.336	17		NA	± 20 %	AverageRF
‡ 2,4,6-Trichlorophenol	3000	3300	0.405	0.449	11		NA	± 20 %	AverageRF
2,4,5-Trichlorophenol	3000	3300	0.423	0.459	9		NA	± 30 %	AverageRF
‡ Pentachlorophenol	3000	3400	0.161	0.180	12		NA	± 20 %	AverageRF
‡ 1,4-Dichlorobenzene	3000	3200	1.36	1.46	7		NA	± 20 %	AverageRF
† 2,4-Dinitrophenol	3000	3400	0.195	0.241	NA		13	± 30 %	Linear
‡ 2-Nitrophenol	3000	3500	0.188	0.221	18		NA	± 20 %	AverageRF
‡ 4-Chloro-3-methylphenol	3000	3400	0.266	0.304	14		NA	± 20 %	AverageRF
† 4-Nitrophenol	3000	3300	0.211	0.232	10		NA	± 30 %	AverageRF
‡ Acenaphthene	3000	3000	0.997	1.01	2		NA	± 20 %	AverageRF
‡ Benzo(a)pyrene	3000	3500	1.25	1.46	17		NA	± 20 %	AverageRF
‡ Di-n-octyl Phthalate	3000	3500	2.07	2.42	17		NA	± 20 %	AverageRF
‡ Fluoranthene	3000	3200	1.10	1.18	7		NA	± 30 %	AverageRF
‡ Hexachlorobutadiene	3000	3300	0.202	0.219	8		NA	± 20 %	AverageRF
† Hexachlorocyclopentadiene	3000	4200	0.288	0.401	39	*	NA	± 30 %	AverageRF
† N-Nitrosodi-n-propylamine	3000	3400	0.820	0.935	14		NA	± 30 %	AverageRF
‡ N-Nitrosodiphenylamine	3000	3300	0.811	0.898	11		NA	± 20 %	AverageRF
‡ Phenol	3000	3600	1.54	1.84	19		NA	± 20 %	AverageRF

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

† **SPCC Compound** ‡ **CCC Compound**

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Date Analyzed: 10/04/2004

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270C

Calibration Date: 10/04/2004
Calibration ID: CAL3872
Analysis Lot: KWG0415229
Units: ng/ml

File ID: J:\MS06\DATA\100404\1004F012.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2-Chlorophenol	3000	3300	0.01	1.35	1.50	11	NA	± 30 %	AverageRF
‡ 2,4-Dichlorophenol	3000	3200	0.01	0.278	0.301	8	NA	± 20 %	AverageRF
‡ 2,4,6-Trichlorophenol	3000	3100	0.01	0.410	0.430	5	NA	± 20 %	AverageRF
2,4,5-Trichlorophenol	3000	3300	0.01	0.440	0.487	11	NA	± 30 %	AverageRF
‡ Pentachlorophenol	3000	3000	0.01	0.138	0.140	2	NA	± 20 %	AverageRF
2-Fluorophenol	3000	3300	0.01	1.23	1.34	9	NA	± 30 %	AverageRF
2,4,6-Tribromophenol	3000	3200	0.01	0.221	0.236	7	NA	± 30 %	AverageRF
† 4-Nitrophenol	3000	3200	0.05	0.325	0.345	6	NA	± 30 %	AverageRF
‡ Phenol	3000	3400	0.01	1.40	1.61	15	NA	± 20 %	AverageRF
† 2,4-Dinitrophenol	3000	3100	0.05	0.216	0.240	NA	2	± 30 %	Linear
‡ 4-Chloro-3-methylphenol	3000	3300	0.01	0.310	0.345	11	NA	± 20 %	AverageRF

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

† SPCC Compound **‡ CCC Compound**

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Date Analyzed: 10/05/2004

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270C

Calibration Date: 10/04/2004
Calibration ID: CAL3872
Analysis Lot: KWG0415302
Units: ng/ml

File ID: J:\MS06\DATA\100504\1005F001.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
2-Chlorophenol	3000	3200	0.01	1.35	1.43	6	NA	± 30 %	AverageRF
‡ 2,4-Dichlorophenol	3000	3300	0.01	0.278	0.307	11	NA	± 20 %	AverageRF
‡ 2,4,6-Trichlorophenol	3000	3400	0.01	0.410	0.459	12	NA	± 20 %	AverageRF
2,4,5-Trichlorophenol	3000	3400	0.01	0.440	0.493	12	NA	± 30 %	AverageRF
‡ Pentachlorophenol	3000	3300	0.01	0.138	0.152	10	NA	± 20 %	AverageRF
2-Fluorophenol	3000	3300	0.01	1.23	1.34	10	NA	± 30 %	AverageRF
2,4,6-Tribromophenol	3000	3400	0.01	0.221	0.248	12	NA	± 30 %	AverageRF
† 4-Nitrophenol	3000	2700	0.05	0.325	0.289	-11	NA	± 30 %	AverageRF
‡ Phenol	3000	3300	0.01	1.40	1.53	9	NA	± 20 %	AverageRF
† 2,4-Dinitrophenol	3000	3000	0.05	0.216	0.237	NA	1	± 30 %	Linear
‡ 4-Chloro-3-methylphenol	3000	3200	0.01	0.310	0.328	6	NA	± 20 %	AverageRF

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

† SPCC Compound ‡ CCC Compound

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209
Date Analyzed: 10/07/2004

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270C

Calibration Date: 10/06/2004
Calibration ID: CAL3878
Analysis Lot: KWG0415478
Units: ng/ml

File ID: J:\MS10\DATA\100704\1007F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
2-Chlorophenol	3000	3200	0.01	1.38	1.46	5		NA	± 30 %	AverageRF
‡ 2,4-Dichlorophenol	3000	3500	0.01	0.287	0.332	16		NA	± 20 %	AverageRF
‡ 2,4,6-Trichlorophenol	3000	3100	0.01	0.405	0.417	3		NA	± 20 %	AverageRF
2,4,5-Trichlorophenol	3000	3200	0.01	0.423	0.457	8		NA	± 30 %	AverageRF
‡ Pentachlorophenol	3000	3300	0.01	0.161	0.175	8		NA	± 20 %	AverageRF
2-Fluorophenol	3000	3100	0.01	1.27	1.29	2		NA	± 30 %	AverageRF
2,4,6-Tribromophenol	3000	3200	0.01	0.112	0.121	8		NA	± 30 %	AverageRF
† 4-Nitrophenol	3000	3200	0.05	0.211	0.227	7		NA	± 30 %	AverageRF
‡ 1,4-Dichlorobenzene	3000	3200	0.01	1.36	1.46	8		NA	± 20 %	AverageRF
‡ Phenol	3000	3400	0.01	1.54	1.73	12		NA	± 20 %	AverageRF
‡ Di-n-octyl Phthalate	3000	3500	0.01	2.07	2.39	15		NA	± 20 %	AverageRF
‡ Fluoranthene	3000	3200	0.01	1.10	1.18	7		NA	± 20 %	AverageRF
‡ Benzo(a)pyrene	3000	3400	0.01	1.25	1.40	12		NA	± 20 %	AverageRF
† 2,4-Dinitrophenol	3000	3000	0.05	0.195	0.214	NA		1	± 30 %	Linear
‡ 4-Chloro-3-methylphenol	3000	3400	0.01	0.266	0.299	13		NA	± 20 %	AverageRF
† N-Nitrosodi-n-propylamine	3000	3100	0.05	0.820	0.850	4		NA	± 30 %	AverageRF
† Hexachlorocyclopentadiene	3000	4000	0.05	0.288	0.386	34	*	NA	± 30 %	AverageRF
‡ Acenaphthene	3000	3000	0.01	0.997	0.997	0		NA	± 30 %	AverageRF
‡ N-Nitrosodiphenylamine	3000	3300	0.01	0.811	0.881	9		NA	± 20 %	AverageRF
‡ Hexachlorobutadiene	3000	3200	0.01	0.202	0.213	6		NA	± 20 %	AverageRF
‡ 2-Nitrophenol	3000	3400	0.01	0.188	0.214	14		NA	± 20 %	AverageRF

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

† SPCC Compound ‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270C

Analysis Lot: KWG0415229
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1004F012.D	Continuing Calibration Verification	KWG0415229-2	10/4/2004	16:03		10/4/2004	16:32
1004A012.D	GC/MS Tuning - Decafluorotriphenyl	KWG0415229-1	10/4/2004	16:03		10/4/2004	16:32
1004F013.D	Method Blank	KWG0414855-3	10/4/2004	16:42		10/4/2004	17:11
1004F014.D	Lab Control Sample	KWG0414855-1	10/4/2004	17:21		10/4/2004	17:51
1004F015.D	Duplicate Lab Control Sample	KWG0414855-2	10/4/2004	18:00		10/4/2004	18:30
1004F016.D	RB-1	K2407209-001	10/4/2004	18:39		10/4/2004	19:09
1004F017.D	RB-2	K2407209-010	10/4/2004	19:18		10/4/2004	19:48
1004F018.D	RB-3	K2407209-022	10/4/2004	19:57		10/4/2004	20:26
1004F019.D	ZZZZZZ	ZZZZZZ	10/4/2004	20:36		10/4/2004	21:06
1004F020.D	107-GSED-C32-0.5	K2407209-002	10/4/2004	21:15		10/4/2004	21:45
1004F021.D	107-GSED-C32-1.0	K2407209-003	10/4/2004	21:54		10/4/2004	22:23
1004F022.D	107-GSED-C32-2.0	K2407209-004	10/4/2004	22:33		10/4/2004	23:02
1004F023.D	107-GSED-C32-3.0	K2407209-005	10/4/2004	23:12		10/4/2004	23:42
1004F024.D	105-GSED-C05-0.5	K2407209-006	10/4/2004	23:51		10/5/2004	00:21
1004F025.D	105-GSED-C05-1.0	K2407209-007	10/5/2004	00:30		10/5/2004	01:00
1004F026.D	105-GSED-C05-2.0	K2407209-008	10/5/2004	01:09		10/5/2004	01:39
1004F027.D	105-GSED-C05-3.0	K2407209-009	10/5/2004	01:48		10/5/2004	02:18
1004F028.D	108-GSED-C02-0.5	K2407209-011	10/5/2004	02:26		10/5/2004	02:56
1004F029.D	108-GSED-C02-1.0	K2407209-012	10/5/2004	03:06		10/5/2004	03:35
1004F030.D	108-GSED-C02-2.0	K2407209-013	10/5/2004	03:44		10/5/2004	04:14

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270C

Analysis Lot: KWG0415302
Instrument ID: MS06

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1005F008.D	108-GSED-C02-1.0D	K2407209-015	10/5/2004	18:31		10/5/2004	18:56
1005F009.D	109-GSED-C01-0.5	K2407209-016	10/5/2004	19:04		10/5/2004	19:29
1005F010.D	109-GSED-C01-1.0	K2407209-017	10/5/2004	19:38		10/5/2004	20:02
1005F011.D	109-GSED-C01-2.0	K2407209-018	10/5/2004	20:11		10/5/2004	20:36
1005F012.D	109-GSED-C01-2.0MS	KWG0414674-6	10/5/2004	20:45		10/5/2004	21:10
1005F013.D	109-GSED-C01-2.0DMS	KWG0414674-7	10/5/2004	21:19		10/5/2004	21:43
1005F014.D	110-GSED-C01A-0.5	K2407209-019	10/5/2004	21:52		10/5/2004	22:17
1005F015.D	110-GSED-C01A-1.0	K2407209-020	10/5/2004	22:26		10/5/2004	22:50
1005F001.D	Continuing Calibration Verification	KWG0415302-2	10/5/2004	14:36		10/5/2004	15:01
1005A001.D	GC/MS Tuning - Decafluorotriphenyl	KWG0415302-1	10/5/2004	14:36		10/5/2004	15:01
1005F002.D	Method Blank	KWG0414674-5	10/5/2004	15:09		10/5/2004	15:34
1005F003.D	Lab Control Sample	KWG0414674-3	10/5/2004	15:43		10/5/2004	16:08
1005F004.D	Duplicate Lab Control Sample	KWG0414674-4	10/5/2004	16:17		10/5/2004	16:42
1005F005.D	107-GSED-C32-2.0MS	KWG0414674-1	10/5/2004	16:50		10/5/2004	17:14
1005F006.D	107-GSED-C32-2.0DMS	KWG0414674-2	10/5/2004	17:24		10/5/2004	17:49
1005F007.D	108-GSED-C02-3.0	K2407209-014	10/5/2004	17:57		10/5/2004	18:22

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Geomatrix Consultants
Project: 9329.000

Service Request: K2407209

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270C

Analysis Lot: KWG0415478
Instrument ID: MS10

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1007F002.D	Continuing Calibration Verification	KWG0415478-2	10/7/2004	13:30		10/7/2004	13:59
1007A002.D	GC/MS Tuning - Decafluorotriphenyl	KWG0415478-1	10/7/2004	13:30		10/7/2004	13:59
1007F008.D	ZZZZZZ	ZZZZZZ	10/7/2004	18:25		10/7/2004	18:54
1007F009.D	110-GSED-C01A-2.0	K2407209-021	10/7/2004	19:06		10/7/2004	19:35
1007F010.D	101-GSED-C09-2.0D	K2407209-023	10/7/2004	19:47		10/7/2004	20:16

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Water

Service Request: K2407209
Date Extracted: 09/29/2004

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Extraction Lot: KWG0414855
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
RB-1	K2407209-001	09/14/04	09/17/04	180ml	2ml	NA	*
RB-2	K2407209-010	09/15/04	09/17/04	230ml	2ml	NA	*
RB-3	K2407209-022	09/16/04	09/17/04	230ml	2ml	NA	*
Method Blank	KWG0414855-3	NA	NA	1050ml	2ml	NA	
Lab Control Sample	KWG0414855-1	NA	NA	1050ml	2ml	NA	
Duplicate Lab Control Sample	KWG0414855-2	NA	NA	1050ml	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Geomatrix Consultants
Project: 9329.000
Sample Matrix: Soil

Service Request: K2407209
Date Extracted: 09/27/2004

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270C

Extraction Lot: KWG0414674
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
107-GSED-C32-0.5	K2407209-002	09/15/04	09/17/04	40.11g	2ml	40.6	
107-GSED-C32-1.0	K2407209-003	09/15/04	09/17/04	40.36g	2ml	46.6	
107-GSED-C32-2.0	K2407209-004	09/15/04	09/17/04	37.90g	2ml	54.8	
107-GSED-C32-3.0	K2407209-005	09/15/04	09/17/04	40.16g	2ml	57.0	
105-GSED-C05-0.5	K2407209-006	09/15/04	09/17/04	40.54g	2ml	42.2	
105-GSED-C05-1.0	K2407209-007	09/15/04	09/17/04	40.26g	2ml	40.0	
105-GSED-C05-2.0	K2407209-008	09/15/04	09/17/04	40.48g	2ml	51.9	
105-GSED-C05-3.0	K2407209-009	09/15/04	09/17/04	26.76g	2ml	77.5	
108-GSED-C02-0.5	K2407209-011	09/16/04	09/17/04	40.60g	2ml	43.5	
108-GSED-C02-1.0	K2407209-012	09/16/04	09/17/04	40.81g	2ml	44.6	
108-GSED-C02-2.0	K2407209-013	09/16/04	09/17/04	38.70g	2ml	51.7	
108-GSED-C02-3.0	K2407209-014	09/16/04	09/17/04	37.68g	2ml	57.7	
108-GSED-C02-1.0D	K2407209-015	09/16/04	09/17/04	40.09g	2ml	46.3	
109-GSED-C01-0.5	K2407209-016	09/16/04	09/17/04	40.03g	2ml	43.4	
109-GSED-C01-1.0	K2407209-017	09/16/04	09/17/04	40.08g	2ml	46.0	
109-GSED-C01-2.0	K2407209-018	09/16/04	09/17/04	36.74g	2ml	54.5	
110-GSED-C01A-0.5	K2407209-019	09/16/04	09/17/04	33.12g	2ml	60.6	
110-GSED-C01A-1.0	K2407209-020	09/16/04	09/17/04	31.06g	2ml	64.7	
110-GSED-C01A-2.0	K2407209-021	09/16/04	09/17/04	24.69g	2ml	82.0	
101-GSED-C09-2.0D	K2407209-023	09/14/04	09/17/04	40.56g	2ml	46.9	
Method Blank	KWG0414674-5	NA	NA	40.81g	2ml	NA	
107-GSED-C32-2.0MS	KWG0414674-1	09/15/04	09/17/04	37.09g	2ml	54.8	
107-GSED-C32-2.0DMS	KWG0414674-2	09/15/04	09/17/04	37.10g	2ml	54.8	
109-GSED-C01-2.0MS	KWG0414674-6	09/16/04	09/17/04	37.72g	2ml	54.5	
109-GSED-C01-2.0DMS	KWG0414674-7	09/16/04	09/17/04	36.78g	2ml	54.5	
Lab Control Sample	KWG0414674-3	NA	NA	20.00g	2ml	NA	
Duplicate Lab Control Sample	KWG0414674-4	NA	NA	20.00g	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Organic Analysis:
Semi-Volatile Organic Compounds by GC/MS

Validation Package

Geomatrix

APPENDIX C

Laboratory Results for Fish Tissue Samples

1317 South 13th Avenue P.O. Box 479 Kelso, Washington 98626 (360) 577-7222 ph (360) 636-1068 fax

Columbia Analytical Services INC.
An Employee - Owned Company

June 29, 2005 Service Request No: K2502124

Ann Holbrow
Geomatrix Consultants
2101 Webster St.
12th Floor
Oakland, CA 94612

RE: 9329

Dear Ann:

Enclosed are the results of the sample(s) submitted to our laboratory on March 24, 2005. For your reference, these analyses have been assigned our service request number K2502124.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) 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 3376.

Respectfully submitted,

Columbia Analytical Services, Inc.

Gregory Salata, Ph.D.
Project Chemist

GS/jeb

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
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.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
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 compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
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 has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

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.
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 estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
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 (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

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.

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Geomatrix Consultants	**Service Request No.:**	K2502124
Project:	9329	**Date Received:**	03/24/05
Sample Matrix:	Fish tissue		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Ten fish tissue samples were received for analysis at Columbia Analytical Services on 03/24/05. The samples were received in good condition and consistent with the accompanying chain of custody form. Upon receipt at the laboratory the samples were filleted, the skin was removed, and the tissue was stored frozen at –20°C until authorization was received from the client to proceed with analysis.

Dioxins and Furans by EPA Method 8290

Dioxin and Furan analysis by EPA Method 8290 was performed at Columbia Analytical Services laboratory in Houston, TX. The narrative for this analysis can be found in the corresponding section of this data package.

Approved by _____ **Date** 6/29/05

Chain of Custody Documentation

Chain-of-Custody Record

11171

C2502124

Project No.: 9329

Date: 23MAR05

Page 1 of 1

Samplers (Signatures): Doug Parkinson

Date	Time	Sample Number	Soil (S), Water (W), Vapor (V), or Other	EPA Method 8270	TPHg by 8015	TPHd by 8015	TPH:	EPA 8260	EPA 8021	Title 22 Metals	Hold	Acidified	No. of containers
16MAR05	1500	BSP-SB-001									✓		
"	1500	BSP-SB-002									✓		
"	1500	BSP-SB-003									✓		
"	1500	BSP-SB-004									✓		
"	1500	BSP-SB-005									✓		
"	1500	~~BSP-SB~~ WSP-006									✓		
"	1500	WSP-SB-007									✓		
"	1500	WSP-SB-008									✓		
"	1500	JST-SB-009									✓		
16MAR05	1500	JST-SB-010									✓		

ANALYSES

REMARKS

Additional Comments:

FILLET BEFORE FREEZING
WILL BE CONTACTED
FOR ANALYSIS

Turnaround Time: STANDARD

Results To: ANN HOLBROW

Total No. of containers: 1

Relinquished by (signature): Doug Parkinson	Date: 23 Mar	Relinquished by (signature):	Date:	Relinquished by (signature):	Date:
Printed Name: DOUGLAS PARKINSON	Time:	Printed Name:	Time:	Printed Name:	Time:
Company: DOUG PARKINSON & ASSOC		Company:		Company:	
Received (signature): Tracy Black	Date: ~~3/24/05~~ 3/24/05	Received (signature): T Black	Date:	Received (signature):	Date:
Printed Name: Black	Time: 1000	Printed Name:	Time:	Printed Name:	Time:
Company: CAS		Company:		Company:	

Method of shipment: FED EX

Laboratory comments and Log No.:

Geomatrix Consultants
330 W. Bay Street, Suite 140
Costa Mesa, California 92627
(949) 642-0245

Geomatrix **Columbia Analytical Services Inc.** PC Gregory

Cooler Receipt and Preservation Form

Project/Client Douglas Parkinson Work Order K250 2124

Cooler received on 3-24-05 and opened on 3-24-05 by BW

1.	Were custody seals on outside of coolers?					Y (N)
	If yes, how many and where?					
2.	Were custody seals intact?					~~Y~~ N
3.	Were signature and date present on the custody seals?					~~Y~~ N
4.	Is the shipper's airbill available and filed? If no, record airbill number: Fed Ex 8505-0554-0801					(Y) N
5.	COC#					
	Temperature of cooler(s) upon receipt: (°C)	7.5				
	Temperature Blank: (°C)	5.6				
	Were samples hand delivered on the same day as collection?					~~Y~~ N
6.	Were custody papers properly filled out (ink, signed, etc.)?					(Y) N
7.	Type of packing material present ICE, baggies					
8.	**Did all bottles arrive in good condition (unbroken)?**					(Y) N
9.	Were all bottle labels complete (i.e analysis, preservation, etc.)?					(Y) N
10.	Did all bottle labels and tags agree with custody papers?					Y (N)
11.	**Were the correct types of bottles used for the tests indicated?**					~~Y~~ N
12.	Were all of the preserved bottles received at the lab with the appropriate pH?					~~Y~~ N
13.	Were VOA vials checked for absence of air bubbles, and if present, noted below?					~~Y~~ N
14.	Did the bottles originate from CAS/K or a branch laboratory?					Y (N)
15.	**Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?**					~~Y~~ N
16.	Was C12/Res negative?					~~Y~~ N

Explain any discrepancies: * Sample JST-SB-009 has two samples as per PC labeled 1 Sample JST-SB-010. CONFIRMED BY DOUG PARKINSON, 3/25/05 gs

RESOLUTION:

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

Dioxins

10655 Richmond Avenue Suite 130A Houston, Texas 77042 (713) 266-1599 ph (713) 266-0130 fax

Columbia Analytical Services INC.
An Employee - Owned Company

June 10, 2005

Service Request No: E0500374

Gregory Salata
Columbia Analytical Services
1317 South 13th Avenue
Kelso, WA 98626

RE: 1613B_Full List/K2502124

Dear Gregory:

Enclosed are the results of the sample(s) submitted to our laboratory on May 12, 2005. For your reference, these analyses have been assigned our service request number E0500374.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) 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 23. You may also contact me via email at JFreemyer@houston.caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Jane Freemyer
Project Manager

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E0500374-001	PSP-SB-001	03/16/05	1500
E0500374-002	PSP-SB-001 DUP	03/16/05	1500
E0500374-003	PSP-SB-002	03/16/05	1500
E0500374-004	PSP-SB-003	03/16/05	1500
E0500374-005	PSP-SB-004	03/16/05	1500
E0500374-006	PSP-SB-005	03/16/05	1500

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Geomatrix	**Service Request No.:**	E0500374
Project:	1613 Full List/K2502124	**Date Received:**	05/12/05
Sample Matrix:	tissue		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six tissue samples were received for analysis at Columbia Analytical Services on May 12, 2005. The following discrepancies were noted upon initial sample inspection. The exceptions are also noted on the cooler receipt and preservation form included in this data package. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C/frozen at –20°C upon receipt at the laboratory.

No discrepancies were noted upon initial sample inspection

Data Validation Notes and Discussion

MS/MSD

A Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) pair was analyzed and reported in lieu of the MS/MSD for these samples.

B flags – Method Blanks

The Method Blank EB21060-MB/U22059#1 contained low levels of 1,2,3,4,6,7,8-HpCDD, OCDD and OCDF below the Method Reporting Limit (MRL). The associated compounds in the samples(s) are flagged with 'B' flags.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Approved by Xiangqiu Liang **Date** 6/10/05

Xiangqiu Liang, Laboratory Director

CAS/HOU - Form Production, Peer Review & Project Review Signatures

SR# Unique ID: E0500374

First Level - Data Processing - to be filled by person generating the forms

Date	5/26/05	Person 1	M
Date		Person 2	

Second Level - Data Review – to be filled by person doing peer review

Date	09/27/05	Reviewer	
Date		Reviewer	

Project Level - Review - to be filled by person doing project compliance review

Date	Reviewer

Columbia Analytical Services INC.

An Employee - Owned Company

Chain-of-custody

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Columbia Analytical Services
10655 Richmond Ave., Suite 130A, Houston, TX 77042
(713) 266-1599 FAX (713) 266-0130

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

SR# ____ K2502124
PAGE __ 1 OF 1

Client Company Name: Geomatrix Consultants
Client Address: 2101 Webster St, 12th Floor, Oakland,CA.64912
Project Name/Number: 9329
Client Project Manager: Ann Holbrow

Sample I.D.	For composite samples * Start Date	Start Time	Stop Date	Stop Time	LAB ID	Sample Matrix	Number of Containers	Analysis Requested: Dioxins by EPA 1613 B (full list)	Dioxins by EPA 1613 B (2,3,7,8 TCDD & TCDF, only)	Dioxins by EPA 8290 (full list)	Dioxins by EPA 8290 (2,3,7,8 TCDD	Dioxins by EPA 8280 (full list)	REMARKS
PSP-SB-001	16-Mar	1500				TISSUE		X					K2502124-001
PSP-SB-002	16-Mar	1500				TISSUE		X					K2502124-002
PSP-SB-003	16-Mar	1500				TISSUE		X					K2502124-003
PSP-SB-004	16-Mar	1500				TISSUE		X					K2502124-004
PSP-SB-005	16-Mar	1500				TISSUE		X					K2502124-005

TURNAROUND REQUIREMENTS
____ 24 hr ____ 48 hr ____ 5 day
X Standard TAT
____ Provide FAX Preliminary Results
Requested Report Date:_____

REPORT REQUIREMENTS
____ I. Routine Report: Results, Method Blank, Surrogate
____ II. QC Summary Reports: MS, MSD as required
X III. Data Validation Report (includes raw data)
EDD

Comments/Special Instructions:
* For grab samples, use start column's date and time.
CAS Project Chemist: Gregory Salata
ANALYZE DUPLICATE ON PSP-SB-001.
PLEASE ALSO DO LIPIDS ON ALL SAMPLES.

RELINQUISHED BY:
Signature: Tracy Blank
Printed Name: Blank
Firm: CAS
Date/Time: 5/11/05 1100

RECEIVED BY:
Signature: Keesha G. Moore
Printed Name: Keesha G. Moore
Firm: CAS-Houston
Date/Time: 5-12-05/1053

RELINQUISHED BY:
Signature:
Printed Name:
Firm:
Date/Time:

RECEIVED BY:
Signature:
Printed Name:
Firm:
Date/Time:

NF 5/16/5

Service Request Summary

Folder #:	**E0500374**
Client Name:	Columbia Analytical Services
Project Name:	1613B_Full List
Project Number:	K2502124
Report To:	Gregory Salata Columbia Analytical Services 1317 South 13th Avenue Kelso, WA 98626
Phone Number:	1-360-577-7222
Fax Number:	1-360-636-1079
E-mail:	gsalata@kelso.caslab.com

Project Chemist:	Jane Freemyer
Originating Lab:	HOUSTON
Created By:	RDIAZ
Due Date:	05/26/2005
EDD:	BASICwQC
Tier:	IV
QAPP:	LAB QAP
Qualifier Set:	CAS Standard
Formset:	CAS Standard
Merged?:	Y
Report to MDL?:	Y

Notes

Lab Code	Client Sample			COC Matrix	Sample Date	Sample Time	Receive Date
E0500374-001	PSP-SB-001			Animal Tissue	03/16/2005	1500	05/12/2005
E - 1613B DIOXINS_FURANS_							
1613B		DIOXINS_FURANS_	Full List (17 Congeners)				
E0500374-002	PSP-SB-001	DUP		Animal Tissue	03/16/2005	1500	05/12/2005
E - 1613B DIOXINS_FURANS_							
1613B		DIOXINS_FURANS_	Full List (17 Congeners)				
E0500374-003	PSP-SB-002			Animal Tissue	03/16/2005	1500	05/12/2005
E - 1613B DIOXINS_FURANS_							
1613B		DIOXINS_FURANS_	Full List (17 Congeners)				
E0500374-004	PSP-SB-003			Animal Tissue	03/16/2005	1500	05/12/2005
E - 1613B DIOXINS_FURANS_							
1613B		DIOXINS_FURANS_	Full List (17 Congeners)				
E0500374-005	PSP-SB-004			Animal Tissue	03/16/2005	1500	05/12/2005
E - 1613B DIOXINS_FURANS_							
1613B		DIOXINS_FURANS_	Full List (17 Congeners)				
E0500374-006	PSP-SB-005			Animal Tissue	03/16/2005	1500	05/12/2005
E - 1613B DIOXINS_FURANS_							
1613B		DIOXINS_FURANS_	Full List (17 Congeners)				

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form

Project/Client: 1613B_Full List/Columbia Analytical Services Inc.

Work Order: E0500374

Cooler received on 05/12/2005 and opened on 5-12-05 by Keesha Z. Moore

1.	Were custody seals on outside of cooler?		(Y) N
2.	Were seals intact and signature & date correct?	NA	(Y) N
3.	Is the shipper's airbill available and filed?		Y (N)
4.	COC #		
5.	Were custody papers properly filled out (ink, signed, etc.)?	NA	(Y) N
6.	Type of packing material present Bubble wrap		
7.	Did all bottles arrive in good condition (unbroken)?	NA	(Y) N
8.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?	NA	(Y) N
9.	Did all bottle labels and tags agree with custody papers?	NA	(Y) N
10.	Were the correct types of bottles used for the tests indicated?	NA	(Y) N
11.	Were all of the preserved bottles received at the lab with the appropriate pH?	(NA)	Y N
12.	Were VOA vials checked for absence of air bubbles, and if present, noted below?	(NA)	Y N
13.	Did the bottles originate from CAS/E or a branch laboratory?		(Y) N
14.	Are CWA Microbiology samples received with >½ the 24 hr. hold time remaining from collection?	(NA)	Y N
15.	Was Cl2/Res negative?	(NA)	Y N

Lab Code	Sample Name
E0500374-001	PSP-SB-001

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID	Barcode	Expected Conditions HS	pH	Temp	Cooler #	Received Conditions Rec Temp	pH Check	Rec HS	Seal Intact?	Corrective Action
E0500374-001.01		NA		-		20.0		NA		

Test List: SOP Lipids 1613B

Lab Code	Sample Name
E0500374-002	PSP-SB-001 DUP

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID	Barcode	Expected Conditions HS	pH	Temp	Cooler #	Received Conditions Rec Temp	pH Check	Rec HS	Seal Intact?	Corrective Action
E0500374-002.01		NA		-		20.0		NA		

Test List: SOP Lipids 1613B

Lab Code	Sample Name
E0500374-003	PSP-SB-002

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID	Barcode	Expected Conditions HS	pH	Temp	Cooler #	Received Conditions Rec Temp	pH Check	Rec HS	Seal Intact?	Corrective Action
E0500374-003.01		NA		-		20.0		NA		

Test List: SOP Lipids 1613B

Lab Code	Sample Name
E0500374-004	PSP-SB-003

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form

Lab Code	Sample Name
E0500374-004	PSP-SB-003

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Rec Temp	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
E0500374-004.01		NA		-		20.0		NA		

Test List: SOP Lipids 1613B

Lab Code	Sample Name
E0500374-005	PSP-SB-004

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Rec Temp	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
E0500374-005.01		NA		-		20.0		NA		

Test List: SOP Lipids 1613B

Lab Code	Sample Name
E0500374-006	PSP-SB-005

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Rec Temp	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
E0500374-006.01		NA		-		20.0		NA		

Test List: SOP Lipids 1613B

All tests have one or more assigned bottles

No	Project ID	Lab ID	Client ID	Sample Size g	Tare Vial	Tare & Wet Sample	Tare & Dry Sample	Calculated Percent Solid	Calculated Percent Moisture	Dry Weight	Sample Description
MB		EB21060-MB	MB	10.000							
LCS		EB21060-LCS	LCS	10.000							
LCSD		EB21060-LCSD	LCSD	10.000							
1	E0500378	E0500378-001.01	3145	5.022							Powdered milk
2	E0500374	E0500374-001.01	PSP-SB-001	20.171							Tissue
3	E0500374	E0500374-002.01DUP	PSP-SB-001DUP	20.116							Tissue
4	E0500374	E0500374-003.01	PSP-SB-002	20.272							Tissue
5	E0500374	E0500374-004.01	PSP-SB-003	20.657							Tissue
6	E0500374	E0500374-005.01	PSP-SB-004	20.190							Tissue
7	E0500374	E0500374-006.01	PSP-SB-005	20.022							Tissue
8	E0500376	E0500376-001.01	1001	20.261							Tissue
9	E0500376	E0500376-002.01	2002	20.550							Tissue
10	E0500376	E0500376-003.01	3003	20.405							Tissue
11	E0500376	E0500376-004.01	4004	20.618							Tissue
12	E0500376	E0500376-005.01	5005	20.404							Tissue
13	E0500369	E0500369-001.01	Composite	5.022							Fish oil
14	L0500731	L0500731-005.01	801552	50.260	12.801	20.265	13.760	12.85	87.15	6.46	Black sludge
15	L0500731	L0500731-006.01	801558	50.451	12.872	19.873	14.440	22.40	77.60	11.30	Black sludge
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											

19

SODIUM SULFATE C1-71-2
ACETONE C1-68-3
TOLUENE C1-74-5
GLASS WOOL GW1-1-4
DICHLOROMETHANE C1-73-3
ETHYL ACETATE C1-69-4
NONANE C1-67-5
HEXANE C1-73-2

SAND C1-33-1
TRIDECANE C1-74-2
SULFURIC ACID C1-74-3
BASIC SILICA GEL S1-24-3
CARBON : C1-73-5
ACIDIC SILICA GEL S1-24-4
SILICA GEL S1-22-6

Standard:	Internal	Matrix
Solution ID:	D7-32-1B	D7-28-3B
Volume:	1000 uL	100 uL
Spiker:	CID	CID
Witness:	DHF	DHF
Date:	5/13/2005	5/13/2005
Standard:	Cleanup	Recovery
Solution ID:	D7-31-2A/B	D6-75-2B
Volume:	100 uL	D6-75-2B 2nd
Spiker:	DHF	2nd
Witness:	CID	
Date:	5/14/2005	5/16/05

EXTRACTION START: 5/13/05
EXTRACTION END: 5/14/05
EXTRACTION METHOD: SOXHLET
TIME STARTED: 1500
TIME FINISHED: 1600
EXTRACTS RECEIVED BY _____
DATE RECEIVED 5/16/05

Columbia Analytical Services, INC.

EB21060 **1613**

Sulfuric Acid Cleanup: 5/14/05
Silica Gel/Carbon Column: 5/14/05

No	Project ID	Lab ID	Client ID	Sample Size g	Tare Vial g	Dried Extract	Percent Lipid	Sample Description	Quantity Analized
MB		~~EB21067-MB~~	~~Method Blank~~	~~10.000~~	~~12.858~~	~~12.858~~	~~0.000~~		~~10.000~~
1	E0500374	E0500374-001.01	PSP-SB-001	7.827	12.804	12.810	0.077	Tissue	7.827
2	E0500374	E0500374-002.01DUP	PSP-SB-001DUP	7.825	13.064	13.071	0.089	Tissue	7.825
3	E0500374	E0500374-003.01	PSP-SB-002	3.514	13.031	13.086	1.565	Tissue	3.514
4	E0500374	E0500374-004.01	PSP-SB-003	3.115	13.058	13.083	0.803	Tissue	3.115
5	E0500374	E0500374-005.01	PSP-SB-004	3.134	13.064	13.069	0.160	Tissue	3.134
6	E0500374	E0500374-006.01	PSP-SB-005	3.886	12.944	12.952	0.206	Tissue	3.886
7	E0500376	E0500376-001.01	1001	10.244	12.982	13.264	2.753	Tissue	10.244
8	E0500376	E0500376-002.01	2002	10.300	13.001	13.012	0.107	Tissue	10.300
9	E0500376	E0500376-003.01	3003	10.475	13.014	13.247	2.224	Tissue	10.475
10	E0500376	E0500376-004.01	4004	10.611	13.075	13.098	0.217	Tissue	10.611
11	E0500376	E0500376-005.01	5005	10.262	12.852	12.869	0.166	Tissue	10.262
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									

(OK 5/27/5 Lipid Measurements Only

02

SODIUM SULFATE C1-71-2
ACETONE C1-68-3
TOLUENE C1-74-5
GLASS WOOL GW1-1-4
DICHLOROMETHANE C1-73-3
ETHYL ACETATE C1-69-4
NONANE C1-67-5
HEXANE C1-73-2

SAND C1-33-1
TRIDECANE C1-74-2
SULFURIC ACID C1-74-3
BASIC SILICA GEL S1-24-3
CARBON : C1-73-5
ACIDIC SILICA GEL S1-24-4
SILICA GEL S1-22-6

Standard:	Internal	Matrix
Solution ID:		
Volume:		
Spiker:		
Witness:		
Date:		

Standard:	Cleanup	Recovery
Solution ID:		
Volume:		
Spiker:		
Witness:		
Date:		

EXTRACTION START:
EXTRACTION END:
EXTRACTION METHOD (1):

TIME STARTED:
TIME FINISHED:

EXTRACTS RECEIVED BY _____

DATE RECEIVED _____

Columbia Analytical Services, INC.

EB21067

Sulfuric Acid Cleanup:
Silica Gel/Carbon Column:

Columbia Analytical Services INC.

An Employee - Owned Company

Dioxin/Furan

Analytical Report

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
METHOD BLANK

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB21060-MB

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Tissue): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22059#1

Analysis Date: 18-MAY-05 Time: 13:03:04 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.030	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.022	U	*	*	0.99
1,2,3,4,7,8-HxCDD	*	0.023	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.029	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.026	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.067	0.021	JK	0.63	1.000	1.01
OCDD	0.938	0.041	J	0.89	1.000	1.04
2,3,7,8-TCDF	*	0.027	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.013	U	*	*	1.02
2,3,4,7,8-PeCDF	*	0.014	U	*	*	1.09
1,2,3,4,7,8-HxCDF	*	0.017	U	*	*	1.15
1,2,3,6,7,8-HxCDF	*	0.017	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.017	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.015	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.016	U	*	*	1.52
1,2,3,4,7,8,9-HpCDF	*	0.024	U	*	*	1.48
OCDF	0.091	0.039	J	0.99	1.004	1.24
Total Tetra-Dioxins	*	0.030	U			
Total Penta-Dioxins	*	0.022	U			
Total Hexa-Dioxins	*	0.023	U			
Total Hepta-Dioxins	0.116	0.021				
Total Tetra-Furans	*	0.027	U			
Total Penta-Furans	*	0.014	U			
Total Hexa-Furans	*	0.017	U			
Total Hepta-Furans	*	0.016	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
METHOD BLANK

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB21060-MB

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Tissue): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Analysis Date: 18-MAY-05 Time: 13:03:04 Sample Data Filename: U22059#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids:

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	2290.98	114.55	25-164	0.79	1.011
13C-1,2,3,7,8-PeCDD	2000	2527.47	126.37	25-181	1.56	1.212
13C-1,2,3,4,7,8-HxCDD	2000	2115.88	105.79	32-141	1.38	0.990
13C-1,2,3,6,7,8-HxCDD	2000	2068.70	103.44	28-130	1.16	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1910.91	95.55	23-140	1.05	1.070
13C-OCDD	4000	3713.61	92.84	17-157	0.90	1.144
13C-2,3,7,8-TCDF	2000	2505.39	125.27	24-169	0.78	0.970
13C-1,2,3,7,8-PeCDF	2000	2536.99	126.85	24-185	1.57	1.166
13C-2,3,4,7,8-PeCDF	2000	2330.24	116.51	21-178	1.57	1.197
13C-1,2,3,4,7,8-HxCDF	2000	1927.66	96.38	26-152	0.52	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1867.29	93.36	26-123	0.53	0.972
13C-1,2,3,7,8,9-HxCDF	2000	2452.51	122.63	29-147	0.53	1.006
13C-2,3,4,6,7,8-HxCDF	2000	2138.23	106.91	28-136	0.53	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1909.28	95.46	28-143	0.45	1.047
13C-1,2,3,4,7,8,9-HpCDF	2000	2016.91	100.85	26-138	0.45	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	977.96	122.25	35-197		1.012

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-001

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-001.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.171 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22060#1

Analysis Date: 18-MAY-05 Time: 13:47:55 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 0.077

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.024	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.030	U	*	*	0.99
1,2,3,4,7,8-HxCDD	*	0.017	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.020	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.018	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.061	0.019	BJK	0.73	1.000	1.01
OCDD	0.555	0.051	BJ	0.86	1.000	1.04
2,3,7,8-TCDF	*	0.026	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.017	U	*	*	1.02
2,3,4,7,8-PeCDF	*	0.020	U	*	*	1.09
1,2,3,4,7,8-HxCDF	0.041	0.016	J	1.19	1.000	1.15
1,2,3,6,7,8-HxCDF	*	0.016	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.016	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.015	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.016	U	*	*	1.52
1,2,3,4,7,8,9-HpCDF	*	0.021	U	*	*	1.48
OCDF	0.052	0.038	BJ	1.02	1.004	1.24
Total Tetra-Dioxins	*	0.024	U			
Total Penta-Dioxins	*	0.030	U			
Total Hexa-Dioxins	*	0.017	U			
Total Hepta-Dioxins	*	0.019	U			
Total Tetra-Furans	*	0.026	U			
Total Penta-Furans	*	0.020	U			
Total Hexa-Furans	0.041	0.016				
Total Hepta-Furans	*	0.016	U			

Results withdrawn. See reextraction report July 28, 2005

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

CLIENT ID.

PSP-SB-001

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500374-001.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.171 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Analysis Date: 18-MAY-05 Time: 13:47:55 Sample Data Filename: U22060#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solid/Lipids: 0.077

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1249.34	62.47	25-164	0.79	1.011
13C-1,2,3,7,8-PeCDD	2000	1479.81	73.99	25-181	1.56	1.212
13C-1,2,3,4,7,8-HxCDD	2000	1297.60	64.88	32-141	1.24	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1314.16	65.71	28-130	1.24	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1183.77	59.19	23-140	1.04	1.070
13C-OCDD	4000	2088.09	52.20	17-157	0.89	1.144
13C-2,3,7,8-TCDF	2000	1257.70	62.89	24-169	0.78	0.970
13C-1,2,3,7,8-PeCDF	2000	1472.43	73.62	24-185	1.57	1.166
13C-2,3,4,7,8-PeCDF	2000	1290.65	64.53	21-178	1.58	1.197
13C-1,2,3,4,7,8-HxCDF	2000	1192.57	59.63	26-152	0.51	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1125.38	56.27	26-123	0.52	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1516.63	75.83	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1256.56	62.83	28-136	0.53	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1147.86	57.39	28-143	0.45	1.047
13C-1,2,3,4,7,8,9-HpCDF	2000	1286.37	64.32	26-138	0.44	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	587.83	73.48	35-197		1.012

Results withdrawn. See reextraction report 7/8/05

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-001

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-001.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.171 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22060#1

Analysis Date: 18-MAY-05 Time: 13:47:55 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 0.077

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.061	X 0.01	6.14e-04
OCDD	0.555	X 0.0001	5.60e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.041	X 0.1	4.07e-03
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.052	X 0.0001	5.00e-06
		Total:	4.75e-03

Results withdrawn
See re-extraction report
1/28/05

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

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Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-001DUP

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-002.01DUP

Client Name: GEOMATRIX Sample Wt/Vol: 20.116 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1 Sample Data Filename: U22061#1

Analysis Date: 18-MAY-05 Time: 14:33:49 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 0.089

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.010	U	*	*	0.98
1,2,3,7,8-PeCDD	0.067	0.011	J	1.32	1.001	0.99
1,2,3,4,7,8-HxCDD	0.061	0.008	J	1.28	1.000	1.15
1,2,3,6,7,8-HxCDD	0.086	0.010	J	1.36	1.000	0.98
1,2,3,7,8,9-HxCDD	0.089	0.009	J	1.09	1.009	1.05
1,2,3,4,6,7,8-HpCDD	0.166	0.044	BJ	1.06	1.000	1.01
OCDD	0.835	0.042	BJ	0.83	1.000	1.04
2,3,7,8-TCDF	*	0.014	U	*	*	1.03
1,2,3,7,8-PeCDF	0.055	0.007	J	1.59	1.001	1.02
2,3,4,7,8-PeCDF	0.069	0.008	JK	1.26	1.001	1.09
1,2,3,4,7,8-HxCDF	0.101	0.008	JK	1.00	1.000	1.15
1,2,3,6,7,8-HxCDF	0.088	0.007	J	1.24	1.000	1.23
1,2,3,7,8,9-HxCDF	0.087	0.007	J	1.24	1.000	1.32
2,3,4,6,7,8-HxCDF	0.092	0.007	J	1.25	1.000	1.18
1,2,3,4,6,7,8-HpCDF	0.101	0.023	J	1.04	1.000	1.52
1,2,3,4,7,8,9-HpCDF	0.077	0.029	BJ	0.90	1.000	1.48
OCDF	0.225	0.045		0.87	1.003	1.24
Total Tetra-Dioxins	*	0.010	U			
Total Penta-Dioxins	0.067	0.011				
Total Hexa-Dioxins	0.236	0.008				
Total Hepta-Dioxins	0.166	0.044				
Total Tetra-Furans	*	0.014	U			
Total Penta-Furans	0.055	0.008				
Total Hexa-Furans	0.267	0.008				
Total Hepta-Furans	0.178	0.023				

Results withdrawn
See re-extraction
report 7/28/05

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
PSP-SB-001DUP

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500374-002.01DUP

Client Name: GEOMATRIX Sample Wt/Vol: 20.116 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Analysis Date: 18-MAY-05 Time: 14:33:49 Sample Data Filename: U22061#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solid/Lipids: 0.089

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1721.99	86.10	25-164	0.79	1.011
13C-1,2,3,7,8-PeCDD	2000	1939.84	96.99	25-181	1.56	1.212
13C-1,2,3,4,7,8-HxCDD	2000	1532.54	76.63	32-141	1.27	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1523.02	76.15	28-130	1.28	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1404.58	70.23	23-140	1.05	1.070
13C-OCDD	4000	2276.44	56.91	17-157	0.91	1.144
13C-2,3,7,8-TCDF	2000	1741.26	87.06	24-169	0.77	0.970
13C-1,2,3,7,8-PeCDF	2000	2007.89	100.39	24-185	1.56	1.166
13C-2,3,4,7,8-PeCDF	2000	1657.67	82.88	21-178	1.57	1.197
13C-1,2,3,4,7,8-HxCDF	2000	1447.20	72.36	26-152	0.53	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1333.79	66.69	26-123	0.53	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1837.58	91.88	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1482.74	74.14	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1326.32	66.32	28-143	0.45	1.047
13C-1,2,3,4,7,8,9-HpCDF	2000	1532.03	76.60	26-138	0.45	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	766.88	95.86	35-197		1.012

Result withdrawn
See reextraction
report. 7/28/05

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-001DUP

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-002.0

Client Name: GEOMATRIX Sample Wt/Vol: 20.116 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1 Sample Data Filename: U22061#1

Analysis Date: 18-MAY-05 Time: 14:33:49 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids: 0.089

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	0.067	X 1.0	6.72e-02
1,2,3,4,7,8-HxCDD	0.061	X 0.1	6.11e-03
1,2,3,6,7,8-HxCDD	0.086	X 0.1	8.63e-03
1,2,3,7,8,9-HxCDD	0.089	X 0.1	8.90e-03
1,2,3,4,6,7,8-HpCDD	0.166	X 0.01	1.66e-03
OCDD	0.835	X 0.0001	8.30e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	0.055	X 0.05	2.76e-03
2,3,4,7,8-PeCDF	0.069	X 0.5	3.43e-02
1,2,3,4,7,8-HxCDF	0.101	X 0.1	1.01e-02
1,2,3,6,7,8-HxCDF	0.088	X 0.1	8.80e-03
1,2,3,7,8,9-HxCDF	0.087	X 0.1	8.66e-03
2,3,4,6,7,8-HxCDF	0.092	X 0.1	9.22e-03
1,2,3,4,6,7,8-HpCDF	0.101	X 0.01	1.01e-03
1,2,3,4,7,8,9-HpCDF	0.077	X 0.01	7.69e-04
OCDF	0.225	X 0.0001	2.20e-05
		Total:	1.68e-01

Results withdrawn
See re-extraction Report.
1/28/05

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

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Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-002

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-003.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.272 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22062#1

Analysis Date: 18-MAY-05 Time: 15:19:40 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 1.565

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.023	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.023	U	*	*	0.99
1,2,3,4,7,8-HxCDD	*	0.019	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.024	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.021	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.172	0.022	BJ	1.02	1.000	1.01
OCDD	1.300	0.036	BJ	0.79	1.000	1.04
2,3,7,8-TCDF	*	0.024	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.014	U	*	*	1.02
2,3,4,7,8-PeCDF	*	0.017	U	*	*	1.09
1,2,3,4,7,8-HxCDF	0.029	0.017	JK	0.93	1.000	1.15
1,2,3,6,7,8-HxCDF	*	0.016	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.018	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.017	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	0.030	0.018	J	1.04	1.000	1.52
1,2,3,4,7,8,9-HpCDF	*	0.023	U	*	*	1.48
OCDF	0.096	0.042	BJ	0.84	1.004	1.24
Total Tetra-Dioxins	*	0.023	U			
Total Penta-Dioxins	*	0.023	U			
Total Hexa-Dioxins	*	0.019	U			
Total Hepta-Dioxins	0.404	0.022				
Total Tetra-Furans	*	0.024	U			
Total Penta-Furans	*	0.017	U			
Total Hexa-Furans	*	0.017	U			
Total Hepta-Furans	0.089	0.018				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
PSP-SB-002

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500374-003.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.272 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Analysis Date: 18-MAY-05 Time: 15:19:40 Sample Data Filename: U22062#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 1.565

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1271.87	63.59	25-164	0.79	1.011
13C-1,2,3,7,8-PeCDD	2000	1432.45	71.62	25-181	1.56	1.212
13C-1,2,3,4,7,8-HxCDD	2000	1213.93	60.70	32-141	1.25	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1173.96	58.70	28-130	1.26	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1077.01	53.85	23-140	1.07	1.070
13C-OCDD	4000	1789.77	44.74	17-157	0.90	1.144
13C-2,3,7,8-TCDF	2000	1285.97	64.30	24-169	0.78	0.971
13C-1,2,3,7,8-PeCDF	2000	1491.78	74.59	24-185	1.57	1.166
13C-2,3,4,7,8-PeCDF	2000	1232.24	61.61	21-178	1.57	1.198
13C-1,2,3,4,7,8-HxCDF	2000	1086.78	54.34	26-152	0.52	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1097.23	54.86	26-123	0.52	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1372.52	68.63	29-147	0.53	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1156.14	57.81	28-136	0.53	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1013.08	50.65	28-143	0.45	1.047
13C-1,2,3,4,7,8,9-HpCDF	2000	1151.78	57.59	26-138	0.44	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	750.59	93.82	35-197		1.012

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-002

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-003.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.272 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22062#1

Analysis Date: 18-MAY-05 Time: 15:19:40 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 1.565

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.172	X 0.01	1.72e-03
OCDD	1.300	X 0.0001	1.30e-04
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.029	X 0.1	2.89e-03
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	0.030	X 0.01	2.98e-04
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.096	X 0.0001	1.00e-05
		Total:	5.05e-03

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-003

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-004.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.657 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22063#1

Analysis Date: 18-MAY-05 Time: 16:05:31 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet mj 6/24/06 weight): ng/Kg % Solids/Lipids: 0.803

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.020	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.021	U	*	*	0.99
1,2,3,4,7,8-HxCDD	*	0.019	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.022	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.020	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.111	0.022	BJ	1.18	1.000	1.01
OCDD	1.063	0.045	BJ	0.90	1.000	1.04
2,3,7,8-TCDF	*	0.021	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.013	U	*	*	1.02
2,3,4,7,8-PeCDF	*	0.013	U	*	*	1.09
1,2,3,4,7,8-HxCDF	0.035	0.012	JK	1.44	1.000	1.15
1,2,3,6,7,8-HxCDF	*	0.011	J	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.011	J	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.011	J	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.013	J	*	*	1.52
1,2,3,4,7,8,9-HpCDF	*	0.016	U	*	*	1.48
OCDF	0.114	0.034	J	1.00	1.003	1.24

Total Tetra-Dioxins	*	0.020
Total Penta-Dioxins	*	0.021
Total Hexa-Dioxins	*	0.019
Total Hepta-Dioxins	0.111	0.022
Total Tetra-Furans	*	0.021
Total Penta-Furans	*	0.013
Total Hexa-Furans	*	0.012
Total Hepta-Furans	*	0.013

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
PSP-SB-003

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500374-004.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.657 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Analysis Date: 18-MAY-05 Time: 16:05:31 Sample Data Filename: U22063#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet mg 6/24/06 weight): ng/Kg % Solid/Lipids: 0.803

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1816.88	90.84	25-164	0.79	1.011
13C-1,2,3,7,8-PeCDD	2000	2007.89	100.39	25-181	1.57	1.212
13C-1,2,3,4,7,8-HxCDD	2000	1606.91	80.35	32-141	1.26	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1667.88	83.39	28-130	1.28	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1485.45	74.27	23-140	1.04	1.070
13C-OCDD	4000	2416.99	60.42	17-157	0.91	1.144
13C-2,3,7,8-TCDF	2000	1884.58	94.23	24-169	0.78	0.971
13C-1,2,3,7,8-PeCDF	2000	2055.50	102.78	24-185	1.58	1.166
13C-2,3,4,7,8-PeCDF	2000	1730.24	86.51	21-178	1.57	1.197
13C-1,2,3,4,7,8-HxCDF	2000	1516.47	75.82	26-152	0.55	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1501.63	75.08	26-123	0.50	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1957.84	97.89	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1607.12	80.36	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1408.86	70.44	28-143	0.45	1.047
13C-1,2,3,4,7,8,9-HpCDF	2000	1610.33	80.52	26-138	0.44	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	796.37	99.55	35-197		1.012

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2378-TCDD (cleanup standard).

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-003

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-004.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.657 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22063#1

Analysis Date: 18-MAY-05 Time: 16:05:31 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet weight): ng/Kg % Solids/Lipids: 0.803

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.111	X 0.01	1.11e-03
OCDD	1.063	X 0.0001	1.06e-04
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.035	X 0.1	3.52e-03
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.114	X 0.0001	1.10e-05
		Total:	4.74e-03

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-004

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-005.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.190 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22064#1

Analysis Date: 18-MAY-05 Time: 16:51:24 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet m 6/20/05 weight): ng/Kg % Solids/Lipids: 0.160

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.020	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.017	U	*	*	0.99
1,2,3,4,7,8-HxCDD	*	0.014	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.017	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.015	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.049	0.018	BJK	0.86	1.000	1.01
OCDD	0.277	0.038	BJ	0.78	1.000	1.04
2,3,7,8-TCDF	*	0.017	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.015	U	*	*	1.02
2,3,4,7,8-PeCDF	*	0.014	U	*	*	1.09
1,2,3,4,7,8-HxCDF	0.036	0.013	J	1.28	1.000	1.15
1,2,3,6,7,8-HxCDF	*	0.013	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.013	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.012	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.014	U	*	*	1.52
1,2,3,4,7,8,9-HpCDF	*	0.019	U	*	*	1.48
OCDF	*	0.034	J	*	*	1.24
Total Tetra-Dioxins	*	0.020	U			
Total Penta-Dioxins	*	0.017	U			
Total Hexa-Dioxins	*	0.014	U			
Total Hepta-Dioxins	*	0.018	U			
Total Tetra-Furans	*	0.017	U			
Total Penta-Furans	*	0.014	U			
Total Hexa-Furans	0.036	0.013				
Total Hepta-Furans	*	0.014	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
PSP-SB-004

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500374-005.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.190 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Analysis Date: 18-MAY-05 Time: 16:51:24 Sample Data Filename: U22064#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet 10 6/20/06 weight): ng/Kg % Solid/Lipids: 0.160

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1539.99	77.00	25-164	0.77	1.011
13C-1,2,3,7,8-PeCDD	2000	1728.46	86.42	25-181	1.55	1.212
13C-1,2,3,4,7,8-HxCDD	2000	1410.05	70.50	32-141	1.26	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1511.18	75.56	28-130	1.26	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1292.48	64.62	23-140	1.06	1.070
13C-OCDD	4000	2161.72	54.04	17-157	0.89	1.144
13C-2,3,7,8-TCDF	2000	1541.67	77.08	24-169	0.78	0.970
13C-1,2,3,7,8-PeCDF	2000	1766.33	88.32	24-185	1.57	1.166
13C-2,3,4,7,8-PeCDF	2000	1495.81	74.79	21-178	1.58	1.197
13C-1,2,3,4,7,8-HxCDF	2000	1344.31	67.22	26-152	0.52	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1305.79	65.29	26-123	0.52	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1663.59	83.18	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1373.92	68.70	28-136	0.53	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1268.44	63.42	28-143	0.45	1.047
13C-1,2,3,4,7,8,9-HpCDF	2000	1387.15	69.36	26-138	0.45	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	683.82	85.48	35-197		1.012

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-004

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-005.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.190 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22064#1

Analysis Date: 18-MAY-05 Time: 16:51:24 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet cm 6/24/05 weight): ng/Kg % Solids/Lipids: 0.160

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.049	X 0.01	4.86e-04
OCDD	0.277	X 0.0001	2.80e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.036	X 0.1	3.60e-03
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	*	X 0.0001	*
		Total:	4.12e-03

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-005

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-006.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.022 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22065#1

Analysis Date: 18-MAY-05 Time: 17:37:14 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet weight): ng/Kg % Solids/Lipids: 0.206

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.015	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.020	U	*	*	0.99
1,2,3,4,7,8-HxCDD	*	0.018	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.021	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.019	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.058	0.016	BJK	1.48	1.001	1.01
OCDD	0.467	0.034	BJ	0.82	1.000	1.04
2,3,7,8-TCDF	*	0.016	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.011	U	*	*	1.02
2,3,4,7,8-PeCDF	*	0.011	U	*	*	1.09
1,2,3,4,7,8-HxCDF	0.034	0.010	J	1.29	1.000	1.15
1,2,3,6,7,8-HxCDF	*	0.010	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.010	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.010	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.014	U	*	*	1.52
1,2,3,4,7,8,9-HpCDF	*	0.019	U	*	*	1.48
OCDF	*	0.037	U	*	*	1.24
Total Tetra-Dioxins	*	0.015	U			
Total Penta-Dioxins	*	0.020	U			
Total Hexa-Dioxins	*	0.018	U			
Total Hepta-Dioxins	*	0.016	U			
Total Tetra-Furans	*	0.016	U			
Total Penta-Furans	*	0.011	U			
Total Hexa-Furans	0.034	0.010				
Total Hepta-Furans	*	0.014	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.

PSP-SB-005

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500374-006.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.022 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Analysis Date: 18-MAY-05 Time: 17:37:14 Sample Data Filename: U22065#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet in 6/24/06 weight): ng/Kg % Solid/Lipids: 0.206

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1668.45	83.42	25-164	0.77	1.012
13C-1,2,3,7,8-PeCDD	2000	1888.64	94.43	25-181	1.56	1.213
13C-1,2,3,4,7,8-HxCDD	2000	1612.54	80.63	32-141	1.24	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1591.45	79.57	28-130	1.25	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1413.78	70.69	23-140	1.05	1.070
13C-OCDD	4000	2303.49	57.59	17-157	0.91	1.144
13C-2,3,7,8-TCDF	2000	1719.55	85.98	24-169	0.77	0.971
13C-1,2,3,7,8-PeCDF	2000	1946.33	97.32	24-185	1.58	1.167
13C-2,3,4,7,8-PeCDF	2000	1655.40	82.77	21-178	1.57	1.198
13C-1,2,3,4,7,8-HxCDF	2000	1436.27	71.81	26-152	0.54	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1425.20	71.26	26-123	0.50	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1820.27	91.01	29-147	0.51	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1509.49	75.47	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1374.40	68.72	28-143	0.45	1.047
13C-1,2,3,4,7,8,9-HpCDF	2000	1486.86	74.34	26-138	0.44	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	765.22	95.65	35-197		1.012

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

Form 3

CLIENT ID.

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

PSP-SB-005

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-006.01

Client Name: GEOMATRIX Sample Wt/Vol: 20.022 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22065#1

Analysis Date: 18-MAY-05 Time: 17:37:14 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22058#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet nf 6/20/06 weight): ng/Kg % Solids/Lipids: 0.206

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.058	X 0.01	5.80e-04
OCDD	0.467	X 0.0001	4.70e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	0.034	X 0.1	3.35e-03
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	*	X 0.0001	*
		Total:	3.98e-03

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

Columbia Analytical Services INC.

An Employee - Owned Company

Accuracy & Precision Data

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Phone (713)266-1599 Fax (713)266-0130
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3DFA
1613 PCDD/PCDF SPIKED SAMPLE SUMMARY

CLIENT ID: LCS/LCSD

Lab Name: COLUMBIA ANALYTICAL SERVICES
Lab Code: CAS LAB. ID: EB21060
Matrix: Solid (Solid, Aqueous, Ash, Waste)

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

ANALYTE	SPIKE ADDED (PG)	LCS SAMPLE CONC.	LCSD SAMPLE CONC.		LCS% RECOV.	#	LCSD% RECOV.	#	RPD %	QC LIMITS
2378-TCDD	200	20.751	21.893		103.76		109.47		5.36	50 - 150
12378-PeCDD	1000	93.942	96.357		93.94		96.36		2.54	50 - 150
123478-HxCDD	1000	87.815	90.564		87.82		90.56		3.08	50 - 150
123678-HxCDD	1000	104.326	108.056		104.33		108.06		3.51	50 - 150
123789-HxCDD	1000	97.446	102.293		97.45		102.29		4.85	50 - 150
1234678-HpCDD	1000	94.781	98.142		94.78		98.14		3.48	50 - 150
OCDD	2000	183.387	188.283		91.69		94.14		2.63	50 - 150
2378-TCDF	200	18.236	19.265		91.18		96.33		5.49	50 - 150
12378-PeCDF	1000	88.771	92.208		88.77		92.21		3.80	50 - 150
23478-PeCDF	1000	94.873	99.529		94.87		99.53		4.79	50 - 150
123478-HxCDF	1000	98.409	102.653		98.41		102.65		4.22	50 - 150
123678-HxCDF	1000	101.875	107.059		101.88		107.06		4.96	50 - 150
123789-HxCDF	1000	85.813	89.38		85.81		89.38		4.07	50 - 150
234678-HxCDF	1000	90.769	95.929		90.77		95.93		5.53	50 - 150
1234678-HpCDF	1000	91.431	94.468		91.43		94.47		3.27	50 - 150
1234789-HpCDF	1000	95.465	97.487		95.47		97.49		2.10	50 - 150
OCDF	2000	191.129	196.526		95.56		98.26		2.78	50 - 150

If an analyte is not detected in either analysis, enter 0 (zero) as the concentration.

Column to be used to flag values outside QC limits.

* Compound outside the QC advisory limits of 50 - 150

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
LCS

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB21060-LCS

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22052#1

Analysis Date: 16-MAY-05 Time: 15:58:04 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22047#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet m 6/24/05 weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	20.751	0.053		0.76	1.001	0.98
1,2,3,7,8-PeCDD	93.942	0.036		1.59	1.001	0.98
1,2,3,4,7,8-HxCDD	87.815	0.040		1.26	1.000	1.15
1,2,3,6,7,8-HxCDD	104.326	0.049		1.26	1.000	0.98
1,2,3,7,8,9-HxCDD	97.446	0.044		1.27	1.008	1.05
1,2,3,4,6,7,8-HpCDD	94.781	0.045		1.06	1.000	1.01
OCDD	183.387	0.073		0.89	1.000	1.05
2,3,7,8-TCDF	18.236	0.038		0.74	1.001	1.03
1,2,3,7,8-PeCDF	88.771	0.025		1.54	1.000	1.01
2,3,4,7,8-PeCDF	94.873	0.027		1.54	1.001	1.08
1,2,3,4,7,8-HxCDF	98.409	0.022		1.25	1.000	1.28
1,2,3,6,7,8-HxCDF	101.875	0.023		1.24	1.000	1.23
1,2,3,7,8,9-HxCDF	85.813	0.024		1.25	1.000	1.32
2,3,4,6,7,8-HxCDF	90.769	0.022		1.22	1.000	1.18
1,2,3,4,6,7,8-HpCDF	91.431	0.074		1.06	1.000	1.53
1,2,3,4,7,8,9-HpCDF	95.465	0.101		1.06	1.000	1.48
OCDF	191.129	0.053		0.90	1.003	1.25
Total Tetra-Dioxins	20.751	0.053				
Total Penta-Dioxins	93.942	0.036				
Total Hexa-Dioxins	289.588	0.040				
Total Hepta-Dioxins	95.074	0.045				
Total Tetra-Furans	18.621	0.038				
Total Penta-Furans	184.108	0.027				
Total Hexa-Furans	376.866	0.022				
Total Hepta-Furans	186.897	0.074				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
LCS

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB21060-LCS

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Analysis Date: 16-MAY-05 Time: 15:58:04 Sample Data Filename: U22052#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22047#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet 10/20/06 weight): ng/Kg % Solid/Lipids:

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1288.37	64.42	25-164	0.79	1.011
13C-1,2,3,7,8-PeCDD	2000	1430.93	71.55	25-181	1.57	1.213
13C-1,2,3,4,7,8-HxCDD	2000	1222.25	61.11	32-141	1.26	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1149.57	57.48	28-130	1.27	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1048.15	52.41	23-140	1.06	1.070
13C-OCDD	4000	2031.05	50.78	17-157	0.91	1.144
13C-2,3,7,8-TCDF	2000	1467.04	73.35	24-169	0.80	0.971
13C-1,2,3,7,8-PeCDF	2000	1488.19	74.41	24-185	1.59	1.167
13C-2,3,4,7,8-PeCDF	2000	1361.65	68.08	21-178	1.57	1.198
13C-1,2,3,4,7,8-HxCDF	2000	1140.77	57.04	26-152	0.54	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1063.93	53.20	26-123	0.51	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1413.38	70.67	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1225.34	61.27	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1060.20	53.01	28-143	0.46	1.047
13C-1,2,3,4,7,8,9-HpCDF	2000	1102.96	55.15	26-138	0.45	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	563.36	70.42	35-197		1.012

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 1

CLIENT ID.

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results LCSD

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB21060-LCSD

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22053#1

Analysis Date: 16-MAY-05 Time: 16:43:56 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22047#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet m6/24/04 weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	21.893	0.026		0.80	1.001	0.98
1,2,3,7,8-PeCDD	96.357	0.018		1.58	1.001	0.98
1,2,3,4,7,8-HxCDD	90.564	0.017		1.25	1.000	1.15
1,2,3,6,7,8-HxCDD	108.056	0.021		1.27	1.000	0.98
1,2,3,7,8,9-HxCDD	102.293	0.019		1.26	1.008	1.05
1,2,3,4,6,7,8-HpCDD	98.142	0.035		1.06	1.000	1.01
OCDD	188.283	0.029		0.90	1.000	1.05
2,3,7,8-TCDF	19.265	0.017		0.77	1.001	1.03
1,2,3,7,8-PeCDF	92.208	0.012		1.57	1.001	1.01
2,3,4,7,8-PeCDF	99.529	0.013		1.58	1.001	1.08
1,2,3,4,7,8-HxCDF	102.653	0.014		1.23	1.000	1.28
1,2,3,6,7,8-HxCDF	107.059	0.015		1.24	1.000	1.23
1,2,3,7,8,9-HxCDF	89.380	0.016		1.24	1.000	1.32
2,3,4,6,7,8-HxCDF	95.929	0.015		1.26	1.001	1.18
1,2,3,4,6,7,8-HpCDF	94.468	0.080		1.05	1.000	1.53
1,2,3,4,7,8,9-HpCDF	97.487	0.109		1.05	1.000	1.48
OCDF	196.526	0.033		0.91	1.003	1.25
Total Tetra-Dioxins	21.893	0.026				
Total Penta-Dioxins	96.357	0.018				
Total Hexa-Dioxins	300.913	0.017				
Total Hepta-Dioxins	98.142	0.035				
Total Tetra-Furans	19.265	0.017				
Total Penta-Furans	192.032	0.013				
Total Hexa-Furans	395.021	0.014				
Total Hepta-Furans	191.955	0.080				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
LCSD

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB21060-LCSD

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 05/13/05 GC Column ID: DB-5

Analysis Date: 16-MAY-05 Time: 16:43:56 Sample Data Filename: U22053#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22059#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22047#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet in 6/24/06 weight): ng/Kg % Solid/Lipids:

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	2475.04	123.75	25-164	0.79	1.011
13C-1,2,3,7,8-PeCDD	2000	2846.33	142.32	25-181	1.58	1.214
13C-1,2,3,4,7,8-HxCDD	2000	2472.25	123.61	32-141	1.26	0.990
13C-1,2,3,6,7,8-HxCDD	2000	2312.84	115.64	28-130	1.25	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	2116.12	105.81	23-140	1.06	1.071
13C-OCDD	4000	4046.34	101.16	17-157	0.92	1.144
13C-2,3,7,8-TCDF	2000	2811.37	140.57	24-169	0.80	0.971
13C-1,2,3,7,8-PeCDF	2000	2886.12	144.31	24-185	1.58	1.166
13C-2,3,4,7,8-PeCDF	2000	2692.78	134.64	21-178	1.57	1.198
13C-1,2,3,4,7,8-HxCDF	2000	2285.06	114.25	26-152	0.55	0.969
13C-1,2,3,6,7,8-HxCDF	2000	2152.19	107.61	26-123	0.52	0.972
13C-1,2,3,7,8,9-HxCDF	2000	2815.74	140.79	29-147	0.53	1.006
13C-2,3,4,6,7,8-HxCDF	2000	2487.28	124.36	28-136	0.54	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	2161.24	108.06	28-143	0.46	1.047
13C-1,2,3,4,7,8,9-HpCDF	2000	2246.67	112.33	26-138	0.45	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	1090.41	136.30	35-197		1.012

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

1317 South 13th Avenue P.O. Box 479 Kelso, Washington 98626 (360) 577-7222 ph (360) 636-1068 fax

Columbia Analytical Services INC.
An Employee - Owned Company

July 5, 2005

Service Request No: K0500590

Ann Holbrow
Geomatrix Consultants, Incorporated
2101 Webster Street
12th Floor
Oakland, CA 94612

RE: Project No. 9329

Dear Ann:

Enclosed are the results of the sample(s) submitted to our laboratory on May 26, 2005. For your reference, these analyses have been assigned our service request number K0500590.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) 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 3376.

Respectfully submitted,

Columbia Analytical Services, Inc.

Gregory Salata, Ph.D.
Project Chemist

GS/jeb

10655 Richmond Avenue Suite 130A Houston, Texas 77042 (713) 266-1599 ph (713) 266-0130 fax

Columbia Analytical Services INC.
An Employee - Owned Company

June 28, 2005

Dr. Gregory Salata
Columbia Analytical Services, Inc.
1317 South 13th Avenue
Kelso, WA 98626
USA

CAS/Houston SR: ***K0500590***
Project: ***Geomatrix***

Dear Greg,

Enclosed are the results of the sample(s) submitted to our laboratory on June 1, 2005. For your reference, these analyses have been assigned our service request number K0500590.

All analyses were performed according to our laboratory's quality assurance program. The test results meet the requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) 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 23. You may also contact me via email at jfreemyer@houston.caslab.com.

Respectfully submitted,
COLUMBIA ANALYTICAL SERVICES, INC.

Jane Freemyer

Jane Freemyer
Project Manager

Columbia Analytical Services INC.

An Employee - Owned Company

Dioxins/Furans

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone(713)266-1599 Fax (713)266-0130
www.caslab.com

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Geomatrix	**Service Request No.:**	K0500590
Project:	K0500590	**Date Received:**	06/01/05
Sample Matrix:	Tissue		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six tissue samples were received for analysis at Columbia Analytical Services on 06/01/05. The following discrepancies were noted upon initial sample inspection. The exceptions are also noted on the cooler receipt and preservation form included in this data package.

The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

No discrepancies were noted upon initial sample inspection.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method BlankEB21091/U22434#1 contained low levels of OCDD and OCDF below the Method Reporting Limit (MRL). The associated compounds in the samples(s) are flagged with 'B' flags.

Y flags – Labeled Standards

Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Form 2s. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

MS/MSD

A Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) pair was analyzed and reported in lieu of the MS/MSD for these samples.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Approved by Xiangqiu Liang **Date** 6/29/05

Xiangqiu Liang, Laboratory Director

Client: Geomatrix Consultants, Incorporated **Service Request:** K0500590
Project: Project No. 9329/

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K0500590-001	Comp JST-SB-040/018	04/21/05	0830
K0500590-002	Comp WSP-SB-033/045	04/22/05	1100
K0500590-003	Comp WSP-SB-044/046	05/10/05	1245
K0500590-004	JST-SB-042	05/09/05	0935
K0500590-005	JST-SB-019	04/21/05	0830
K0500590-006	JST-SB-017	04/21/05	0830

Method 1613B/Dioxins & Furans
Reporting Limits

CONGENER	CONGENER ABBREVIATION	CAS RN	REPORTING LIMITS Aqueous	REPORTING LIMITS Solids
			PG/L	NG/KG
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2378-TCDD	1746-01-6	10	1.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxins	12378-PeCDD	40321-76-4	50	5.0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	123478-HxCDD	39227-28-6	50	5.0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	123678-HxCDD	57653-85-7	50	5.0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	123789-HxCDD	19408-74-3	50	5.0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1234678-HpCDD	35822-46-9	50	5.0
Octachlorodibenzo-p-dioxin	OCDD	3268-87-9	100	10
2,3,7,8-Tetrachlorodibenzofuran	2378-TCDF	51207-31-9	10	1.0
1,2,3,7,8-Pentachlorodibenzofuran	12378-PeCDF	57117-41-6	50	5.0
2,3,4,7,8-Pentachlorodibenzofuran	23478-PeCDF	57117-31-4	50	5.0
1,2,3,6,7,8-Hexachlorodibenzofuran	123478-HxCDF	70648-26-9	50	5.0
1,2,3,7,8,9-Hexachlorodibenzofuran	123678-HxCDF	57117-44-9	50	5.0
1,2,3,4,7,8-Hexachlorodibenzofuran	123789-HxCDF	72918-21-9	50	5.0
2,3,4,6,7,8-Hexachlorodibenzofuran	234678-HxCDF	60851-34-5	50	5.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1234678-HpCDF	67562-39-4	50	5.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	1234789-HpCDF	55673-89-7	50	5.0
Octachlorodibenzofuran	OCDF	39001-02-0	100	10
Total Tetra-Dioxins	*	*	10	1.0
Total Penta-Dioxins	*	*	50	5.0
Total Hexa-Dioxins	*	*	50	5.0
Total Hepta-Dioxins	*	*	50	5.0
Total Tetra-Furans	*	*	10	1.0
Total Penta-Furans	*	*	50	5.0
Total Hexa-Furans	*	*	50	5.0
Total Hepta-Furans	*	*	50	5.0

NOTE: Tissue samples are reported on a wet-weight basis and soil/sediment samples are reported on a dry-weight basis.

Data Qualifier Flags

- **B** Used when an associated analyte is found in the method blank, as well as in the sample

- C Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 23788-TCDF in the samples. The confirmed result should be used in determining the TEQ value for TCDF. The samples requiring confirmation are indicated in the table above.

- **E** Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range

- **J** Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the detection limit (DL)

- **K** EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

- **U** Indicates the compound was analyzed and not detected.

- **X** User defined; see case narrative for detailed explanation

- **Y** Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Form 2s. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

- * Indicates concentration is reported as 'Not Detected'

CAS/HOU - Form Production, Peer Review & Project Review Signatures

SR# Unique ID K0500590

First Level - Data Processing - to be filled by person generating the forms

Date	6/21/05	Person 1	
Date		Person 2	

Second Level - Data Review – to be filled by person doing peer review

Date	06/22/05	Reviewer	
Date		Reviewer	

Project Level - Review - to be filled by person doing project compliance review

Date	6/28/5	Reviewer	

Dioxins

Columbia Analytical Services INC.

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Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 360-577-7222 • FAX 360-636-1068

CAS Contact: Gregory Salata, Ph.D.

Project Name: Project No. 9329
Project Number:
Project Manager: Ann Holbrow
Company: Geomatrix Consultants, Incorporated

Lab Code	Client Sample ID	Matrix	Sample Date	Sample Time	Date Received	DIOXINS_FURANS DF
K0500590-001	Comp JST-SB-040/018	Animal Tissue	04/21/05	0830	05/26/05	III
K0500590-002	Comp WSP-SB-033/045	Animal Tissue	04/22/05	1100	05/26/05	III
K0500590-003	Comp WSP-SB-044/046	Animal Tissue	05/10/05	1245	05/26/05	III
K0500590-004	JST-SB-042	Animal Tissue	05/09/05	0935	05/26/05	III
K0500590-005	JST-SB-019	Animal Tissue	04/21/05	0830	05/26/05	III
K0500590-006	JST-SB-017	Animal Tissue	04/21/05	0830	05/26/05	III

Special Instructions/Comments

NEED LIPIDS + TOTAL SOLIDS ANALYZED IN HOUSTON.

Turnaround Requirements

____ **RUSH** (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

X **STANDARD** 2 week TAT

Requested FAX Date: _____

Requested Report Date: 06/15/05

Report Requirements

____ I. Results Only

____ II. Results + QC Summaries

X III. Results + QC and Calibration Summaries

____ IV. Data Validation Report with Raw Data

PQL/MDL/J N

EDD Y Basic with QC

Invoice Information

PO# K0500590

Bill to

Relinquished By: [signature] CAS 5/31/05 1130 Received By: [signature] 2°C 6-1-05/1000 Airbill Number: _____

Service Request Summary

NF 6/2/5

Folder #:	**K0500590**
Client Name:	Geomatrix Consultants, Incorporated
Project Name:	Project No. 9329
Project Number:	

Report To: Ann Holbrow
Geomatrix Consultants, Incorporated
2101 Webster Street
12th Floor
Oakland, CA 94612
Phone Number: 510-663-4135
Fax Number: (510)663-4141
E-mail: aholbrow@geomatrix.com

Project Chemist:	Jane Freemyer
Originating Lab:	KELSO
Logged By:	FADAIR
Date Received:	05/26/2005
Internal Due Date:	06/12/2005
EDD:	BASICwQC
Tier:	~~III~~ IV (NF)
QAPP:	LAB QAP
Qualifier Set:	CAS Standard
Formset:	CAS Standard
Merged?:	Y
Report to MDL?:	~~N~~ Y
P.O. Number:	

6 - -N/A N/A

Location: SUBBED

CAS Samp No.	Client Samp No.	Matrix	Collected		KELSO SUB_SAMPLE/ None	KELSO HOMOGEN/ SOP	SVM DIOXINS_FURANS_DF/ 1613B
K0500590-001	Comp JST-SB-040/018	Animal Tis	4/21/05	0830	III	III	III
K0500590-002	Comp WSP-SB-033/045	Animal Tis	4/22/05	1100	III	III	III
K0500590-003	Comp WSP-SB-044/046	Animal Tis	5/10/05	1245	III	III	III
K0500590-004	JST-SB-042	Animal Tis	5/9/05	0935	III	III	III
K0500590-005	JST-SB-019	Animal Tis	4/21/05	0830	III	III	III
K0500590-006	JST-SB-017	Animal Tis	4/21/05	0830	III	III	III

Folder Comments: (+ Lipids) (+ Solids) NF 6/3/5

Test Comments:

GenChem	SUB_SAMPLE/None	Metals lab to sub-sample and return to SMO for outside shipping

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form

Project/Client: Project No. 9329/Geomatrix Consultants, Incorporated

Work Order: K0500590

Cooler received on ~~05/26/2005~~ 06/01/05 and opened on 6-1-05 by Keesha L. Moore

1.	Were custody seals on outside of cooler?		(Y)	N	9.	Did all bottle labels and tags agree with custody papers?	NA (Y) N
2.	Were seals intact and signature & date correct?	NA	(Y)	N	10.	Were the correct types of bottles used for the tests indicated?	NA (Y) N
3.	Is the shipper's airbill available and filed?		Y	(N)	11.	Were all of the preserved bottles received at the lab with the appropriate pH?	(NA) Y N
4.	COC #				12.	Were VOA vials checked for absence of air bubbles, and if present, noted below?	(NA) Y N
5.	Were custody papers properly filled out (ink, signed, etc.)?	NA	(Y)	N	13.	Did the bottles originate from CAS/K or a branch laboratory?	(Y) N
6.	Type of packing material present	Bubble wrap, ice			14.	Are CWA Microbiology samples received with >½ the 24 hr. hold time remaining from collection?	(NA) Y N
7.	Did all bottles arrive in good condition (unbroken)?	NA	(Y)	N	15.	Was Cl2/Res negative?	(NA) Y N
8.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?	NA	(Y)	N			

Lab Code	Sample Name
K0500590-001	Comp JST-SB-040/018

N/A (N/A)

		Expected Conditions			Received Conditions					
Bottle ID	Barcode	HS	pH	Temp	Cooler #	Rec Temp	pH Check	Rec HS	Seal Intact?	Corrective Action
K0500590-001.01		NA		-				NA		

Test List: 1613B

K0500590-002	Comp WSP-SB-033/045

N/A (N/A)

		Expected Conditions			Received Conditions					
Bottle ID	Barcode	HS	pH	Temp	Cooler #	Rec Temp	pH Check	Rec HS	Seal Intact?	Corrective Action
K0500590-002.01		NA		-				NA		

Test List: 1613B

K0500590-003	Comp WSP-SB-044/046

N/A (N/A)

		Expected Conditions			Received Conditions					
Bottle ID	Barcode	HS	pH	Temp	Cooler #	Rec Temp	pH Check	Rec HS	Seal Intact?	Corrective Action
K0500590-003.01		NA		-				NA		

Test List: 1613B

K0500590-004	JST-SB-042

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form

Lab Code	Sample Name
K0500590-004	JST-SB-042

N/A (N/A)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Rec Temp	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
K0500590-004.01		NA		-				NA		

Test List: 1613B

Lab Code	Sample Name
K0500590-005	JST-SB-019

N/A (N/A)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Rec Temp	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
K0500590-005.01		NA		-				NA		

Test List: 1613B

Lab Code	Sample Name
K0500590-006	JST-SB-017

N/A (N/A)

Bottle ID	Barcode	Expected Conditions HS	Expected Conditions pH	Expected Conditions Temp	Cooler #	Received Conditions Rec Temp	Received Conditions pH Check	Received Conditions Rec HS	Seal Intact?	Corrective Action
K0500590-006.01		NA		-				NA		

Test List: 1613B

The following tests have no assigned bottles

K0500590-001	HOMOGEN	SOP
K0500590-001	SUB_SAMPLE	None
K0500590-002	HOMOGEN	SOP
K0500590-002	SUB_SAMPLE	None
K0500590-003	HOMOGEN	SOP
K0500590-003	SUB_SAMPLE	None
K0500590-004	HOMOGEN	SOP
K0500590-004	SUB_SAMPLE	None
K0500590-005	HOMOGEN	SOP
K0500590-005	SUB_SAMPLE	None
K0500590-006	HOMOGEN	SOP
K0500590-006	SUB_SAMPLE	None

No	Project ID	Lab ID	Client ID	Sample Size g	Tare Vial	Tare & Wet Sample	Tare & Dry Sample	Calculated Percent Solid	Calculated Percent Moisture	Dry Weight	Sample Description
MB		EB21091-MB	MB	10.000							
LCS		EB21091-LCS	LCS	10.000							
LCSD		EB21091-LCSD	LCSD	10.000							
1	E0500447	E0500447-001.01	WSP-SB-006	10.336	13.054	16.712	13.821	20.97	79.03	2.17	Tissue
2	E0500447	E0500447-002.01	WSP-SB-007	10.309	12.991	16.629	13.712	19.82	80.18	2.04	Tissue
3	E0500447	E0500447-003.01	WSP-SB-008	10.082	12.959	17.450	13.903	21.02	78.98	2.12	Tissue
4	E0500447	E0500447-004.01	JST-SB-009	10.434	12.993	16.668	13.804	22.07	77.93	2.30	Tissue
5	K0500590	K0500590-001.01	Comp JST-SB-040/018	9.997	13.005	16.129	13.624	19.81	80.19	1.98	Tissue
6	K0500590	K0500590-002.01	Comp WSP-SB-033/045	10.013	12.971	16.678	13.648	18.26	81.74	1.83	Tissue
7	K0500590	K0500590-003.01	Comp WSP-SB-044/046	10.133	12.992	16.831	13.714	18.81	81.19	1.91	Tissue
8	K0500590	K0500590-004.01	JST-SB-042	9.760	13.017	15.612	13.476	17.69	82.31	1.73	Tissue
9	K0500590	K0500590-005.01	JST-SB-019	10.216	12.967	16.346	13.714	22.11	77.89	2.26	Tissue
10	K0500590	K0500590-006.01	JST-SB-017	10.467	12.989	16.296	13.692	21.26	78.74	2.23	Tissue
11	E0500449	E0500449-006.01	WR-PG-62	14.615	13.022	19.382	16.516	54.94	45.06	8.03	Wet brown mud
12	E0500449	E0500449-007.01	WR-PG-60	15.481	13.041	18.575	16.103	55.33	44.67	8.57	Dry brown mud
13	E0500449	E0500449-008.01	WR-PG-58	13.665	12.989	18.475	16.334	60.97	39.03	8.33	Wet grey/brown mud
14	E0500449	E0500449-009.01	WR-PG-56	15.280	12.976	18.820	16.264	56.26	43.74	8.60	Wet brown mud
15	E0500448	E0500448-001.01	WR-PG-36	14.560	12.995	18.180	16.137	60.60	39.40	8.82	Wet brown mud
16	E0500429	E0500429-052.01RE	mn-ss-1301-14 0-2"	5.224	12.800	15.305	14.798	79.76	20.24	4.17	Dry brown dirt
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											

SODIUM SULFATE C1-71-2
ACETONE C1-68-3
TOLUENE C1-74-5
GLASS WOOL GW1-1-4
DICHLOROMETHANE C1-73-3
ETHYL ACETATE C1-69-4
NONANE C1-67-5
HEXANE C1-73-2

SAND C1-33-1
TRIDECANE C1-74-2
SULFURIC ACID C1-74-3
BASIC SILICA GEL S1-24-3
CARBON : C1-73-5
ACIDIC SILICA GEL S1-24-4
SILICA GEL S1-22-6

Standard:	Internal	Matrix
Solution ID:	D7-35-3B	D7-28-3B
Volume:	1000 uL	100 uL
Spiker:	KYM	KYM
Witness:	JB	JB
Date:	6/14/2005	6/14/2005

Standard:	Cleanup	Recovery
Solution ID:	D7-33-5A/B	D6-75-3B
Volume:	100 uL	1000 uL
Spiker:	DHF	
Witness:	JB	KC
Date:	6/15/2005	

EXTRACTION START: 6-14-05
EXTRACTION END: 6-15-05
EXTRACTION METHOD: Soxhlet

TIME STARTED: 1500
TIME FINISHED: 0700

EXTRACTS RECEIVED BY KC

DATE RECEIVED 6-17-05

Columbia Analytical Services, INC.

EB21091 **1613**

Sulfuric Acid Cleanup: 6-15-05
Silica Gel/Carbon Column: 6-16-05

No	Project ID	Lab ID	Client ID	Sample Size g	Tare Vial g	Dried Extract	Percent Lipid	Sample Description	Quantity Analized
MB		EB21094-MB	Method Blank	10.000					
	E0500447	E0500447-001.01	WSP-SB-006	10.336	12.962	12.984	0.426		
	E0500447	E0500447-002.01	WSP-SB-007	10.309	12.902	12.919	0.330		
1	E0500447	E0500447-003.01	WSP-SB-008	10.082	12.993	13.004	0.22		
2	E0500447	E0500447-004.01	JST-SB-009	10.434	12.896	12.909	0.249		
3	K0500590	K0500590-001.01	Comp JST-SB-040/018	9.997	12.758	12.763	0.100		
4	K0500590	K0500590-002.01	Comp WSP-SB-033/045	10.013	12.906	12.910	0.080		
5	K0500590	K0500590-003.01	Comp WSP-SB-044/046	10.133	13.092	13.102	0.197		
6	K0500590	K0500590-004.01	JST-SB-042	9.760	12.656	12.671	0.307		
7	K0500590	K0500590-005.01	JST-SB-019	10.216	12.668	12.701	0.646		
8	K0500590	K0500590-006.01	JST-SB-017	10.467	12.712	12.718	0.115		
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									

Percent Lipid Measurement OF 6/28/5

SODIUM SULFATE C1-71-2
ACETONE C1-68-3
TOLUENE C1-74-5
GLASS WOOL GW1-1-4
DICHLOROMETHANE C1-73-3
ETHYL ACETATE C1-69-4
NONANE C1-67-5
HEXANE C1-73-2

SAND C1-33-1
TRIDECANE C1-74-2
SULFURIC ACID C1-74-3
BASIC SILICA GEL S1-24-3
CARBON : C1-73-5
ACIDIC SILICA GEL S1-24-4
SILICA GEL S1-22-6

Standard:	Internal	Matrix
Solution ID:		
Volume:	1000 ul	100 uL
Spiker:		
Witness:		
Date:		

Standard:	Cleanup	Recovery
Solution ID:		
Volume:	100 uL	
Spiker:		
Witness:		
Date:		

EXTRACTION START: 6/14/05
EXTRACTION END: 6/16/05
EXTRACTION METHOD (1):

TIME STARTED: 15:00
TIME FINISHED: 7:00

EXTRACTS RECEIVED BY _____

DATE RECEIVED ____6/17/05_____

Columbia Analytical Services, INC.

EB21094

Sulfuric Acid Cleanup:
Silica Gel/Carbon Column:

Columbia Analytical Services INC.

An Employee - Owned Company

Dioxin/Furan

Analytical Report

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
METHOD BLANK

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB21091-MB

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22434#1

Analysis Date: 17-JUN-05 Time: 15:55:05 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/22/06 weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.044	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.046	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.057	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.072	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.065	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	*	0.054	U	*	*	1.01
OCDD	0.442	0.115	J	0.93	1.000	1.05
2,3,7,8-TCDF	*	0.040	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.037	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.033	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.057	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.069	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.071	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.068	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.043	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.056	U	*	*	1.48
OCDF	0.341	0.102	J	0.87	1.003	1.25
Total Tetra-Dioxins	*	0.044	U			
Total Penta-Dioxins	*	0.046	U			
Total Hexa-Dioxins	*	0.057	U			
Total Hepta-Dioxins	*	0.054	U			
Total Tetra-Furans	*	0.040	U			
Total Penta-Furans	*	0.033	U			
Total Hexa-Furans	*	0.057	U			
Total Hepta-Furans	*	0.043	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

CLIENT ID.

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

METHOD BLANK

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB21091-MB

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 15:55:05 Sample Data Filename: U22434#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/22/06 weight): ng/Kg % Solid/Lipids:

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1695.59	84.78	25-164	0.77	1.012
13C-1,2,3,7,8-PeCDD	2000	1876.05	93.80	25-181	1.54	1.227
13C-1,2,3,4,7,8-HxCDD	2000	1745.00	87.25	32-141	1.26	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1605.34	80.27	28-130	1.25	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1547.02	77.35	23-140	1.05	1.071
13C-OCDD	4000	2534.51	63.36	17-157	0.90	1.144
13C-2,3,7,8-TCDF	2000	1874.99	93.75	24-169	0.77	0.969
13C-1,2,3,7,8-PeCDF	2000	1630.08	81.50	24-185	1.55	1.177
13C-2,3,4,7,8-PeCDF	2000	1640.73	82.04	21-178	1.55	1.211
13C-1,2,3,4,7,8-HxCDF	2000	1597.07	79.85	26-152	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1404.86	70.24	26-123	0.52	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1839.33	91.97	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1542.59	77.13	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1453.78	72.69	28-143	0.44	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1637.80	81.89	26-138	0.44	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	782.43	97.80	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
Comp JST-SB-040/018

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-001.01

Client Name: Geomatrix Sample Wt/Vol: 9.997 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22435#1

Analysis Date: 17-JUN-05 Time: 17:51:31 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~wet~~ WET weight): ng/Kg % Solids/Lipids: 19.81/0.100

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.046	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.032	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.039	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.043	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.041	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.074	0.026	JK	1.24	1.000	1.01
OCDD	0.438	0.077	JB	0.90	1.000	1.05
2,3,7,8-TCDF	*	0.041	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.029	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.028	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.021	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.024	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.025	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.024	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.030	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.036	U	*	*	1.48
OCDF	0.409	0.074	JB	0.97	1.003	1.25
Total Tetra-Dioxins	*	0.046	U			
Total Penta-Dioxins	*	0.032	U			
Total Hexa-Dioxins	*	0.039	U			
Total Hepta-Dioxins	0.066	0.026				
Total Tetra-Furans	*	0.041	U			
Total Penta-Furans	*	0.028	U			
Total Hexa-Furans	*	0.021	U			
Total Hepta-Furans	*	0.030	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

CLIENT ID.

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

Comp JST-SB-040/018

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:K0500590-001.01

Client Name: Geomatrix Sample Wt/Vol: 9.997 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 17:51:31 Sample Data Filename: U22435#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 19.81/0.100

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1718.97	85.95	25-164	0.80	1.013
13C-1,2,3,7,8-PeCDD	2000	1915.79	95.79	25-181	1.53	1.227
13C-1,2,3,4,7,8-HxCDD	2000	1487.42	74.37	32-141	1.24	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1490.57	74.53	28-130	1.27	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1514.36	75.72	23-140	1.05	1.072
13C-OCDD	4000	2536.25	63.41	17-157	0.91	1.144
13C-2,3,7,8-TCDF	2000	1920.46	96.02	24-169	0.78	0.969
13C-1,2,3,7,8-PeCDF	2000	1729.70	86.49	24-185	1.55	1.177
13C-2,3,4,7,8-PeCDF	2000	1654.09	82.70	21-178	1.56	1.211
13C-1,2,3,4,7,8-HxCDF	2000	1530.12	76.51	26-152	0.51	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1351.94	67.60	26-123	0.53	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1801.81	90.09	29-147	0.53	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1473.79	73.69	28-136	0.51	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1378.81	68.94	28-143	0.45	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1617.23	80.86	26-138	0.45	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	819.99	102.50	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
Comp JST-SB-040/7

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-001.01

Client Name: Geomatrix Sample Wt/Vol: 9.997 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22435#1

Analysis Date: 17-JUN-05 Time: 17:51:31 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET OF Wt weight): ng/Kg % Solids/Lipids: 19.81/0.100

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.074	X 0.01	7.39e-04
OCDD	0.438	X 0.0001	4.40e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.409	X 0.0001	4.10e-05
		Total:	8.24e-04

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
Comp WSP-SB-033/045

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-002.01

Client Name: Geomatrix Sample Wt/Vol: 10.013 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22436#1

Analysis Date: 17-JUN-05 Time: 18:36:11 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 18.26/0.080

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.034	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.034	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.028	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.033	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.031	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.089	0.029	JK	0.86	1.000	1.01
OCDD	0.713	0.075	JB	0.83	1.000	1.05
2,3,7,8-TCDF	*	0.041	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.024	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.023	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.022	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.027	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.026	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.026	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.027	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.033	U	*	*	1.48
OCDF	0.208	0.065	JB	0.88	1.003	1.25
Total Tetra-Dioxins	*	0.034	U			
Total Penta-Dioxins	*	0.034	U			
Total Hexa-Dioxins	*	0.028	U			
Total Hepta-Dioxins	0.207	0.029				
Total Tetra-Furans	*	0.041	U			
Total Penta-Furans	*	0.023	U			
Total Hexa-Furans	*	0.022	U			
Total Hepta-Furans	*	0.027	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
Comp WSP-SB-033/045

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:K0500590-002.01

Client Name: Geomatrix Sample Wt/Vol: 10.013 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 18:36:11 Sample Data Filename: U22436#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 18.26/0.080

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1632.12	81.61	25-164	0.78	1.013
13C-1,2,3,7,8-PeCDD	2000	1833.48	91.67	25-181	1.53	1.227
13C-1,2,3,4,7,8-HxCDD	2000	1521.18	76.06	32-141	1.24	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1481.35	74.07	28-130	1.23	0.991
13C-1,2,3,4,6,7,8-HpCDD	2000	1465.33	73.27	23-140	1.05	1.071
13C-OCDD	4000	2446.95	61.17	17-157	0.89	1.144
13C-2,3,7,8-TCDF	2000	1844.99	92.25	24-169	0.77	0.969
13C-1,2,3,7,8-PeCDF	2000	1670.15	83.51	24-185	1.53	1.178
13C-2,3,4,7,8-PeCDF	2000	1618.91	80.95	21-178	1.56	1.211
13C-1,2,3,4,7,8-HxCDF	2000	1464.17	73.21	26-152	0.51	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1304.96	65.25	26-123	0.52	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1751.28	87.56	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1403.41	70.17	28-136	0.53	0.985
13C-1,2,3,4,6,7,8-HpCDF	2000	1329.77	66.49	28-143	0.44	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1553.43	77.67	26-138	0.44	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	818.69	102.34	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
Comp WSP-SB-033/

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-002.01

Client Name: Geomatrix Sample Wt/Vol: 10.013 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22436#1

Analysis Date: 17-JUN-05 Time: 18:36:11 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET LF 6/2016 weight): ng/Kg % Solids/Lipids: 18.26/0.080

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.089	X 0.01	8.88e-04
OCDD	0.713	X 0.0001	7.10e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.208	X 0.0001	2.10e-05
		Total:	9.80e-04

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

6/90

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
Comp WSP-SB-044/046

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-003.01

Client Name: Geomatrix Sample Wt/Vol: 10.133 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22437#1

Analysis Date: 17-JUN-05 Time: 19:22:32 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 18.81/0.197

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.029	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.026	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.035	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.041	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.038	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.071	0.033	J	1.02	1.000	1.01
OCDD	0.369	0.066	JBK	0.72	1.000	1.05
2,3,7,8-TCDF	*	0.039	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.024	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.023	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.022	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.025	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.026	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.025	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.034	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.042	U	*	*	1.48
OCDF	0.195	0.072	JB	0.77	1.003	1.25
Total Tetra-Dioxins	*	0.029	U			
Total Penta-Dioxins	*	0.026	U			
Total Hexa-Dioxins	*	0.035	U			
Total Hepta-Dioxins	0.142	0.033				
Total Tetra-Furans	*	0.039	U			
Total Penta-Furans	*	0.023	U			
Total Hexa-Furans	*	0.022	U			
Total Hepta-Furans	*	0.034	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

CLIENT ID.

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

Comp WSP-SB-044/046

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:K0500590-003.01

Client Name: Geomatrix Sample Wt/Vol: 10.133 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 19:22:32 Sample Data Filename: U22437#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 18.81/0.197

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1636.79	81.84	25-164	0.80	1.013
13C-1,2,3,7,8-PeCDD	2000	1824.37	91.22	25-181	1.55	1.227
13C-1,2,3,4,7,8-HxCDD	2000	1523.69	76.18	32-141	1.23	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1523.06	76.15	28-130	1.23	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1478.46	73.92	23-140	1.05	1.071
13C-OCDD	4000	2475.87	61.90	17-157	0.89	1.144
13C-2,3,7,8-TCDF	2000	1789.13	89.46	24-169	0.77	0.969
13C-1,2,3,7,8-PeCDF	2000	1630.27	81.51	24-185	1.54	1.178
13C-2,3,4,7,8-PeCDF	2000	1620.65	81.03	21-178	1.54	1.211
13C-1,2,3,4,7,8-HxCDF	2000	1482.86	74.14	26-152	0.53	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1326.01	66.30	26-123	0.53	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1769.94	88.50	29-147	0.51	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1448.47	72.42	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1367.81	68.39	28-143	0.44	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1583.03	79.15	26-138	0.44	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	783.13	97.89	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
Comp WSP-SB-044/π

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-003.01

Client Name: Geomatrix Sample Wt/Vol: 10.133 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22437#1

Analysis Date: 17-JUN-05 Time: 19:22:32 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/2016 weight): ng/Kg % Solids/Lipids: 18.81/0.197

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.071	X 0.01	7.10e-04
OCDD	0.369	X 0.0001	3.70e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.195	X 0.0001	2.00e-05
		Total:	7.66e-04

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

26A

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
JST-SB-042

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-004.01

Client Name: Geomatrix Sample Wt/Vol: 9.760 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22438#1

Analysis Date: 17-JUN-05 Time: 20:08:52 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 17.69/0.307

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.044	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.039	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.035	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.042	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.039	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	*	0.041	U	*	*	1.01
OCDD	0.373	0.053	JB	0.80	1.000	1.05
2,3,7,8-TCDF	*	0.035	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.032	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.031	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.024	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.029	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.028	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.028	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.035	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.043	U	*	*	1.48
OCDF	0.151	0.051	JB	0.86	1.003	1.25
Total Tetra-Dioxins	*	0.044	U			
Total Penta-Dioxins	*	0.039	U			
Total Hexa-Dioxins	*	0.035	U			
Total Hepta-Dioxins	*	0.041	U			
Total Tetra-Furans	*	0.035	U			
Total Penta-Furans	*	0.031	U			
Total Hexa-Furans	*	0.024	U			
Total Hepta-Furans	*	0.035	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

CLIENT ID.

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

JST-SB-042

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:K0500590-004.01

Client Name: Geomatrix Sample Wt/Vol: 9.760 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 20:08:52 Sample Data Filename: U22438#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 17.69/0.307

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1777.71	88.89	25-164	0.81	1.012
13C-1,2,3,7,8-PeCDD	2000	1992.61	99.63	25-181	1.53	1.227
13C-1,2,3,4,7,8-HxCDD	2000	1766.26	88.31	32-141	1.27	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1585.53	79.28	28-130	1.26	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1587.53	79.38	23-140	1.05	1.072
13C-OCDD	4000	2714.81	67.87	17-157	0.90	1.144
13C-2,3,7,8-TCDF	2000	2003.79	100.19	24-169	0.77	0.968
13C-1,2,3,7,8-PeCDF	2000	1785.47	89.27	24-185	1.55	1.177
13C-2,3,4,7,8-PeCDF	2000	1740.78	87.04	21-178	1.55	1.211
13C-1,2,3,4,7,8-HxCDF	2000	1609.28	80.46	26-152	0.53	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1400.08	70.00	26-123	0.53	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1926.45	96.32	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1525.07	76.25	28-136	0.53	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1467.00	73.35	28-143	0.44	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1707.38	85.37	26-138	0.45	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	828.76	103.59	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
JST-SB-042

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-004.01

Client Name: Geomatrix Sample Wt/Vol: 9.760 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22438#1

Analysis Date: 17-JUN-05 Time: 20:08:52 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET OF 6/20/16 weight): ng/Kg % Solids/Lipids: 17.69/0.307

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	*	X 0.01	*
OCDD	0.373	X 0.0001	3.70e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.151	X 0.0001	1.50e-05
		Total:	5.20e-05

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
JST-SB-019

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-005.01

Client Name: Geomatrix Sample Wt/Vol: 10.216 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22439#1

Analysis Date: 17-JUN-05 Time: 20:55:12 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 22.11/0.646

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.048	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.042	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.040	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.049	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.045	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.101	0.026	J	1.06	1.000	1.01
OCDD	0.897	0.077	JB	0.89	1.000	1.05
2,3,7,8-TCDF	*	0.036	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.029	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.029	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.023	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.027	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.027	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.027	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.029	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.027	U	*	*	1.48
OCDF	0.202	0.070	JB	0.79	1.003	1.25
Total Tetra-Dioxins	*	0.048	U			
Total Penta-Dioxins	*	0.042	U			
Total Hexa-Dioxins	*	0.040	U			
Total Hepta-Dioxins	0.281	0.026				
Total Tetra-Furans	*	0.036	U			
Total Penta-Furans	*	0.029	U			
Total Hexa-Furans	*	0.023	U			
Total Hepta-Furans	*	0.029	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
JST-SB-019

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:K0500590-005.01

Client Name: Geomatrix Sample Wt/Vol: 10.216 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 20:55:12 Sample Data Filename: U22439#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 22.11/0.646

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1690.47	84.52	25-164	0.80	1.012
13C-1,2,3,7,8-PeCDD	2000	1845.71	92.29	25-181	1.55	1.227
13C-1,2,3,4,7,8-HxCDD	2000	1546.01	77.30	32-141	1.26	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1470.98	73.55	28-130	1.27	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1423.41	71.17	23-140	1.05	1.071
13C-OCDD	4000	2272.43	56.81	17-157	0.91	1.144
13C-2,3,7,8-TCDF	2000	1913.14	95.66	24-169	0.78	0.968
13C-1,2,3,7,8-PeCDF	2000	1678.93	83.95	24-185	1.54	1.177
13C-2,3,4,7,8-PeCDF	2000	1565.29	78.26	21-178	1.56	1.211
13C-1,2,3,4,7,8-HxCDF	2000	1470.69	73.53	26-152	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1317.03	65.85	26-123	0.51	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1749.51	87.48	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1404.09	70.20	28-136	0.53	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1074.73	53.74	28-143	0.45	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1527.91	76.40	26-138	0.43	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	856.51	107.06	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

CLIENT ID.

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

JST-SB-019

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-005.01

Client Name: Geomatrix Sample Wt/Vol: 10.216 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22439#1

Analysis Date: 17-JUN-05 Time: 20:55:12 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET LF 6/20/06 weight): ng/Kg % Solids/Lipids: 22.11/0.646

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.101	X 0.01	1.01e-03
OCDD	0.897	X 0.0001	9.00e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.202	X 0.0001	2.00e-05
		Total:	1.12e-03

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

6/90

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
JST-SB-017

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-006.01

Client Name: Geomatrix Sample Wt/Vol: 10.467 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22440#1

Analysis Date: 17-JUN-05 Time: 21:41:32 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 21.26/0.115

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.045	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.037	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.032	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.037	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.035	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.063	0.038	JK	0.77	1.000	1.01
OCDD	0.475	0.085	JBK	0.74	1.000	1.05
2,3,7,8-TCDF	*	0.037	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.029	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.030	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.021	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.026	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.025	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.026	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.035	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.038	U	*	*	1.48
OCDF	0.285	0.070	JB	0.95	1.003	1.25
Total Tetra-Dioxins	*	0.045	U			
Total Penta-Dioxins	*	0.037	U			
Total Hexa-Dioxins	*	0.032	U			
Total Hepta-Dioxins	0.073	0.038				
Total Tetra-Furans	*	0.037	U			
Total Penta-Furans	*	0.030	U			
Total Hexa-Furans	*	0.021	U			
Total Hepta-Furans	*	0.035	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
JST-SB-017

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:K0500590-006.01

Client Name: Geomatrix Sample Wt/Vol: 10.467 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 21:41:32 Sample Data Filename: U22440#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 21.26/0.115

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1776.12	88.81	25-164	0.76	1.013
13C-1,2,3,7,8-PeCDD	2000	1965.47	98.27	25-181	1.54	1.228
13C-1,2,3,4,7,8-HxCDD	2000	1600.49	80.02	32-141	1.28	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1581.27	79.06	28-130	1.26	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1479.78	73.99	23-140	1.06	1.071
13C-OCDD	4000	2125.35	53.13	17-157	0.92	1.144
13C-2,3,7,8-TCDF	2000	1976.32	98.82	24-169	0.77	0.969
13C-1,2,3,7,8-PeCDF	2000	1755.24	87.76	24-185	1.56	1.178
13C-2,3,4,7,8-PeCDF	2000	1636.05	81.80	21-178	1.57	1.212
13C-1,2,3,4,7,8-HxCDF	2000	1560.51	78.03	26-152	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1396.65	69.83	26-123	0.52	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1863.40	93.17	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1469.19	73.46	28-136	0.52	0.985
13C-1,2,3,4,6,7,8-HpCDF	2000	1267.43	63.37	28-143	0.45	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1569.41	78.47	26-138	0.43	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	831.13	103.89	35-197		1.014

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.

JST-SB-017

Lab Name: Columbia Analytical Services   Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: K0500590-006.01

Client Name: Geomatrix   Sample Wt/Vol: 10.467 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue   Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05   Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05   GC Column ID: DB-5

Ext. Vol(ul):20.0   Inj. Vol(ul):1.0   Sample Data Filename: U22440#1

Analysis Date: 17-JUN-05 Time: 21:41:32   Blank Data Filename: U22434#1

Dilution Factor: 1   Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/20/06 weight): ng/Kg % Solids/Lipids: 21.26/0.115

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.063	X 0.01	6.31e-04
OCDD	0.475	X 0.0001	4.80e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.285	X 0.0001	2.90e-05
		Total:	7.07e-04

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

Columbia Analytical Services INC.

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Accuracy & Precision Data

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

3DFA
1613 PCDD/PCDF SPIKED SAMPLE SUMMARY

CLIENT ID: LCS/LCSD

Lab Name: COLUMBIA ANALYTICAL SERVICES
Lab Code: CAS LAB. ID: EB21091
Matrix: Solid (Solid, Aqueous, Ash, Waste)

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

ANALYTE	SPIKE ADDED (PG)	LCS SAMPLE CONC.	LCSD SAMPLE CONC.		LCS% RECOV.	#	LCSD% RECOV.	#	RPD %	QC LIMITS
2378-TCDD	200	23.779	20.507		118.90		102.54		14.78	50 - 150
12378-PeCDD	1000	102.438	97.309		102.44		97.31		5.14	50 - 150
123478-HxCDD	1000	108.225	94.522		108.23		94.52		13.52	50 - 150
123678-HxCDD	1000	121.061	109.173		121.06		109.17		10.33	50 - 150
123789-HxCDD	1000	118.641	105.295		118.64		105.30		11.92	50 - 150
1234678-HpCDD	1000	107.147	100.826		107.15		100.83		6.08	50 - 150
OCDD	2000	218.340	211.319		109.17		105.66		3.27	50 - 150
2378-TCDF	200	17.648	15.299		88.24		76.50		14.26	50 - 150
12378-PeCDF	1000	112.696	99.357		112.70		99.36		12.58	50 - 150
23478-PeCDF	1000	108.158	95.257		108.16		95.26		12.68	50 - 150
123478-HxCDF	1000	106.364	92.205		106.36		92.21		14.26	50 - 150
123678-HxCDF	1000	118.670	106.754		118.67		106.75		10.57	50 - 150
123789-HxCDF	1000	99.088	86.112		99.09		86.11		14.01	50 - 150
234678-HxCDF	1000	107.897	96.028		107.90		96.03		11.64	50 - 150
1234678-HpCDF	1000	100.740	92.807		100.74		92.81		8.20	50 - 150
1234789-HpCDF	1000	99.558	92.764		99.56		92.76		7.07	50 - 150
OCDF	2000	218.292	188.009		109.15		94.00		14.91	50 - 150

If an analyte is not detected in either analysis, enter 0 (zero) as the concentration.

Column to be used to flag values outside QC limits.

* Compound outside the QC advisory limits of 50 - 150

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
LCS

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB21091-LCS

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): solid Initial Calibration Date: 08/10/04

Sample Receipt Date: Instrument ID: 70S

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C14093#3

Analysis Date: 23-JUN-05 Time: 13:56:23 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: C14093#2

Concentration Units (pg/L or ng/Kg ~~dry~~ wet CF 6/12/06 weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	23.779	0.113		0.77	1.001	0.95
1,2,3,7,8-PeCDD	102.438	0.098		1.60	1.000	1.04
1,2,3,4,7,8-HxCDD	108.225	0.073		1.24	1.000	1.07
1,2,3,6,7,8-HxCDD	121.061	0.084		1.23	1.000	0.95
1,2,3,7,8,9-HxCDD	118.641	0.080		1.22	1.009	0.99
1,2,3,4,6,7,8-HpCDD	107.147	0.118		1.05	1.000	0.99
OCDD	218.340	0.239		0.88	1.000	1.02
2,3,7,8-TCDF	17.648	0.082		0.76	1.001	1.08
1,2,3,7,8-PeCDF	112.696	0.081		1.54	1.000	0.93
2,3,4,7,8-PeCDF	108.158	0.078		1.53	1.000	1.01
1,2,3,4,7,8-HxCDF	106.364	0.051		1.23	1.000	1.21
1,2,3,6,7,8-HxCDF	118.670	0.058		1.24	1.000	1.19
1,2,3,7,8,9-HxCDF	99.088	0.067		1.25	1.000	1.26
2,3,4,6,7,8-HxCDF	107.897	0.058		1.24	1.000	1.14
1,2,3,4,6,7,8-HpCDF	100.740	0.089		1.02	1.000	1.43
1,2,3,4,7,8,9-HpCDF	99.558	0.147		1.02	1.000	1.41
OCDF	218.292	0.327		0.88	1.005	1.37
Total Tetra-Dioxins	23.779	0.113				
Total Penta-Dioxins	102.438	0.098				
Total Hexa-Dioxins	347.928	0.084				
Total Hepta-Dioxins	109.655	0.118				
Total Tetra-Furans	18.106	0.082				
Total Penta-Furans	222.225	0.078				
Total Hexa-Furans	432.020	0.058				
Total Hepta-Furans	200.298	0.089				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
LCS

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB21091-LCS

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): solid Initial Calibration Date: 08/10/04

Sample Receipt Date: Instrument ID: 70S

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 23-JUN-05 Time: 13:56:23 Sample Data Filename: C14093#3

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: C14093#2

Concentration Units (pg/L or ng/Kg ~~dry~~ wet wt 6/20/06 weight): ng/Kg % Solid/Lipids:

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1631.79	81.59	25-164	0.79	1.008
13C-1,2,3,7,8-PeCDD	2000	1603.49	80.17	25-181	1.54	1.184
13C-1,2,3,4,7,8-HxCDD	2000	1830.51	91.53	32-141	1.23	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1571.38	78.57	28-130	1.25	0.991
13C-1,2,3,4,6,7,8-HpCDD	2000	1445.16	72.26	23-140	1.05	1.077
13C-OCDD	4000	1868.08	46.70	17-157	0.85	1.167
13C-2,3,7,8-TCDF	2000	1936.37	96.82	24-169	0.79	0.977
13C-1,2,3,7,8-PeCDF	2000	1600.46	80.02	24-185	1.55	1.141
13C-2,3,4,7,8-PeCDF	2000	1481.69	74.08	21-178	1.55	1.170
13C-1,2,3,4,7,8-HxCDF	2000	1901.23	95.06	26-152	0.48	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1587.91	79.40	26-123	0.49	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1854.41	92.72	29-147	0.49	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1726.80	86.34	28-136	0.48	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1640.62	82.03	28-143	0.44	1.050
13C-1,2,3,4,7,8,9-HpCDF	2000	1447.98	72.40	26-138	0.43	1.089
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	734.82	91.85	35-197		1.009

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 1

CLIENT ID.

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results LCSD

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB21091-LCSD

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22461#1

Analysis Date: 20-JUN-05 Time: 01:09:14 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22448#1

Concentration Units (pg/L or ng/Kg ~~dry~~ weight): ng/Kg WET CF 6/20/6 % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	20.507	0.040		0.74	1.001	0.98
1,2,3,7,8-PeCDD	97.309	0.029		1.55	1.000	0.98
1,2,3,4,7,8-HxCDD	94.522	0.031		1.24	1.000	1.15
1,2,3,6,7,8-HxCDD	109.173	0.037		1.23	1.000	0.98
1,2,3,7,8,9-HxCDD	105.295	0.034		1.21	1.009	1.05
1,2,3,4,6,7,8-HpCDD	100.826	0.070		1.07	1.000	1.01
OCDD	211.319	0.092		0.87	1.000	1.05
2,3,7,8-TCDF	15.299	0.040		0.74	1.001	1.03
1,2,3,7,8-PeCDF	99.357	0.031		1.55	1.001	1.01
2,3,4,7,8-PeCDF	95.257	0.031		1.53	1.001	1.08
1,2,3,4,7,8-HxCDF	92.205	0.040		1.21	1.000	1.28
1,2,3,6,7,8-HxCDF	106.754	0.047		1.21	1.000	1.23
1,2,3,7,8,9-HxCDF	86.112	0.050		1.21	1.000	1.32
2,3,4,6,7,8-HxCDF	96.028	0.047		1.27	1.001	1.18
1,2,3,4,6,7,8-HpCDF	92.807	0.275		1.01	1.000	1.53
1,2,3,4,7,8,9-HpCDF	92.764	0.384		1.01	1.000	1.48
OCDF	188.009	0.071		0.88	1.003	1.25
Total Tetra-Dioxins	20.507	0.040				
Total Penta-Dioxins	97.309	0.029				
Total Hexa-Dioxins	308.990	0.031				
Total Hepta-Dioxins	103.672	0.070				
Total Tetra-Furans	15.299	0.040				
Total Penta-Furans	194.614	0.031				
Total Hexa-Furans	381.099	0.040				
Total Hepta-Furans	187.553	0.275				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID. LCSD

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB21091-LCSD

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 20-JUN-05 Time: 01:09:14 Sample Data Filename: U22461#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22448#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/21/06 weight): ng/Kg % Solid/Lipids:

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1765.34	88.27	25-164	0.77	1.013
13C-1,2,3,7,8-PeCDD	2000	1847.69	92.38	25-181	1.54	1.230
13C-1,2,3,4,7,8-HxCDD	2000	1695.35	84.77	32-141	1.23	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1614.06	80.70	28-130	1.23	0.991
13C-1,2,3,4,6,7,8-HpCDD	2000	1340.87	67.04	23-140	1.05	1.072
13C-OCDD	4000	1828.59	45.71	17-157	0.89	1.144
13C-2,3,7,8-TCDF	2000	1690.64	84.53	24-169	0.76	0.969
13C-1,2,3,7,8-PeCDF	2000	1597.02	79.85	24-185	1.53	1.180
13C-2,3,4,7,8-PeCDF	2000	1494.45	74.72	21-178	1.55	1.213
13C-1,2,3,4,7,8-HxCDF	2000	1514.47	75.72	26-152	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1386.63	69.33	26-123	0.52	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1745.83	87.29	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1443.23	72.16	28-136	0.51	0.985
13C-1,2,3,4,6,7,8-HpCDF	2000	1296.64	64.83	28-143	0.43	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1295.42	64.77	26-138	0.44	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	787.15	98.39	35-197		1.014

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2378-TCDD (cleanup standard).

RFP C500273T1

1317 South 13th Avenue P.O. Box 479 Kelso, Washington 98626 (360) 577-7222 ph (360) 636-1068 fax

Columbia Analytical Services INC.
An Employee - Owned Company

July 28, 2005

Service Request No: K2502124

Ann Holbrow
Geomatrix Consultants
2101 Webster St.
12th Floor
Oakland, CA 94612

RE: 9329

Dear Ann:

Enclosed is the revised report for the sample(s) submitted to our laboratory on March 24, 2005. For your reference, these analyses have been assigned our service request number K2502124.

We apologize for any inconvenience this may have created.

Please call if you have any questions. My extension is 3376.

Respectfully submitted,

Columbia Analytical Services, Inc.

Gregory Salata, Ph.D.
Project Chemist

GS/jeb

10655 Richmond Avenue Suite 130A Houston, Texas 77042 (713) 266-1599 ph (713) 266-0130 fax

Columbia Analytical Services INC.
An Employee - Owned Company

July 21, 2005

Dr. Gregory Salata
Columbia Analytical Services, Inc.
1317 South 13th Avenue
Kelso, WA 98626

Subject: ***Report Amendment; E0500374***
K2502124/Geomatrix

Dear Greg,

Samples PSP-SB-001 and PSP-SB-001DUP were originally reported as duplicate samples. The Toxicity Equivalence values did not agree well and the samples were re-extracted and re-analyzed.

Please replace the results for E0500374-001 and E0500374-002 with the enclosed data package.

Should you have any questions or need additional information, please call Jane Freemyer at 713-266-1599.

Sincerely,
COLUMBIA ANALYTICAL SERVICES, INC.

Jane Freemyer
HRMS Chemist: Quality Assurance/Projects
jfreemyer@houston.caslab.com

Columbia Analytical Services INC.

An Employee - Owned Company

Dioxin/Furan Testing

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Geomatrix, Inc.	**Service Request No.:**	E0500374_RE
Project:	K2502124	**Date Received:**	05/12/05
Sample Matrix:	tissue		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

This amendment contains the re-extracted and re-analyzed Method 1613B test results for PSP-SB-001 and PSP-SB-001DUP. The samples were re-extracted because the compounds detected did not duplicate well at low levels. Since the samples are so clean and we are working at such low levels of detection, we decided re-extraction and re-analysis would best resolve the discrepancies in the duplicate results.

The re-extracted and re-analyzed results, reported as E0500374-001.01RE and E0500374-002.01RE are the results to use when reporting Method 1613B test results. The enclosed results replace the results reported previously for these samples.

Sample Receipt

Please see the original report for E0500374 for the sample receipt information.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blank EB22015-MB/U12409#1contained low levels of 1234678-HpCDD and OCDD below the Method Reporting Limit (MRL). The Method Blank EB22015-MB/U22665#1contained low levels of 1234678-HpCDD and OCDD below the Method Reporting Limit (MRL). The associated compounds in the samples(s) are flagged with 'B' flags.

MS/MSD

A Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) was analyzed and reported in lieu of the MS/MSD for these samples.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Approved by Xiangqiu Liang **Date** 7/22/05

Xiangqiu Liang, Laboratory Director

Client: Columbia Analytical Services,Inc.
Project: 1613B_Full List/K2502124

Service Request: E0500374

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E0500374-001RE	PSP-SB-001	03/16/05	1500
E0500374-002RE	PSP-SB-001 DUP	03/16/05	1500
E0500374-003	PSP-SB-002	03/16/05	1500
E0500374-004	PSP-SB-003	03/16/05	1500
E0500374-005	PSP-SB-004	03/16/05	1500
E0500374-006	PSP-SB-005	03/16/05	1500

(OF) 9/21/5

Columbia Analytical Services INC.

An Employee - Owned Company

Dioxin/Furan Testing

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Method 1613B/Dioxins & Furans
Reporting Limits

CONGENER	CONGENER ABBREVIATION	CAS RN	REPORTING LIMITS Aqueous	REPORTING LIMITS Solids
			PG/L	NG/KG
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2378-TCDD	1746-01-6	10	1.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxins	12378-PeCDD	40321-76-4	50	5.0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	123478-HxCDD	39227-28-6	50	5.0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	123678-HxCDD	57653-85-7	50	5.0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	123789-HxCDD	19408-74-3	50	5.0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1234678-HpCDD	35822-46-9	50	5.0
Octachlorodibenzo-p-dioxin	OCDD	3268-87-9	100	10
2,3,7,8-Tetrachlorodibenzofuran	2378-TCDF	51207-31-9	10	1.0
1,2,3,7,8-Pentachlorodibenzofuran	12378-PeCDF	57117-41-6	50	5.0
2,3,4,7,8-Pentachlorodibenzofuran	23478-PeCDF	57117-31-4	50	5.0
1,2,3,6,7,8-Hexachlorodibenzofuran	123478-HxCDF	70648-26-9	50	5.0
1,2,3,7,8,9-Hexachlorodibenzofuran	123678-HxCDF	57117-44-9	50	5.0
1,2,3,4,7,8-Hexachlorodibenzofuran	123789-HxCDF	72918-21-9	50	5.0
2,3,4,6,7,8-Hexachlorodibenzofuran	234678-HxCDF	60851-34-5	50	5.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1234678-HpCDF	67562-39-4	50	5.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	1234789-HpCDF	55673-89-7	50	5.0
Octachlorodibenzofuran	OCDF	39001-02-0	100	10
Total Tetra-Dioxins	*	*	10	1.0
Total Penta-Dioxins	*	*	50	5.0
Total Hexa-Dioxins	*	*	50	5.0
Total Hepta-Dioxins	*	*	50	5.0
Total Tetra-Furans	*	*	10	1.0
Total Penta-Furans	*	*	50	5.0
Total Hexa-Furans	*	*	50	5.0
Total Hepta-Furans	*	*	50	5.0

NOTE: Tissue samples are reported on a wet-weight basis and soil/sediment samples are reported on a dry-weight basis.

Data Qualifier Flags

- **B** Used when an associated analyte is found in the method blank, as well as in the sample

- C Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 23788-TCDF in the samples. The confirmed result should be used in determining the TEQ value for TCDF. The samples requiring confirmation are indicated in the table above.

- **E** Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range

- **J** Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the detection limit (DL)

- **K** EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

- **U** Indicates the compound was analyzed and not detected.

- **X** User defined; see case narrative for detailed explanation

- **Y** Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Form 2s. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

- * Indicates concentration is reported as 'Not Detected'

CAS/HOU - Form Production, Peer Review & Project Review Signatures

SR# Unique ID: E0500374 RE

First Level - Data Processing - to be filled by person generating the forms

Date	07/14/05	Person 1	
Date		Person 2	

Second Level - Data Review – to be filled by person doing peer review

Date	07/18/05	Reviewer	
Date		Reviewer	

Project Level - Review - to be filled by person doing project compliance review

Date	7/19/5	Reviewer	

Columbia Analytical Services INC.

An Employee - Owned Company

Chain-of-custody

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Nonconformity and Corrective Action Report

NONCONFORMITY

N&CA Report No. E0500374

PROCEDURE (SOP or METHOD): EVENT DATE: 7/7/5

EVENT: ☐ Missed Holding Time ☑ QC Failure ☐ Lab Error (spilled sample, spiking error, etc.)
☐ Method Blank Contamination ☐ Login Error ☐ Project Management Error
☐ Equipment Failure ☐ Unacceptable PT Sample Result ☐ Other (describe):

SAMPLES / PROJECTS / CUSTOMERS / SYSTEMS AFFECTED

Duplicates do not match - reextract samples -001 and -002

DETAILED DESCRIPTION

ORIGINATOR: Jane Fleming DATE: 7/7/5

PROJECT CHEMIST(s): _____ NOTIFIED BY: _____ DATE: _____

CORRECTIVE ACTION AND OUTCOME

Re-establishment of conformity must be demonstrated and documented. Describe the steps that were taken, or are planned to be taken, to correct the particular Nonconformity and prevent its reoccurrence. Include Project Chemist instructions here.

Report results as E0500374-001.01RE and E0500374-002.01RE

Is the data to be flagged in the Analytical Report with an appropriate qualifier? ☑ No ☐ Yes

APPROVAL AND NOTIFICATION

Supervisor Verification and Approval of Corrective Action _____ Date: _____
Comments:

QA PM Verification and Approval of Corrective Action DF Date: 7/21/5
Comments:

Customer Notified by ☐ Telephone ☐ Fax ☑ E-mail ☐ Narrative ☐ Not notified
Project Chemist Verification and Approval of Corrective Action DF Date: 7/21/5
Comments: (Retain record)

Original: Customer File Photocopies: Supervisor and QA PM N&CA Report 2004.doc 3/26/2004

No	Project ID	Lab ID	Client ID	Sample Size g	Tare Vial	Tare & Wet Sample	Tare & Dry Sample	Calculated Percent Solid	Calculated Percent Moisture	Dry Weight	Sample Description
MB		EB22015-MB	MB	10.000							
LCS		EB22015-LCS	LCS	10.000							
LCSD		EB22015-LCSD	LCSD	10.000							
1	E0500506	E0500506-001.01	3204	5.004							Powdered Milk
2	E0500510	E0500510-001.01	WFI Ash 2Q05	13.487	13.022	15.507	14.951	77.63	22.37	10.47	Black Moist Soil
3	J0502657	J0502657-001.01	BG-9	15.930	13.078	18.305	17.059	76.16	23.84	12.13	Wet Grayish Soil
4	J0502657	J0502657-002.01	BG-8	14.297	12.821	17.388	13.866	22.88	77.12	3.27	Wet Black Soil
5	J0502657	J0502657-003.01	BG-7	13.217	13.068	17.091	13.763	17.28	82.72	2.28	Wet Black Soil
6	J0502781	J0502781-001.01	BG-6	12.751	12.835	16.495	13.978	31.23	68.77	3.98	Wet Grayish Soil
7	J0502781	J0502781-002.01	BG-6D	16.727	13.031	16.704	13.892	23.44	76.56	3.92	Wet Grayish Soil
8	J0502781	J0502781-003.01	BG-5	14.328	12.853	15.895	13.506	21.47	78.53	3.08	Wet Grayish Soil
9	J0502781	J0502781-004.01	BG-4	15.028	13.036	16.359	15.442	72.40	27.60	10.88	Wet Black Soil
10	E0500512	E0500512-001.01	#10 Boiler Ash	11.995	13.000	15.640	14.897	71.86	28.14	8.62	Moist Black Ash
11	E0500512	E0500512-002.01	WWTP Sludge	12.834	13.021	16.160	14.320	41.38	58.62	5.31	Brown Loose Pebbles/Sludge
12	E0500374	E0500374-001.01 RE	PSP-SB-001	4.453							Tissue
13	E0500374	E0500374-002.01 RE	PSP-SB-001 DUP	5.851							Tissue
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											

11

SODIUM SULFATE C1-71-2
ACETONE C1-68-3
TOLUENE C1-74-5
GLASS WOOL GW1-1-4
DICHLOROMETHANE C1-73-3
ETHYL ACETATE C1-69-4
NONANE C1-67-5
HEXANE C1-73-2

SAND C1-33-1
TRIDECANE C1-74-2
SULFURIC ACID C1-74-3
BASIC SILICA GEL S1-24-3
CARBON : C1-73-5
ACIDIC SILICA GEL S1-24-4
SILICA GEL S1-22-6

Standard:	Internal	Matrix
Solution ID:	D7-42-3B	D7-28-3B
Volume:	1000 uL	100 uL
Spiker:	DHF	DHF
Witness:	JB	JB
Date:	7/7/2005	7/7/2005

Standard:	Cleanup	Recovery
Solution ID:	D7-41-4A/B	D6-75-2B
Volume:	100 uL	200 uL
Spiker:	JB	
Witness:	KO	
Date:	7/11/2005	

EXTRACTION START: 07/7/05
EXTRACTION END: 07/08/05
EXTRACTION METHOD:Soxlet
TIME STARTED: 900
TIME FINISHED: 1300
EXTRACTS RECEIVED BY _____
DATE RECEIVED 07/11/05

Columbia Analytical Services, INC.

EB22015 **1613**

Sulfuric Acid Cleanup: 7/11/05
Silica Gel/Carbon Column:07/11/05

Columbia Analytical Services INC.

An Employee - Owned Company

Dioxin/Furan

Analytical Report

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
METHOD BLANK

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB22015-MB

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 09/30/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U12409#1

Analysis Date: 13-JUL-05 Time: 13:31:46 Blank Data Filename: U12409#1

Dilution Factor: 1 Cal. Ver. Data Filename: U12408#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet AF 6/20/6 weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.093	U	*	*	1.06
1,2,3,7,8-PeCDD	*	0.060	U	*	*	0.99
1,2,3,4,7,8-HxCDD	*	0.059	U	*	*	1.10
1,2,3,6,7,8-HxCDD	*	0.065	U	*	*	0.97
1,2,3,7,8,9-HxCDD	*	0.057	U	*	*	1.12
1,2,3,4,6,7,8-HpCDD	0.074	0.060	JK	1.44	1.000	0.93
OCDD	0.623	0.073	J	0.98	1.000	1.08
2,3,7,8-TCDF	*	0.086	U	*	*	0.91
1,2,3,7,8-PeCDF	*	0.051	U	*	*	0.88
2,3,4,7,8-PeCDF	*	0.048	U	*	*	0.94
1,2,3,4,7,8-HxCDF	*	0.058	U	*	*	1.13
1,2,3,6,7,8-HxCDF	*	0.062	U	*	*	1.12
1,2,3,7,8,9-HxCDF	*	0.068	U	*	*	1.16
2,3,4,6,7,8-HxCDF	*	0.065	U	*	*	1.06
1,2,3,4,6,7,8-HpCDF	*	0.051	U	*	*	1.34
1,2,3,4,7,8,9-HpCDF	*	0.067	U	*	*	1.31
OCDF	*	0.133	U	*	*	1.12
Total Tetra-Dioxins	*	0.093	U			
Total Penta-Dioxins	*	0.060	U			
Total Hexa-Dioxins	*	0.059	U			
Total Hepta-Dioxins	*	0.060	U			
Total Tetra-Furans	*	0.086	U			
Total Penta-Furans	*	0.048	U			
Total Hexa-Furans	*	0.058	U			
Total Hepta-Furans	*	0.051	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.

METHOD BLANK

Lab Name: Columbia Analytical Services   Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB22015-MB

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid   Initial Calibration Date: 09/30/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05   GC Column ID: DB-5

Analysis Date: 13-JUL-05 Time: 13:31:46   Sample Data Filename: U12409#1

Ext.Vol(ul):20.0   Inj.Vol(ul):1.0   Blank Data Filename: U12409#1

Dilution Factor: 1   Cal. Ver. Data Filename: U12408#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet CF [illegible] weight): ng/Kg   % Solid/Lipids:

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1285.66	64.28	25-164	0.76	1.010
13C-1,2,3,7,8-PeCDD	2000	1210.83	60.54	25-181	1.57	1.193
13C-1,2,3,4,7,8-HxCDD	2000	1501.66	75.08	32-141	1.24	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1489.31	74.47	28-130	1.24	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1243.55	62.18	23-140	1.05	1.068
13C-OCDD	4000	2287.45	57.19	17-157	0.90	1.142
13C-2,3,7,8-TCDF	2000	1248.55	62.43	24-169	0.78	0.974
13C-1,2,3,7,8-PeCDF	2000	1100.04	55.00	24-185	1.56	1.150
13C-2,3,4,7,8-PeCDF	2000	1040.28	52.01	21-178	1.56	1.180
13C-1,2,3,4,7,8-HxCDF	2000	1453.62	72.68	26-152	0.53	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1412.36	70.62	26-123	0.53	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1455.22	72.76	29-147	0.53	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1381.90	69.10	28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1348.11	67.41	28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1314.13	65.71	26-138	0.44	1.077
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	568.43	71.05	35-197		1.011

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
METHOD BLANK

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB22015-MB

Client Name: Sample Wt/Vol: 10.00 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 nn 2/24/6 GC Column:DB-5

Ext. Vol(ul): 20.0 Inj. Vol(ul): 10 Sample Data Filename: U22665#1

Analysis Date: 11-JUL-05 Time: 18:36:59 Blank Data Filename: U22665#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22663#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.038	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.032	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.034	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.041	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.038	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.096	0.039	J	1.03	1.000	1.01
OCDD	0.316	0.077	J	0.90	1.000	1.05
2,3,7,8-TCDF	*	0.041	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.026	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.024	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.028	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.033	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.035	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.033	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.030	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.041	U	*	*	1.48
OCDF	*	0.069	U	*	*	1.25
Total Tetra-Dioxins	*	0.038	U			
Total Penta-Dioxins	*	0.032	U			
Total Hexa-Dioxins	*	0.034	U			
Total Hepta-Dioxins	0.096	0.039				
Total Tetra-Furans	*	0.041	U			
Total Penta-Furans	*	0.024	U			
Total Hexa-Furans	*	0.028	U			
Total Hepta-Furans	*	0.030	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

CLIENT ID.

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

METHOD BLANK

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB22015-MB

Client Name: Sample Wt/Vol: 10.00 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column ID: DB-5

Analysis Date: 11-JUL-05 Time: 18:36:59 Sample Data Filename: U22665#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22665#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22663#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet or Caustic weight): ng/Kg % Solid/Lipids:

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1422.40	71.12	25-164	0.78	1.013
13C-1,2,3,7,8-PeCDD	2000	1579.82	78.99	25-181	1.55	1.236
13C-1,2,3,4,7,8-HxCDD	2000	1338.37	66.92	32-141	1.23	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1354.59	67.73	28-130	1.23	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1304.71	65.24	23-140	1.04	1.072
13C-OCDD	4000	2432.78	60.82	17-157	0.88	1.145
13C-2,3,7,8-TCDF	2000	1535.23	76.76	24-169	0.78	0.969
13C-1,2,3,7,8-PeCDF	2000	1385.11	69.26	24-185	1.55	1.185
13C-2,3,4,7,8-PeCDF	2000	1349.27	67.46	21-178	1.55	1.219
13C-1,2,3,4,7,8-HxCDF	2000	1248.70	62.44	26-152	0.53	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1150.47	57.52	26-123	0.53	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1468.35	73.42	29-147	0.53	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1192.98	59.65	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1240.93	62.05	28-143	0.45	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1336.52	66.83	26-138	0.44	1.082
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	641.18	80.15	35-197		1.014

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-001

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-001.01RE

Client Name: GEOMATRIX Sample Wt/Vol: 4.453 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): TISSUE Initial Calibration Date: 09/30/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U12410#1

Analysis Date: 13-JUL-05 Time: 14:16:49 Blank Data Filename: U12409#1

Dilution Factor: 1 Cal. Ver. Data Filename: U12408#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.273	U	*	*	1.06
1,2,3,7,8-PeCDD	*	0.153	U	*	*	0.99
1,2,3,4,7,8-HxCDD	*	0.117	U	*	*	1.10
1,2,3,6,7,8-HxCDD	*	0.133	U	*	*	0.97
1,2,3,7,8,9-HxCDD	*	0.115	U	*	*	1.12
1,2,3,4,6,7,8-HpCDD	*	0.298	U	*	*	0.93
OCDD	1.575	0.227	BJ	0.89	1.001	1.08
2,3,7,8-TCDF	*	0.294	U	*	*	0.91
1,2,3,7,8-PeCDF	*	0.112	U	*	*	0.88
2,3,4,7,8-PeCDF	*	0.109	U	*	*	0.94
1,2,3,4,7,8-HxCDF	*	0.103	U	*	*	1.13
1,2,3,6,7,8-HxCDF	*	0.111	U	*	*	1.12
1,2,3,7,8,9-HxCDF	*	0.134	U	*	*	1.16
2,3,4,6,7,8-HxCDF	*	0.116	U	*	*	1.06
1,2,3,4,6,7,8-HpCDF	*	0.195	U	*	*	1.34
1,2,3,4,7,8,9-HpCDF	*	0.277	U	*	*	1.31
OCDF	2.854	0.292	J	1.01	1.004	1.12
Total Tetra-Dioxins	*	0.273	U			
Total Penta-Dioxins	*	0.153	U			
Total Hexa-Dioxins	*	0.117	U			
Total Hepta-Dioxins	*	0.298	U			
Total Tetra-Furans	*	0.294	U			
Total Penta-Furans	*	0.109	U			
Total Hexa-Furans	*	0.103	U			
Total Hepta-Furans	*	0.195	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

CLIENT ID.

PSP-SB-001

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500374-001.01RE

Client Name: GEOMATRIX Sample Wt/Vol: 4.453 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): TISSUE Initial Calibration Date: 09/30/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column ID: DB-5

Analysis Date: 13-JUL-05 Time: 14:16:49 Sample Data Filename: U12410#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U12409#1

Dilution Factor: 1 Cal. Ver. Data Filename: U12408#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/20/06 weight): ng/Kg % Solid/Lipids:

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1195.56	59.78	25-164	0.77	1.010
13C-1,2,3,7,8-PeCDD	2000	1085.80	54.29	25-181	1.55	1.193
13C-1,2,3,4,7,8-HxCDD	2000	1364.49	68.22	32-141	1.24	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1319.83	65.99	28-130	1.25	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	694.04	34.70	23-140	1.04	1.067
13C-OCDD	4000	1857.90	46.45	17-157	0.90	1.141
13C-2,3,7,8-TCDF	2000	1122.30	56.11	24-169	0.77	0.975
13C-1,2,3,7,8-PeCDF	2000	1035.42	51.77	24-185	1.56	1.150
13C-2,3,4,7,8-PeCDF	2000	952.65	47.63	21-178	1.54	1.179
13C-1,2,3,4,7,8-HxCDF	2000	1378.69	68.93	26-152	0.53	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1340.20	67.01	26-123	0.54	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1235.43	61.77	29-147	0.51	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1308.50	65.42	28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1199.18	59.96	28-143	0.45	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1111.48	55.57	26-138	0.43	1.077
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	638.00	79.75	35-197		1.011

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-001

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-001.0

Client Name: GEOMATRIX Sample Wt/Vol: 4.453 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): TISSUE Initial Calibration Date: 09/30/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 07/07/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U12410#1

Analysis Date: 13-JUL-05 Time: 14:16:49 Blank Data Filename: U12409#1

Dilution Factor: 1 Cal. Ver. Data Filename: U12408#1

Concentration Units (pg/L or ng/Kg ~~dry~~ NOT Reported weight): ng/Kg % Solids/Lipids:

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	*	X 0.01	*
OCDD	1.575	X 0.0001	1.57e-04
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	2.854	X 0.0001	2.85e-04
		Total:	4.43e-04

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-001 DUP

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-002.01RE

Client Name: GEOMATRIX Sample Wt/Vol: 5.851 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): TISSUE Initial Calibration Date: 09/30/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U12411#1

Analysis Date: 13-JUL-05 Time: 15:03:18 Blank Data Filename: U12409#1

Dilution Factor: 1 Cal. Ver. Data Filename: U12408#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet or wet weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.155	U	*	*	1.06
1,2,3,7,8-PeCDD	*	0.139	U	*	*	0.99
1,2,3,4,7,8-HxCDD	*	0.087	U	*	*	1.10
1,2,3,6,7,8-HxCDD	*	0.101	U	*	*	0.97
1,2,3,7,8,9-HxCDD	*	0.086	U	*	*	1.12
1,2,3,4,6,7,8-HpCDD	0.211	0.143	J	1.09	1.001	0.93
OCDD	1.071	0.192	BJ	0.89	1.000	1.08
2,3,7,8-TCDF	*	0.168	U	*	*	0.91
1,2,3,7,8-PeCDF	*	0.090	U	*	*	0.88
2,3,4,7,8-PeCDF	*	0.094	U	*	*	0.94
1,2,3,4,7,8-HxCDF	*	0.075	U	*	*	1.13
1,2,3,6,7,8-HxCDF	*	0.083	U	*	*	1.12
1,2,3,7,8,9-HxCDF	*	0.090	U	*	*	1.16
2,3,4,6,7,8-HxCDF	*	0.087	U	*	*	1.06
1,2,3,4,6,7,8-HpCDF	*	0.131	U	*	*	1.34
1,2,3,4,7,8,9-HpCDF	*	0.166	U	*	*	1.31
OCDF	*	0.261	U	*	*	1.12
Total Tetra-Dioxins	*	0.155	U			
Total Penta-Dioxins	*	0.139	U			
Total Hexa-Dioxins	*	0.087	U			
Total Hepta-Dioxins	0.211	0.143				
Total Tetra-Furans	*	0.168	U			
Total Penta-Furans	*	0.094	U			
Total Hexa-Furans	*	0.075	U			
Total Hepta-Furans	*	0.131	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
PSP-SB-001 DUP

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500374-002.01RE

Client Name: GEOMATRIX Sample Wt/Vol: 5.851 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): TISSUE Initial Calibration Date: 09/30/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column ID: DB-5

Analysis Date: 13-JUL-05 Time: 15:03:18 Sample Data Filename: U12411#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U12409#1

Dilution Factor: 1 Cal. Ver. Data Filename: U12408#1

Concentration Units (pg/L or ng/Kg ~~dry~~ wet weight): ng/Kg % Solid/Lipids:

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1224.58	61.23	25-164	0.78	1.009
13C-1,2,3,7,8-PeCDD	2000	1116.11	55.81	25-181	1.54	1.192
13C-1,2,3,4,7,8-HxCDD	2000	1337.00	66.85	32-141	1.23	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1339.05	66.95	28-130	1.23	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	987.96	49.40	23-140	1.03	1.067
13C-OCDD	4000	1718.14	42.95	17-157	0.89	1.141
13C-2,3,7,8-TCDF	2000	1147.07	57.35	24-169	0.77	0.975
13C-1,2,3,7,8-PeCDF	2000	1041.10	52.05	24-185	1.56	1.150
13C-2,3,4,7,8-PeCDF	2000	914.41	45.72	21-178	1.56	1.179
13C-1,2,3,4,7,8-HxCDF	2000	1320.71	66.04	26-152	0.51	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1303.88	65.19	26-123	0.50	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1330.68	66.53	29-147	0.53	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1245.96	62.30	28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1122.91	56.15	28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1156.76	57.84	26-138	0.45	1.077
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	640.11	80.01	35-197		1.011

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
PSP-SB-001 DUP

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500374-002.0

Client Name: GEOMATRIX Sample Wt/Vol: 5.851 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): TISSUE Initial Calibration Date: 09/30/04

Sample Receipt Date: 05/12/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 07/07/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U12411#1

Analysis Date: 13-JUL-05 Time: 15:03:18 Blank Data Filename: U12409#1

Dilution Factor: 1 Cal. Ver. Data Filename: U12408#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET weight): ng/Kg % Solids/Lipids: (WET OF 6/2016)

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.211	X 0.01	2.11e-03
OCDD	1.071	X 0.0001	1.07e-04
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	*	X 0.0001	*
		Total:	2.22e-03

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

6/90

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
LCS

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB22015-LCS

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22672#1

Analysis Date: 12-JUL-05 Time: 00:01:11 Blank Data Filename: U22665#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22663#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET weight): ng/Kg % Solids/Lipids: of 6/12/06

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	22.922	0.036		0.77	1.001	0.98
1,2,3,7,8-PeCDD	108.006	0.024		1.58	1.001	0.98
1,2,3,4,7,8-HxCDD	102.897	0.024		1.22	1.000	1.15
1,2,3,6,7,8-HxCDD	120.866	0.030		1.22	1.000	0.98
1,2,3,7,8,9-HxCDD	116.780	0.027		1.25	1.009	1.05
1,2,3,4,6,7,8-HpCDD	109.309	0.028		1.06	1.000	1.01
OCDD	218.308	0.051		0.87	1.000	1.05
2,3,7,8-TCDF	17.774	0.035		0.78	1.001	1.03
1,2,3,7,8-PeCDF	107.905	0.016		1.54	1.001	1.01
2,3,4,7,8-PeCDF	104.506	0.017		1.54	1.001	1.08
1,2,3,4,7,8-HxCDF	101.772	0.023		1.27	1.000	1.28
1,2,3,6,7,8-HxCDF	118.108	0.029		1.23	1.000	1.23
1,2,3,7,8,9-HxCDF	95.474	0.029		1.24	1.000	1.32
2,3,4,6,7,8-HxCDF	106.031	0.029		1.22	1.000	1.18
1,2,3,4,6,7,8-HpCDF	101.508	0.042		1.03	1.000	1.53
1,2,3,4,7,8,9-HpCDF	103.202	0.055		1.03	1.000	1.48
OCDF	222.859	0.031		0.90	1.003	1.25
Total Tetra-Dioxins	22.972	0.036				
Total Penta-Dioxins	108.006	0.024				
Total Hexa-Dioxins	223.762	0.024				
Total Hepta-Dioxins	109.709	0.028				
Total Tetra-Furans	18.157	0.035				
Total Penta-Furans	212.411	0.017				
Total Hexa-Furans	421.385	0.023				
Total Hepta-Furans	204.710	0.042				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.

LCS

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB22015-LCS

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column ID: DB-5

Analysis Date: 12-JUL-05 Time: 00:01:11 Sample Data Filename: U22672#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22665#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22663#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/1/06 weight): ng/Kg % Solid/Lipids:

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1576.11	78.81	25-164	0.79	1.014
13C-1,2,3,7,8-PeCDD	2000	1765.66	88.28	25-181	1.53	1.237
13C-1,2,3,4,7,8-HxCDD	2000	1489.30	74.47	32-141	1.24	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1407.28	70.36	28-130	1.23	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1479.23	73.96	23-140	1.04	1.072
13C-OCDD	4000	2687.63	67.19	17-157	0.88	1.145
13C-2,3,7,8-TCDF	2000	1614.44	80.72	24-169	0.76	0.970
13C-1,2,3,7,8-PeCDF	2000	1567.54	78.38	24-185	1.54	1.186
13C-2,3,4,7,8-PeCDF	2000	1450.70	72.54	21-178	1.57	1.221
13C-1,2,3,4,7,8-HxCDF	2000	1306.38	65.32	26-152	0.52	0.967
13C-1,2,3,6,7,8-HxCDF	2000	1237.67	61.88	26-123	0.52	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1643.48	82.17	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1243.51	62.18	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1359.95	68.00	28-143	0.45	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1523.03	76.15	26-138	0.44	1.082
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	718.16	89.77	35-197		1.015

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
LCSD
SDG No:

Lab Name: Columbia Analytical Services Contract:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB22015-LCSD

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22673#1

Analysis Date: 12-JUL-05 Time: 00:47:29 Blank Data Filename: U22665#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22663#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	22.768	0.036		0.79	1.001	0.98
1,2,3,7,8-PeCDD	110.988	0.025		1.56	1.001	0.98
1,2,3,4,7,8-HxCDD	105.132	0.032		1.23	1.000	1.15
1,2,3,6,7,8-HxCDD	125.181	0.041		1.25	1.000	0.98
1,2,3,7,8,9-HxCDD	117.141	0.037		1.24	1.009	1.05
1,2,3,4,6,7,8-HpCDD	111.630	0.026		1.04	1.000	1.01
OCDD	222.004	0.054		0.86	1.000	1.05
2,3,7,8-TCDF	17.846	0.038		0.76	1.001	1.03
1,2,3,7,8-PeCDF	110.258	0.021		1.52	1.001	1.01
2,3,4,7,8-PeCDF	107.329	0.021		1.53	1.001	1.08
1,2,3,4,7,8-HxCDF	105.179	0.017		1.25	1.000	1.28
1,2,3,6,7,8-HxCDF	119.555	0.021		1.27	1.000	1.23
1,2,3,7,8,9-HxCDF	99.248	0.022		1.28	1.000	1.32
2,3,4,6,7,8-HxCDF	107.574	0.021		1.26	1.000	1.18
1,2,3,4,6,7,8-HpCDF	104.715	0.081		1.02	1.000	1.53
1,2,3,4,7,8,9-HpCDF	105.138	0.104		1.00	1.000	1.48
OCDF	231.173	0.040		0.91	1.003	1.25
Total Tetra-Dioxins	22.768	0.036				
Total Penta-Dioxins	110.988	0.025				
Total Hexa-Dioxins	230.314	0.032				
Total Hepta-Dioxins	111.630	0.026				
Total Tetra-Furans	17.857	0.038				
Total Penta-Furans	218.074	0.021				
Total Hexa-Furans	431.557	0.017				
Total Hepta-Furans	209.854	0.081				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

CLIENT ID.

LCSD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB22015-LCSD

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 07/07/05 GC Column ID: DB-5

Analysis Date: 12-JUL-05 Time: 00:47:29 Sample Data Filename: U22673#1

Ext.Vol(ul):20.0 Inj.Vol(ul):1.0 Blank Data Filename: U22665#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22663#1

WEJ CF 6/22/6

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solid/Lipids:

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1348.73	67.44	25-164	0.80	1.014
13C-1,2,3,7,8-PeCDD	2000	1551.78	77.59	25-181	1.54	1.237
13C-1,2,3,4,7,8-HxCDD	2000	1316.43	65.82	32-141	1.23	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1251.23	62.56	28-130	1.24	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1263.70	63.18	23-140	1.05	1.072
13C-OCDD	4000	2236.13	55.90	17-157	0.89	1.145
13C-2,3,7,8-TCDF	2000	1395.57	69.78	24-169	0.77	0.970
13C-1,2,3,7,8-PeCDF	2000	1360.30	68.01	24-185	1.54	1.186
13C-2,3,4,7,8-PeCDF	2000	1274.77	63.74	21-178	1.54	1.221
13C-1,2,3,4,7,8-HxCDF	2000	1152.61	57.63	26-152	0.52	0.967
13C-1,2,3,6,7,8-HxCDF	2000	1106.92	55.35	26-123	0.52	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1428.81	71.44	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1109.46	55.47	28-136	0.53	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1182.80	59.14	28-143	0.44	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1293.61	64.68	26-138	0.44	1.082
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	608.46	76.06	35-197		1.015

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

1317 South 13th Avenue P.O. Box 479 Kelso, Washington 98626 (360) 577-7222 ph (360) 636-1068 fax

Columbia Analytical Services INC.
An Employee - Owned Company

September 21, 2005 Service Request No: K0503777

Ann Holbrow
Geomatrix Consultants, Incorporated
2101 Webster Street
12th Floor
Oakland, CA 94612

RE: 9329

Dear Ann:

Enclosed are the results of the sample(s) submitted to our laboratory on March 24, 2005. For your reference, these analyses have been assigned our service request number K0503777.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) 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 3376.

Respectfully submitted,

Columbia Analytical Services, Inc.

Gregory Salata, Ph.D.
Project Chemist

GS/jeb

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
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.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
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 compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
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 has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

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.
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 estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
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 (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

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.

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Geomatrix Consultants, Inc.	**Service Request No.:**	K0503777
Project:	9329	**Date Received:**	03/24/05
Sample Matrix:	Tissue		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Five samples were received at Columbia Analytical Services on 03/24/05 and analyzed under service request K2502124. The samples were stored frozen at –20°C upon receipt at the laboratory. Total solids were not determined on five of the samples received on the original service request. The total solids determination was performed under this service request.

Total Solids

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

Approved by _____ **Date** 9/21/05

Total Solids

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Geomatrix Consultants, Incorporated
Project: 9329
Sample Matrix: Tissue

Service Request: K0503777
Date Collected: 3/16/05
Date Received: 3/24/05

Solids, Total

Prep Method: NONE
Analysis Method: Freeze Dry
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
PSP-SB-001	K0503777-001	9/16/05	24.0	
PSP-SB-002	K0503777-002	9/16/05	23.9	
PSP-SB-003	K0503777-003	9/16/05	24.5	
PSP-SB-004	K0503777-004	9/16/05	22.9	
PSP-SB-005	K0503777-005	9/16/05	25.5	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Geomatrix Consultants, Incorporated
Project: 9329
Sample Matrix: Tissue

Service Request: K0503777
Date Collected: 03/16/05
Date Received: 03/24/05
Date Extracted: NA
Date Analyzed: 09/16/05

Duplicate Summary

Sample Name: PSP-SB-001
Lab Code: K0503777-001D
Test Notes:

Units: PERCENT
Basis: Wet

Analyte	Prep Method	Analysis Method	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Solids, Total	NA	Freeze Dry	24.0	22.3	23.2	7	

Service Request #: K0503777

Analysis For: Freeze Dried Solids

Extr/Prep Batch
KP0501357

Lab Code	Wet Weight (g)	Tare (g)	Tare + Dry Wt.(g)	Dry Weight (g)	% Total Solids
K0503777-1	1.7470	15.2018	15.6203	0.4185	24.0
-1dup	2.7374	15.1897	15.7995	0.6098	22.3
-2	2.4688	15.1021	15.6915	0.5894	23.9
-3	2.3777	15.1630	15.7446	0.5816	24.5
-4	2.5616	15.1967	15.7837	0.5870	22.9
-5	1.3119	15.1808	15.5158	0.3350	25.5

MW 9/16/05

Time In: _____ Time Out: _____

Comments: fillet - originally K2502124

$\bar{x}$ = RPD =

Analyst: Michelle Wallace Date 9/16/05

Reviewed By: [signature] Date 9/19/05

10655 Richmond Avenue Suite 130A Houston, Texas 77042 (713) 266-1599 ph (713) 266-0130 fax

Columbia Analytical Services INC.
An Employee - Owned Company

June 24, 2005

Service Request No: E0500447

Gregory Salata
Columbia Analytical Services
1317 South 13th Avenue
Kelso, WA 98626

RE: 1613B_Full List/K2502124

Dear Gregory:

Enclosed are the results of the sample(s) submitted to our laboratory on June 1, 2005. For your reference, these analyses have been assigned our service request number E0500447.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) 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 23. You may also contact me via email at JFreemyer@houston.caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Jane Freemyer

Jane Freemyer
Project Manager

10655 Richmond Avenue Suite 130A Houston, Texas 77042 (713) 266-1599 ph (713) 266-0130 fax

Columbia Analytical Services INC.
An Employee - Owned Company

June 30, 2005

Dr. Gregory Salata
Columbia Analytical Services, Inc.
1317 South 13th Avenue
Kelso, WA 98626

Subject: ***Report Amendment; E0500447***
K2502124/Geomatrix

Dear Greg,

Enclosed please find the revisions to the Form 3 results. The Toxicity Equivalence calculations have been revised to reflect the World Health Organization toxicity values.

Please replace pages 19, 22, 25 and 28 in the original report with the enclosed pages 19A, 22A, 25 and 28A.

Should you have any questions or need additional information, please call Jane Freemyer at 713-266-1599.

Sincerely,
COLUMBIA ANALYTICAL SERVICES, INC.

Jane Freemyer

Jane Freemyer
HRMS Chemist: Quality Assurance/Projects
jfreemyer@houston.caslab.com

Columbia Analytical Services INC.

An Employee - Owned Company

Dioxins/Furans

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone(713)266-1599 Fax (713)266-0130
www.caslab.com

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Columbia Analytical Services, Inc.	**Service Request No.:**	E0500447
Project:	K2502124	**Date Received:**	06/01/05
Sample Matrix:	Tissue		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Four tissue samples were received for analysis at Columbia Analytical Services on 06/01/05. The following discrepancies were noted upon initial sample inspection. The exceptions are also noted on the cooler receipt and preservation form included in this data package.

The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

No discrepancies were noted upon initial sample inspection.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blank EB21091/U22433#1 contained low levels of OCDD and OCDF below the Method Reporting Limit (MRL). The associated compounds in the samples(s) are flagged with 'B' flags.

MS/MSD

A Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) was analyzed and reported in lieu of the MS/MSD for these samples.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Approved by Xiangqiu Liang **Date** 6/28/05

Xiangqiu Liang, Laboratory Director

Client: Columbia Analytical Services,Inc.
Project: 1613B_Full List/K2502124

Service Request: E0500447

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E0500447-001	WSP-SB-006	03/16/05	1500
E0500447-002	WSP-SB-007	03/16/05	1500
E0500447-003	WSP-SB-008	03/16/05	1500
E0500447-004	JST-SB-009	03/16/05	1500

Method 1613B/Dioxins & Furans
Reporting Limits

CONGENER	CONGENER ABBREVIATION	CAS RN	REPORTING LIMITS Aqueous	REPORTING LIMITS Solids
			PG/L	NG/KG
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2378-TCDD	1746-01-6	10	1.0
1,2,3,7,8-Pentachlorodibenzo-p-dioxins	12378-PeCDD	40321-76-4	50	5.0
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	123478-HxCDD	39227-28-6	50	5.0
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	123678-HxCDD	57653-85-7	50	5.0
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	123789-HxCDD	19408-74-3	50	5.0
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1234678-HpCDD	35822-46-9	50	5.0
Octachlorodibenzo-p-dioxin	OCDD	3268-87-9	100	10
2,3,7,8-Tetrachlorodibenzofuran	2378-TCDF	51207-31-9	10	1.0
1,2,3,7,8-Pentachlorodibenzofuran	12378-PeCDF	57117-41-6	50	5.0
2,3,4,7,8-Pentachlorodibenzofuran	23478-PeCDF	57117-31-4	50	5.0
1,2,3,6,7,8-Hexachlorodibenzofuran	123478-HxCDF	70648-26-9	50	5.0
1,2,3,7,8,9-Hexachlorodibenzofuran	123678-HxCDF	57117-44-9	50	5.0
1,2,3,4,7,8-Hexachlorodibenzofuran	123789-HxCDF	72918-21-9	50	5.0
2,3,4,6,7,8-Hexachlorodibenzofuran	234678-HxCDF	60851-34-5	50	5.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1234678-HpCDF	67562-39-4	50	5.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	1234789-HpCDF	55673-89-7	50	5.0
Octachlorodibenzofuran	OCDF	39001-02-0	100	10
Total Tetra-Dioxins	*	*	10	1.0
Total Penta-Dioxins	*	*	50	5.0
Total Hexa-Dioxins	*	*	50	5.0
Total Hepta-Dioxins	*	*	50	5.0
Total Tetra-Furans	*	*	10	1.0
Total Penta-Furans	*	*	50	5.0
Total Hexa-Furans	*	*	50	5.0
Total Hepta-Furans	*	*	50	5.0

NOTE: Tissue samples are reported on a wet-weight basis and soil/sediment samples are reported on a dry-weight basis.

Data Qualifier Flags

- **B** Used when an associated analyte is found in the method blank, as well as in the sample

- C Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 23788-TCDF in the samples. The confirmed result should be used in determining the TEQ value for TCDF. The samples requiring confirmation are indicated in the table above.

- **E** Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range

- **J** Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the detection limit (DL)

- **K** EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

- **U** Indicates the compound was analyzed and not detected.

- **X** User defined; see case narrative for detailed explanation

- **Y** Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Form 2s. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

- * Indicates concentration is reported as 'Not Detected'

CAS/HOU - Form Production, Peer Review & Project Review Signatures

SR# Unique ID: E0500447

First Level - Data Processing - to be filled by person generating the forms

Date	6/22/05	Person 1	
Date		Person 2	

Second Level - Data Review – to be filled by person doing peer review

Date	06/24/05	Reviewer	
Date		Reviewer	

Project Level - Review - to be filled by person doing project compliance review

Date	6/24/5	Reviewer	

Chain-of-custody

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

ATTN: JANE FREEMYER

Columbia Analytical Services

10655 Richmond Ave., Suite 130A, Houston, TX 77042
(713) 266-1599 FAX (713) 266-0130

CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

K2502124-006-009

PAGE __ 1 OF 1

Client Company Name:	Geomatrix Consultants
Client Address:	2101 Webster St. 12th Fl. Oakland, CA. 94612
Project Name/Number:	9329
Client Project Manager:	Ann Holbrow

Sample I.D.	For composite samples * Start Date	Start Time	Stop Date	Stop Time	LAB ID	Sample Matrix	Number of Containers	Analysis Requested: Dioxins by EPA 1613 B (full list)	Dioxins by EPA 1613 B (2,3,7,8 TCDD & TCDF, only)	Dioxins by EPA 8290 (full list)	Dioxins by EPA 8290 (2,3,7,8 TCDD	Dioxins by EPA 8280 (full list)	REMARKS
WSP-SB-006	16-Mar	1500				tissue	1	✓					K2502124-006
WSP-SB-007	16-Mar	1500				tissue	1	✓					K2502124-007
WSP-SB-008	16-Mar	1500				tissue	1	✓					K2502124-008
JST-SB-009	16-Mar	1500				tissue	1	✓					K2502124-009

TURNAROUND REQUIREMENTS

____ 24 hr ____ 48 hr ____ 5 day
X Standard TAT
____ Provide FAX Preliminary Results

Requested Report Date:_____

REPORT REQUIREMENTS

____ I. Routine Report: Results, Method Blank, Surrogate
____ II. QC Summary Reports: MS, MSD as required
X III. Data Validation Report (Includes raw data)
X EDD

Comments/Special Instructions:

* For grab samples, use start column's date and time.
CAS Project Chemist: Gregory Saltz P.H.D.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Printed Name: Tracy Black	Printed Name:	Printed Name:	Printed Name:
Firm: CAS	Firm:	Firm:	Firm:
Date/Time: 5/31/05 1000	Date/Time:	Date/Time:	Date/Time:

NF 6/3/5

Service Request Summary

Folder #: **E0500447**
Client Name: Columbia Analytical Services
Project Name: 1613B_Full List
Project Number: K2502124

Report To: Gregory Salata
Columbia Analytical Services
1317 South 13th Avenue
Kelso, WA 98626
Phone Number: 1-360-577-7222
Fax Number: 1-360-636-1079
E-mail: gsalata@kelso.caslab.com

Project Chemist: Jane Freemyer
Originating Lab: HOUSTON
Created By: RDIAZ
Due Date: 06/15/2005
EDD: BASICwQC
Tier: IV
QAPP: LAB QAP
Qualifier Set: CAS Standard
Formset: CAS Standard
Merged?: Y
Report to MDL?: Y

Notes

Lab Code	Client Sample	COC Matrix	Sample Date	Sample Time	Receive Date
E0500447-001	WSP-SB-006	Animal Tissue	03/16/2005	1500	06/01/2005
E - 1613B DIOXINS_FURANS_					
1613B	DIOXINS_FURANS_	Full List (17 Congeners)			
E0500447-002	WSP-SB-007	Animal Tissue	03/16/2005	1500	06/01/2005
E - 1613B DIOXINS_FURANS_					
1613B	DIOXINS_FURANS_	Full List (17 Congeners)			
E0500447-003	WSP-SB-008	Animal Tissue	03/16/2005	1500	06/01/2005
E - 1613B DIOXINS_FURANS_					
1613B	DIOXINS_FURANS_	Full List (17 Congeners)			
E0500447-004	JST-SB-009	Animal Tissue	03/16/2005	1500	06/01/2005
E - 1613B DIOXINS_FURANS_					
1613B	DIOXINS_FURANS_	Full List (17 Congeners)			

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form

Work Order: E0500447

Project/Client: 1613B_Full List/Columbia Analytical Services,Inc.

Cooler received on 06/01/2005 and opened on 6-1-05 by Kendra G. Moore

1.	Were custody seals on outside of cooler?		(Y)	N	9.	Did all bottle labels and tags agree with custody papers?	NA (Y) N
2.	Were seals intact and signature & date correct?	NA	(Y)	N	10.	Were the correct types of bottles used for the tests indicated?	NA (Y) N
3.	Is the shipper's airbill available and filed?		Y	(N)	11.	Were all of the preserved bottles received at the lab with the appropriate pH?	(NA) Y N
4.	COC # _____ _____ _____		on 6-1-05		12.	Were VOA vials checked for absence of air bubbles, and if present, noted below?	(NA) Y N
5.	Were custody papers properly filled out (ink, signed, etc.)?	~~NA~~	Y	N	13.	Did the bottles originate from CAS/E or a branch laboratory?	(Y) N
6.	Type of packing material present Bubble wrap, ice				14.	Are CWA Microbiology samples received with >½ the 24 hr. hold time remaining from collection?	(NA) Y N
7.	Did all bottles arrive in good condition (unbroken)?	NA	(Y)	N	15.	Was Cl2/Res negative?	(NA) Y N
8.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?	NA	(Y)	N			

Lab Code **Sample Name**

E0500447-001 WSP-SB-006

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

		Expected Conditions			Cooler	Received Conditions				
Bottle ID	**Barcode**	**HS**	**pH**	**Temp**	**#**	**Rec Temp**	**pH Check**	**Rec HS**	**Seal Intact?**	**Corrective Action**
E0500447-001.01		NA		-		2.0		NA		

Test List: 1613B

E0500447-002 WSP-SB-007

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

		Expected Conditions			Cooler	Received Conditions				
Bottle ID	**Barcode**	**HS**	**pH**	**Temp**	**#**	**Rec Temp**	**pH Check**	**Rec HS**	**Seal Intact?**	**Corrective Action**
E0500447-002.01		NA		-		2.0		NA		

Test List: 1613B

E0500447-003 WSP-SB-008

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

		Expected Conditions			Cooler	Received Conditions				
Bottle ID	**Barcode**	**HS**	**pH**	**Temp**	**#**	**Rec Temp**	**pH Check**	**Rec HS**	**Seal Intact?**	**Corrective Action**
E0500447-003.01		NA		-		2.0		NA		

Test List: 1613B

E0500447-004 JST-SB-009

Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form

Lab Code	Sample Name
E0500447-004	JST-SB-009

16oz-Glass Jar WM CLEAR Teflon Liner(Unpreserved)

		Expected Conditions			Cooler	Received Conditions				
Bottle ID	**Barcode**	**HS**	**pH**	**Temp**	**#**	**Rec Temp**	**pH Check**	**Rec HS**	**Seal Intact?**	**Corrective Action**
E0500447-004.01		NA		-		2.0		NA		

Test List: 1613B

All tests have one or more assigned bottles

No	Project ID	Lab ID	Client ID	Sample Size g	Tare Vial	Tare & Wet Sample	Tare & Dry Sample	Calculated Percent Solid	Calculated Percent Moisture	Dry Weight	Sample Description
MB		EB21091-MB	MB	10.000							
LCS		EB21091-LCS	LCS	10.000							
LCSD		EB21091-LCSD	LCSD	10.000							
1	E0500447	E0500447-001.01	WSP-SB-006	10.336	13.054	16.712	13.821	20.97	79.03	2.17	Tissue
2	E0500447	E0500447-002.01	WSP-SB-007	10.309	12.991	16.629	13.712	19.82	80.18	2.04	Tissue
3	E0500447	E0500447-003.01	WSP-SB-008	10.082	12.959	17.450	13.903	21.02	78.98	2.12	Tissue
4	E0500447	E0500447-004.01	JST-SB-009	10.434	12.993	16.668	13.804	22.07	77.93	2.30	Tissue
5	K0500590	K0500590-001.01	Comp JST-SB-040/018	9.997	13.005	16.129	13.624	19.81	80.19	1.98	Tissue
6	K0500590	K0500590-002.01	Comp WSP-SB-033/045	10.013	12.971	16.678	13.648	18.26	81.74	1.83	Tissue
7	K0500590	K0500590-003.01	Comp WSP-SB-044/046	10.133	12.992	16.831	13.714	18.81	81.19	1.91	Tissue
8	K0500590	K0500590-004.01	JST-SB-042	9.760	13.017	15.612	13.476	17.69	82.31	1.73	Tissue
9	K0500590	K0500590-005.01	JST-SB-019	10.216	12.967	16.346	13.714	22.11	77.89	2.26	Tissue
10	K0500590	K0500590-006.01	JST-SB-017	10.467	12.989	16.296	13.692	21.26	78.74	2.23	Tissue
11	E0500449	E0500449-006.01	WR-PG-62	14.615	13.022	19.382	16.516	54.94	45.06	8.03	Wet brown mud
12	E0500449	E0500449-007.01	WR-PG-60	15.481	13.041	18.575	16.103	55.33	44.67	8.57	Dry brown mud
13	E0500449	E0500449-008.01	WR-PG-58	13.665	12.989	18.475	16.334	60.97	39.03	8.33	Wet grey/brown mud
14	E0500449	E0500449-009.01	WR-PG-56	15.280	12.976	18.820	16.264	56.26	43.74	8.60	Wet brown mud
15	E0500448	E0500448-001.01	WR-PG-36	14.560	12.995	18.180	16.137	60.60	39.40	8.82	Wet brown mud
16	E0500429	E0500429-052.01RE	mn-ss-1301-14 0-2"	5.224	12.800	15.305	14.798	79.76	20.24	4.17	Dry brown dirt
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											

13

326

SODIUM SULFATE C1-71-2
ACETONE C1-68-3
TOLUENE C1-74-5
GLASS WOOL GW1-1-4
DICHLOROMETHANE C1-73-3
ETHYL ACETATE C1-69-4
NONANE C1-67-5
HEXANE C1-73-2

SAND C1-33-1
TRIDECANE C1-74-2
SULFURIC ACID C1-74-3
BASIC SILICA GEL S1-24-3
CARBON : C1-73-5
ACIDIC SILICA GEL S1-24-4
SILICA GEL S1-22-6

Standard:	Internal	Matrix
Solution ID:	D7-35-3B	D7-28-3B
Volume:	1000 uL	100 uL
Spiker:	KYM	KYM
Witness:	JB	JB
Date:	6/14/2005	6/14/2005

Standard:	Cleanup	Recovery
Solution ID:	D7-33-5A/B	D7-28-3B
Volume:	100 uL	200 uL
Spiker:	DHF	
Witness:	JB	
Date:	6/15/2005	

EXTRACTION START: 6-14-05
EXTRACTION END: 6-15-05
EXTRACTION METHOD: Soxhlet

TIME STARTED: 1500
TIME FINISHED: 0700

EXTRACTS RECEIVED BY _____

DATE RECEIVED 6-17-05

Columbia Analytical Services, INC.

EB21091 **1613**

Sulfuric Acid Cleanup: 6-15-05
Silica Gel/Carbon Column: 6-16-05

Columbia Analytical Services INC.

An Employee - Owned Company

Dioxin/Furan

Analytical Report

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
METHOD BLANK

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB21091-MB

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22434#1

Analysis Date: 17-JUN-05 Time: 15:55:05 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET (Feb06 weight): ng/Kg % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.044	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.046	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.057	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.072	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.065	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	*	0.054	U	*	*	1.01
OCDD	0.442	0.115	J	0.93	1.000	1.05
2,3,7,8-TCDF	*	0.040	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.037	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.033	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.057	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.069	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.071	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.068	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.043	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.056	U	*	*	1.48
OCDF	0.341	0.102	J	0.87	1.003	1.25
Total Tetra-Dioxins	*	0.044	U			
Total Penta-Dioxins	*	0.046	U			
Total Hexa-Dioxins	*	0.057	U			
Total Hepta-Dioxins	*	0.054	U			
Total Tetra-Furans	*	0.040	U			
Total Penta-Furans	*	0.033	U			
Total Hexa-Furans	*	0.057	U			
Total Hepta-Furans	*	0.043	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

CLIENT ID.

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

METHOD BLANK

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB21091-MB

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 15:55:05 Sample Data Filename: U22434#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET weight): ng/Kg % Solid/Lipids:

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limits(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1695.59	84.78	25-164	0.77	1.012
13C-1,2,3,7,8-PeCDD	2000	1876.05	93.80	25-181	1.54	1.227
13C-1,2,3,4,7,8-HxCDD	2000	1745.00	87.25	32-141	1.26	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1605.34	80.27	28-130	1.25	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1547.02	77.35	23-140	1.05	1.071
13C-OCDD	4000	2534.51	63.36	17-157	0.90	1.144
13C-2,3,7,8-TCDF	2000	1874.99	93.75	24-169	0.77	0.969
13C-1,2,3,7,8-PeCDF	2000	1630.08	81.50	24-185	1.55	1.177
13C-2,3,4,7,8-PeCDF	2000	1640.73	82.04	21-178	1.55	1.211
13C-1,2,3,4,7,8-HxCDF	2000	1597.07	79.85	26-152	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1404.86	70.24	26-123	0.52	0.971
13C-1,2,3,7,8,9-HxCDF	2000	1839.33	91.97	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1542.59	77.13	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1453.78	72.69	28-143	0.44	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1637.80	81.89	26-138	0.44	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	782.43	97.80	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
WSP-SB-006

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500447-001.01

Client Name: Geomatrix Sample Wt/Vol: 10.336 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22441#1

Analysis Date: 17-JUN-05 Time: 22:27:52 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 20.97/0.426

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.041	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.045	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.035	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.039	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.037	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.117	0.038	J	0.95	1.000	1.01
OCDD	0.708	0.059	JB	0.99	1.000	1.05
2,3,7,8-TCDF	*	0.042	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.028	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.027	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.025	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.030	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.031	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.028	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.030	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.038	U	*	*	1.48
OCDF	0.274	0.048	JB	0.84	1.003	1.25
Total Tetra-Dioxins	*	0.041	U			
Total Penta-Dioxins	*	0.045	U			
Total Hexa-Dioxins	*	0.035	U			
Total Hepta-Dioxins	0.249	0.038				
Total Tetra-Furans	*	0.042	U			
Total Penta-Furans	*	0.027	U			
Total Hexa-Furans	*	0.025	U			
Total Hepta-Furans	*	0.030	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
WSP-SB-006

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500447-001.01

Client Name: Geomatrix Sample Wt/Vol: 10.336 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 22:27:52 Sample Data Filename: U22441#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 20.97/0.426

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1675.05	83.75	25-164	0.80	1.013
13C-1,2,3,7,8-PeCDD	2000	1816.31	90.82	25-181	1.56	1.228
13C-1,2,3,4,7,8-HxCDD	2000	1542.50	77.13	32-141	1.23	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1591.63	79.58	28-130	1.26	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1432.24	71.61	23-140	1.04	1.071
13C-OCDD	4000	2548.84	63.72	17-157	0.93	1.144
13C-2,3,7,8-TCDF	2000	1859.71	92.99	24-169	0.77	0.969
13C-1,2,3,7,8-PeCDF	2000	1635.62	81.78	24-185	1.56	1.178
13C-2,3,4,7,8-PeCDF	2000	1595.85	79.79	21-178	1.56	1.212
13C-1,2,3,4,7,8-HxCDF	2000	1482.74	74.14	26-152	0.53	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1358.71	67.94	26-123	0.52	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1783.46	89.17	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1468.08	73.40	28-136	0.51	0.985
13C-1,2,3,4,6,7,8-HpCDF	2000	1356.13	67.81	28-143	0.44	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1539.93	77.00	26-138	0.45	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	789.04	98.63	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
WSP-SB-006

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500447-001.01

Client Name: Geomatrix Sample Wt/Vol: 10.336 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22441#1

Analysis Date: 17-JUN-05 Time: 22:27:52 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/20/06 weight): ng/Kg % Solids/Lipids: 20.97/0.426

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.117	X 0.01	1.17e-03
OCDD	0.708	X 0.0001	7.10e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.274	X 0.0001	2.70e-05
		Total:	1.27e-03

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

6/90

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
WSP-SB-007

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500447-002.01

Client Name: Geomatrix Sample Wt/Vol: 10.309 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22442#1

Analysis Date: 17-JUN-05 Time: 23:14:10 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 19.82/0.330

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.051	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.029	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.029	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.033	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.031	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.058	0.028	J	1.03	1.000	1.01
OCDD	0.362	0.064	JB	1.01	1.000	1.05
2,3,7,8-TCDF	*	0.043	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.015	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.016	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.020	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.025	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.025	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.024	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.025	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.033	U	*	*	1.48
OCDF	0.128	0.050	JB	0.91	1.004	1.25
Total Tetra-Dioxins	*	0.051	U			
Total Penta-Dioxins	*	0.029	U			
Total Hexa-Dioxins	*	0.029	U			
Total Hepta-Dioxins	0.058	0.028				
Total Tetra-Furans	*	0.043	U			
Total Penta-Furans	*	0.016	U			
Total Hexa-Furans	*	0.020	U			
Total Hepta-Furans	*	0.025	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
WSP-SB-007

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500447-002.01

Client Name: Geomatrix Sample Wt/Vol: 10.309 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 17-JUN-05 Time: 23:14:10 Sample Data Filename: U22442#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 19.82/0.330

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1681.58	84.08	25-164	0.80	1.012
13C-1,2,3,7,8-PeCDD	2000	1830.53	91.53	25-181	1.56	1.228
13C-1,2,3,4,7,8-HxCDD	2000	1509.38	75.47	32-141	1.27	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1504.10	75.20	28-130	1.25	0.991
13C-1,2,3,4,6,7,8-HpCDD	2000	1444.01	72.20	23-140	1.04	1.071
13C-OCDD	4000	2202.47	55.06	17-157	0.91	1.143
13C-2,3,7,8-TCDF	2000	1893.03	94.65	24-169	0.76	0.968
13C-1,2,3,7,8-PeCDF	2000	1684.88	84.24	24-185	1.54	1.178
13C-2,3,4,7,8-PeCDF	2000	1608.02	80.40	21-178	1.55	1.212
13C-1,2,3,4,7,8-HxCDF	2000	1501.19	75.06	26-152	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1344.77	67.24	26-123	0.52	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1784.35	89.22	29-147	0.51	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1448.69	72.43	28-136	0.52	0.985
13C-1,2,3,4,6,7,8-HpCDF	2000	1357.88	67.89	28-143	0.45	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1512.61	75.63	26-138	0.44	1.080
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	767.45	95.93	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
WSP-SB-007

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500447-002.01

Client Name: Geomatrix Sample Wt/Vol: 10.309 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22442#1

Analysis Date: 17-JUN-05 Time: 23:14:10 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/20/6 weight): ng/Kg % Solids/Lipids: 19.82/0.330

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.058	X 0.01	5.75e-04
OCDD	0.362	X 0.0001	3.60e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.128	X 0.0001	1.30e-05
		Total:	6.24e-04

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

6/90

22A

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
WSP-SB-008

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500447-003.01

Client Name: Geomatrix Sample Wt/Vol: 10.082 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22443#1

Analysis Date: 18-JUN-05 Time: 00:00:30 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 21.02/0.22

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.041	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.042	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.044	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.050	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.047	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	*	0.047	U	*	*	1.01
OCDD	0.354	0.083	JB	0.80	1.000	1.05
2,3,7,8-TCDF	*	0.040	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.035	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.035	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.026	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.031	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.033	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.029	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.040	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.055	U	*	*	1.48
OCDF	0.145	0.096	JB	0.80	1.003	1.25
Total Tetra-Dioxins	*	0.041	U			
Total Penta-Dioxins	*	0.042	U			
Total Hexa-Dioxins	*	0.044	U			
Total Hepta-Dioxins	*	0.047	U			
Total Tetra-Furans	*	0.040	U			
Total Penta-Furans	*	0.035	U			
Total Hexa-Furans	*	0.026	U			
Total Hepta-Furans	*	0.040	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

CLIENT ID.

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

WSP-SB-008

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500447-003.01

Client Name: Geomatrix Sample Wt/Vol: 10.082 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 18-JUN-05 Time: 00:00:30 Sample Data Filename: U22443#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 21.02/0.22

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1605.71	80.29	25-164	0.80	1.013
13C-1,2,3,7,8-PeCDD	2000	1743.27	87.16	25-181	1.54	1.228
13C-1,2,3,4,7,8-HxCDD	2000	1517.49	75.87	32-141	1.32	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1512.85	75.64	28-130	1.16	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1328.66	66.43	23-140	1.05	1.071
13C-OCDD	4000	1787.30	44.68	17-157	0.91	1.144
13C-2,3,7,8-TCDF	2000	1834.21	91.71	24-169	0.76	0.969
13C-1,2,3,7,8-PeCDF	2000	1548.72	77.44	24-185	1.55	1.179
13C-2,3,4,7,8-PeCDF	2000	1531.82	76.59	21-178	1.55	1.212
13C-1,2,3,4,7,8-HxCDF	2000	1471.46	73.57	26-152	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1327.39	66.37	26-123	0.53	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1675.55	83.78	29-147	0.51	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1444.74	72.24	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1259.75	62.99	28-143	0.44	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1345.24	67.26	26-138	0.44	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	773.46	96.68	35-197		1.013

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
WSP-SB-008

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500447-003.01

Client Name: Geomatrix Sample Wt/Vol: 10.082 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22443#1

Analysis Date: 18-JUN-05 Time: 00:00:30 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22433#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/20/06 weight): ng/Kg % Solids/Lipids: 21.02/0.22

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	*	X 0.01	*
OCDD	0.354	X 0.0001	3.50e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.145	X 0.0001	1.40e-05
		Total:	5.00e-05

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
JST-SB-009

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500447-004.01

Client Name: Geomatrix Sample Wt/Vol: 10.434 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22484#1

Analysis Date: 22-JUN-05 Time: 13:28:34 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22481#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solids/Lipids: 22.07/0.249

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	*	0.033	U	*	*	0.98
1,2,3,7,8-PeCDD	*	0.028	U	*	*	0.98
1,2,3,4,7,8-HxCDD	*	0.017	U	*	*	1.15
1,2,3,6,7,8-HxCDD	*	0.022	U	*	*	0.98
1,2,3,7,8,9-HxCDD	*	0.020	U	*	*	1.05
1,2,3,4,6,7,8-HpCDD	0.076	0.018	J	1.04	1.000	1.01
OCDD	0.452	0.032	JB	0.85	1.000	1.05
2,3,7,8-TCDF	*	0.037	U	*	*	1.03
1,2,3,7,8-PeCDF	*	0.016	U	*	*	1.01
2,3,4,7,8-PeCDF	*	0.017	U	*	*	1.08
1,2,3,4,7,8-HxCDF	*	0.017	U	*	*	1.28
1,2,3,6,7,8-HxCDF	*	0.020	U	*	*	1.23
1,2,3,7,8,9-HxCDF	*	0.019	U	*	*	1.32
2,3,4,6,7,8-HxCDF	*	0.021	U	*	*	1.18
1,2,3,4,6,7,8-HpCDF	*	0.016	U	*	*	1.53
1,2,3,4,7,8,9-HpCDF	*	0.019	U	*	*	1.48
OCDF	0.118	0.028	JK	0.75	1.003	1.25
Total Tetra-Dioxins	*	0.033	U			
Total Penta-Dioxins	*	0.028	U			
Total Hexa-Dioxins	*	0.017	U			
Total Hepta-Dioxins	0.139	0.018				
Total Tetra-Furans	*	0.037	U			
Total Penta-Furans	*	0.017	U			
Total Hexa-Furans	*	0.017	U			
Total Hepta-Furans	*	0.016	U			

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

CLIENT ID.
JST-SB-009

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:E0500447-004.01

Client Name: Geomatrix Sample Wt/Vol: 10.434 g or mL: g

Matrix (Tissue): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 22-JUN-05 Time: 13:28:34 Sample Data Filename: U22484#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22481#1

Concentration Units (pg/L or ng/Kg wet weight): ng/Kg % Solid/Lipids: 22.07/0.249

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1572.13	78.61	25-164	0.75	1.013
13C-1,2,3,7,8-PeCDD	2000	1739.42	86.97	25-181	1.55	1.231
13C-1,2,3,4,7,8-HxCDD	2000	1510.69	75.53	32-141	1.24	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1428.27	71.41	28-130	1.24	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	1511.31	75.57	23-140	1.05	1.072
13C-OCDD	4000	3071.92	76.80	17-157	0.90	1.144
13C-2,3,7,8-TCDF	2000	1722.13	86.11	24-169	0.78	0.969
13C-1,2,3,7,8-PeCDF	2000	1644.46	82.22	24-185	1.53	1.182
13C-2,3,4,7,8-PeCDF	2000	1471.12	73.56	21-178	1.57	1.215
13C-1,2,3,4,7,8-HxCDF	2000	1434.85	71.74	26-152	0.53	0.967
13C-1,2,3,6,7,8-HxCDF	2000	1318.24	65.91	26-123	0.53	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1806.02	90.30	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1332.18	66.61	28-136	0.52	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1458.05	72.90	28-143	0.44	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1689.46	84.47	26-138	0.44	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	729.10	91.14	35-197		1.014

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 3

PCDD/PCDF TOXICITY EQUIVALENCE SUMMARY
Use for Sample and Blank Results

CLIENT ID.
JST-SB-009

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: E0500447-004.01

Client Name: Geomatrix Sample Wt/Vol: 10.434 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Tissue Initial Calibration Date: 10/25/04

Sample Receipt Date: 06/01/05 Instrument ID: AutoSepc-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22484#1

Analysis Date: 22-JUN-05 Time: 13:28:34 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22481#1

Concentration Units (pg/L or ng/Kg ~~dry~~ WET LF 6/20/6 weight): ng/Kg % Solids/Lipids: 22.07/0.249

	CONCENTRATION	TEF(1)	TEF-ADJUSTED CONCENTRATION
2,3,7,8-TCDD	*	X 1.0	*
1,2,3,7,8-PeCDD	*	X 1.0	*
1,2,3,4,7,8-HxCDD	*	X 0.1	*
1,2,3,6,7,8-HxCDD	*	X 0.1	*
1,2,3,7,8,9-HxCDD	*	X 0.1	*
1,2,3,4,6,7,8-HpCDD	0.076	X 0.01	7.62e-04
OCDD	0.452	X 0.0001	4.50e-05
2,3,7,8-TCDF	*	X 0.1	*
1,2,3,7,8-PeCDF	*	X 0.05	*
2,3,4,7,8-PeCDF	*	X 0.5	*
1,2,3,4,7,8-HxCDF	*	X 0.1	*
1,2,3,6,7,8-HxCDF	*	X 0.1	*
1,2,3,7,8,9-HxCDF	*	X 0.1	*
2,3,4,6,7,8-HxCDF	*	X 0.1	*
1,2,3,4,6,7,8-HpCDF	*	X 0.01	*
1,2,3,4,7,8,9-HpCDF	*	X 0.01	*
OCDF	0.118	X 0.0001	1.20e-05
		Total:	8.19e-04

(1) World Health Organization (WHO) adopted TEF's, taken from: Van der Berg, et al: Toxic Equivalency Factor (TEFs) for PCBs, PCDDs, PCDFs for Hummans and Wildlife(Environ Health perspect 106:775-792 (1998).

6/90

Columbia Analytical Services INC.

An Employee - Owned Company

Accuracy & Precision Data

10655 Richmond Avenue, Suite 130-A, Houston, TX 77042
Phone (713)266-1599 Fax (713)266-0130
www.caslab.com

3DFA

1613 PCDD/PCDF SPIKED SAMPLE SUMMARY

CLIENT ID: LCS/LCSD

Lab Name: COLUMBIA ANALYTICAL SERVICES
Lab Code: CAS LAB. ID: EB21091
Matrix: Solid (Solid, Aqueous, Ash, Waste)

CONCENTRATION UNITS: (pg/L or ng/Kg) ng/Kg

ANALYTE	SPIKE ADDED (PG)	LCS SAMPLE CONC.	LCSD SAMPLE CONC.		LCS% RECOV.	#	LCSD% RECOV.	#	RPD %	QC LIMITS
2378-TCDD	200	23.779	20.507		118.90		102.54		14.78	50 - 150
12378-PeCDD	1000	102.438	97.309		102.44		97.31		5.14	50 - 150
123478-HxCDD	1000	108.225	94.522		108.23		94.52		13.52	50 - 150
123678-HxCDD	1000	121.061	109.173		121.06		109.17		10.33	50 - 150
123789-HxCDD	1000	118.641	105.295		118.64		105.30		11.92	50 - 150
1234678-HpCDD	1000	107.147	100.826		107.15		100.83		6.08	50 - 150
OCDD	2000	218.340	211.319		109.17		105.66		3.27	50 - 150
2378-TCDF	200	17.648	15.299		88.24		76.50		14.26	50 - 150
12378-PeCDF	1000	112.696	99.357		112.70		99.36		12.58	50 - 150
23478-PeCDF	1000	108.158	95.257		108.16		95.26		12.68	50 - 150
123478-HxCDF	1000	106.364	92.205		106.36		92.21		14.26	50 - 150
123678-HxCDF	1000	118.670	106.754		118.67		106.75		10.57	50 - 150
123789-HxCDF	1000	99.088	86.112		99.09		86.11		14.01	50 - 150
234678-HxCDF	1000	107.897	96.028		107.90		96.03		11.64	50 - 150
1234678-HpCDF	1000	100.740	92.807		100.74		92.81		8.20	50 - 150
1234789-HpCDF	1000	99.558	92.764		99.56		92.76		7.07	50 - 150
OCDF	2000	218.292	188.009		109.15		94.00		14.91	50 - 150

If an analyte is not detected in either analysis, enter 0 (zero) as the concentration.

Column to be used to flag values outside QC limits.

* Compound outside the QC advisory limits of 50 - 150

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
LCS

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB21091-LCS

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): solid Initial Calibration Date: 08/10/04

Sample Receipt Date: Instrument ID: 70S

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: C14093#3

Analysis Date: 23-JUN-05 Time: 13:56:23 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: C14093#2

Concentration Units (pg/L or ng/Kg ~~dry~~ weight): ng/Kg % Solids/Lipids: WET WF 6/20/06

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	23.779	0.113		0.77	1.001	0.95
1,2,3,7,8-PeCDD	102.438	0.098		1.60	1.000	1.04
1,2,3,4,7,8-HxCDD	108.225	0.073		1.24	1.000	1.07
1,2,3,6,7,8-HxCDD	121.061	0.084		1.23	1.000	0.95
1,2,3,7,8,9-HxCDD	118.641	0.080		1.22	1.009	0.99
1,2,3,4,6,7,8-HpCDD	107.147	0.118		1.05	1.000	0.99
OCDD	218.340	0.239		0.88	1.000	1.02
2,3,7,8-TCDF	17.648	0.082		0.76	1.001	1.08
1,2,3,7,8-PeCDF	112.696	0.081		1.54	1.000	0.93
2,3,4,7,8-PeCDF	108.158	0.078		1.53	1.000	1.01
1,2,3,4,7,8-HxCDF	106.364	0.051		1.23	1.000	1.21
1,2,3,6,7,8-HxCDF	118.670	0.058		1.24	1.000	1.19
1,2,3,7,8,9-HxCDF	99.088	0.067		1.25	1.000	1.26
2,3,4,6,7,8-HxCDF	107.897	0.058		1.24	1.000	1.14
1,2,3,4,6,7,8-HpCDF	100.740	0.089		1.02	1.000	1.43
1,2,3,4,7,8,9-HpCDF	99.558	0.147		1.02	1.000	1.41
OCDF	218.292	0.327		0.88	1.005	1.37
Total Tetra-Dioxins	23.779	0.113				
Total Penta-Dioxins	102.438	0.098				
Total Hexa-Dioxins	347.928	0.084				
Total Hepta-Dioxins	109.655	0.118				
Total Tetra-Furans	18.106	0.082				
Total Penta-Furans	222.225	0.078				
Total Hexa-Furans	432.020	0.058				
Total Hepta-Furans	200.298	0.089				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

CLIENT ID.

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

LCS

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB21091-LCS

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): solid Initial Calibration Date: 08/10/04

Sample Receipt Date: Instrument ID: 70S

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 23-JUN-05 Time: 13:56:23 Sample Data Filename: C14093#3

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: C14093#2

Concentration Units (pg/L or ng/Kg ~~dry~~ WET CF 6/20/16 weight): ng/Kg % Solid/Lipids:

LABELED COMPOUNDS	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
13C-2,3,7,8-TCDD	2000	1631.79	81.59	25-164	0.79	1.008
13C-1,2,3,7,8-PeCDD	2000	1603.49	80.17	25-181	1.54	1.184
13C-1,2,3,4,7,8-HxCDD	2000	1830.51	91.53	32-141	1.23	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1571.38	78.57	28-130	1.25	0.991
13C-1,2,3,4,6,7,8-HpCDD	2000	1445.16	72.26	23-140	1.05	1.077
13C-OCDD	4000	1868.08	46.70	17-157	0.85	1.167
13C-2,3,7,8-TCDF	2000	1936.37	96.82	24-169	0.79	0.977
13C-1,2,3,7,8-PeCDF	2000	1600.46	80.02	24-185	1.55	1.141
13C-2,3,4,7,8-PeCDF	2000	1481.69	74.08	21-178	1.55	1.170
13C-1,2,3,4,7,8-HxCDF	2000	1901.23	95.06	26-152	0.48	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1587.91	79.40	26-123	0.49	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1854.41	92.72	29-147	0.49	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1726.80	86.34	28-136	0.48	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1640.62	82.03	28-143	0.44	1.050
13C-1,2,3,4,7,8,9-HpCDF	2000	1447.98	72.40	26-138	0.43	1.089
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	734.82	91.85	35-197		1.009

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.

(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37C14-2378-TCDD (cleanup standard).

RFP C500273T1

Form 1

PCDD/PCDF ANALYSIS DATA SHEET
Use for Sample and Blank Results

CLIENT ID.
LCSD

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID: EB21091-LCSD

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column:DB-5

Ext. Vol(ul):20.0 Inj. Vol(ul):1.0 Sample Data Filename: U22461#1

Analysis Date: 20-JUN-05 Time: 01:09:14 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22448#1

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg WET CF 6/21/05 % Solids/Lipids:

ANALYTE	CONCENTRATION FOUND	DETECTION LIMIT	Qual. (1)	ION ABUND. RATIO (2)	RRT (2)	MEAN RRF
2,3,7,8-TCDD	20.507	0.040		0.74	1.001	0.98
1,2,3,7,8-PeCDD	97.309	0.029		1.55	1.000	0.98
1,2,3,4,7,8-HxCDD	94.522	0.031		1.24	1.000	1.15
1,2,3,6,7,8-HxCDD	109.173	0.037		1.23	1.000	0.98
1,2,3,7,8,9-HxCDD	105.295	0.034		1.21	1.009	1.05
1,2,3,4,6,7,8-HpCDD	100.826	0.070		1.07	1.000	1.01
OCDD	211.319	0.092		0.87	1.000	1.05
2,3,7,8-TCDF	15.299	0.040		0.74	1.001	1.03
1,2,3,7,8-PeCDF	99.357	0.031		1.55	1.001	1.01
2,3,4,7,8-PeCDF	95.257	0.031		1.53	1.001	1.08
1,2,3,4,7,8-HxCDF	92.205	0.040		1.21	1.000	1.28
1,2,3,6,7,8-HxCDF	106.754	0.047		1.21	1.000	1.23
1,2,3,7,8,9-HxCDF	86.112	0.050		1.21	1.000	1.32
2,3,4,6,7,8-HxCDF	96.028	0.047		1.27	1.001	1.18
1,2,3,4,6,7,8-HpCDF	92.807	0.275		1.01	1.000	1.53
1,2,3,4,7,8,9-HpCDF	92.764	0.384		1.01	1.000	1.48
OCDF	188.009	0.071		0.88	1.003	1.25
Total Tetra-Dioxins	20.507	0.040				
Total Penta-Dioxins	97.309	0.029				
Total Hexa-Dioxins	308.990	0.031				
Total Hepta-Dioxins	103.672	0.070				
Total Tetra-Furans	15.299	0.040				
Total Penta-Furans	194.614	0.031				
Total Hexa-Furans	381.099	0.040				
Total Hepta-Furans	187.553	0.275				

(1) Qualifier U indicates not detected; The K indicates EMPC. The C needs value from second column analysis. The B indicates possible blank contamination.
(2) RRTs and ion ratios are specified in Tables 2 and 9, Method 1613.

USEPA, EAD

CLIENT ID.

FORM 2: PCDD/PCDF LABELED COMPOUND AND CLEANUP STANDARD RECOVERIES

LCSD

Lab Name: Columbia Analytical Services Contract: SDG No:

Lab Code: CAS Method:1613 Case No: Client No: Lab ID:EB21091-LCSD

Client Name: Sample Wt/Vol: 10.000 g or mL: g

Matrix (Solid/Aqueous/Waste/Ash): Solid Initial Calibration Date: 10/25/04

Sample Receipt Date: Instrument ID: AutoSpec-Ultima

Ext. Date: 06/14/05 GC Column ID: DB-5

Analysis Date: 20-JUN-05 Time: 01:09:14 Sample Data Filename: U22461#1

Ext. Vol(uL): 20.0 Inj. Vol(uL): 1.0 Blank Data Filename: U22434#1

Dilution Factor: 1 Cal. Ver. Data Filename: U22448#1

WET CF 6/2016

Concentration Units (pg/L or ng/Kg dry weight): ng/Kg % Solid/Lipids:

	SPIKE CONC.	CONC. FOUND	R(%) (1)	QC Limite(1)	ION ABUND. RATIO (2)	RRT (2)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	2000	1765.34	88.27	25-164	0.77	1.013
13C-1,2,3,7,8-PeCDD	2000	1847.69	92.38	25-181	1.54	1.230
13C-1,2,3,4,7,8-HxCDD	2000	1695.35	84.77	32-141	1.23	0.989
13C-1,2,3,6,7,8-HxCDD	2000	1614.06	80.70	28-130	1.23	0.991
13C-1,2,3,4,6,7,8-HpCDD	2000	1340.87	67.04	23-140	1.05	1.072
13C-OCDD	4000	1828.59	45.71	17-157	0.89	1.144
13C-2,3,7,8-TCDF	2000	1690.64	84.53	24-169	0.76	0.969
13C-1,2,3,7,8-PeCDF	2000	1597.02	79.85	24-185	1.53	1.180
13C-2,3,4,7,8-PeCDF	2000	1494.45	74.72	21-178	1.55	1.213
13C-1,2,3,4,7,8-HxCDF	2000	1514.47	75.72	26-152	0.52	0.968
13C-1,2,3,6,7,8-HxCDF	2000	1386.63	69.33	26-123	0.52	0.970
13C-1,2,3,7,8,9-HxCDF	2000	1745.83	87.29	29-147	0.52	1.006
13C-2,3,4,6,7,8-HxCDF	2000	1443.23	72.16	28-136	0.51	0.985
13C-1,2,3,4,6,7,8-HpCDF	2000	1296.64	64.83	28-143	0.43	1.048
13C-1,2,3,4,7,8,9-HpCDF	2000	1295.42	64.77	26-138	0.44	1.081
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	800	787.15	98.39	35-197		1.014

(1) Contract-required limits for percent recovery (R) are specified in Table 7, Method 1613.
(2) Contract-required limits for RRTs and ion abundance ratios are specified in Tables 2 and 9, respectively, Method 1613. NOTE: There is no ion abundance ratio for 37Cl4-2378-TCDD (cleanup standard).

RFP C500273T1

Geomatrix

APPENDIX D

Quality Assurance/Quality Control Review for Sediment Samples

LAB REPORT QUALITY ASSURANCE CHECKLIST

Project Information			
Project Name:	SPI Arcata	Lab Name:	Columbia Analytical
Project Number:	9329.000 Task	Lab Report Number:	K2407209
Sample Numbers: *(Attach list if needed)*	RB-x (x=1,2,3), 107-GSED-C32-x (x=0.5,1.0,2.0,3.0), 105-GSED-C05-x (x=0.5,1.0,2.0,3.0), 108-GSED-C02-x (x=0.5,1.0,2.0,3.0), 109-GSED-C01-2.0, 110-GSED-C01A-x (x=0.5,1.0,2.0)		

Report Completeness		Comments
Are all samples listed on the COC included in the report? *(Indicate any differences in Comments column and resolve with the lab.)*	X Yes ☐ No	
Are all analytical tests listed on the COC for each sample included in the report? *(Indicate any differences in Comments column and resolve with the lab.)*	X Yes ☐ No	
Are all items required by the contract with the lab included in the report? *(Indicate any exceptions in the Comments column.)*	X Yes ☐ No	No contract. Standard items included.

QA Review of Lab Performance	
X Attached	Organic Data Assessment Summary form
☐ Attached	Inorganic Data Assessment Summary form

Field Blank QA Review		
Are there any detections in the trip blanks? N/A	☐ Yes ☐ No	*If yes, identify associated samples:*
Are there any detections in the equipment blanks? N/A	☐ Yes ☐ No	*If yes, identify associated samples:*

Invoice Review		
Did the lab meet the promised turnaround times?	X Yes ☐ No	*If no, does a discount apply?*
Did any problems result in unusable sample results?	☐ Yes X No	*If yes, evaluate whether the lab should be paid for the analysis.*
Are all items required by the contract with the lab included in the report? *(Indicate any exceptions in the Comments column.)*	X Yes ☐ No	No contract. Standard items included.

Completed by:	Gypsy Achong	Date:	10/18/04
Reviewed by:	[signature]	Date:	10/20/04

ORGANIC DATA ASSESSMENT SUMMARY

Project Information			
Project Name:	SPI Arcata	Lab Name:	Columbia Analytical
Project Number:	9329 Task	Lab Report Number:	K2407209
Reviewer's Signature:		Number of Samples:	23
Review Date:	10/18/04	Matrix:	Soil and Water

Assessment Summary

Using the codes O, M, Z, and X described below, complete the table for a single quality control batch or sample delivery group. Identify comments by means of a footnote, e.g. M(2), describe in the space provided.

Method Name:	SVOC (Soil)	SVOC (Water)	TOC (Soil)	TOC (Water)
Method Number:	8270C	8270C	ASTM D4129-82M	415.1
1. Preservation/hold times	O1	M5	O8	O11
2. GC/MS tune, instr. performance	--	--	--	--
3. Calibrations	--	--	--	--
4. Blanks	O	O	O	O
5. Surrogates	O2	M6	--	--
6. Matrix spike/dup	M3	--	O9	O12
7. Lab QC samples	O4	O7	O10	O13
8. Internal standards	--	--	--	--
9. Compound ID	--	--	--	--
10. System performance	--	--	--	--
11. Field duplicates	--	--	--	--
12. Overall assessment	O	M	O	O

Assessment Codes:

O = No quality controls (QC) problems were identified for these criteria.

M = The results are qualified due to QC problems. The quantitative results will be qualified with a QC flag indicating that the results are estimated due to error greater than specified in the method.

Z = The results are unacceptable due to gross QC problems. The results will be qualified as rejected (R).

X = QC problems were identified, but they do not affect the results, or the reviewer is not certain of the effect on the results; or supporting documentation or data is not present in the

laboratory data package.

Assessment Code	Description	Action Required
O1	No technical holding time has been established for soil matrices. All sediment samples were within method holding time: extraction within 10 days of laboratory receipt; analysis within 40 days of extraction.	
O2	Surrogate recovery control limits: 2-Fluorophenol: 28-109% 2,4,6-Tribromophenol: 35-138%	
M3	Two samples were used for MS/MSD analysis. MS/MSD/Analyte recovery limits for 107-GSED-C32-2.0: 2-Chlorophenol: 113/66/35-115% 2,4-Dichlorophenol: 78/81/39-123% 2,4,6-Trichlorophenol: 82/92/38-129% 2,4,5-Trichlorophenol: 81/92/34-138% Pentachlorophenol: 59/49/10-150% RPDs ranged from 4 to 53. RPD limits: 40 The RPD for 2-Chlorophenol (53) in the MS/MSD analysis was outside of the 8270C method limit (40). MS/MSD/Analyte recovery limits for 109-GSED-C01-2.0: 2-Chlorophenol: 72/88/35-115% 2,4-Dichlorophenol: 78/84/39-123% 2,4,6-Trichlorophenol: 81/84/38-129% 2,4,5-Trichlorophenol: 82/81/34-138% Pentachlorophenol: 68/55/10-150% RPDs ranged from 1 to 22. RPD limits: 40	No action required. 2-Chlorophenol not detected in project samples.
O4	LCS/LCSD/Analyte recovery limits: 2-Chlorophenol: 84/71/39-119% 2,4-Dichlorophenol: 82/68/42-120% 2,4,6-Trichlorophenol: 84/75/40-124% 2,4,5-Trichlorophenol: 84/74/44-122% Pentachlorophenol: 84/71/29-130% RPDs ranged from 12 to 19. RPD limits:	

	40	
M5	Hold time for water samples is 7 days from date of sample collection to extraction; 40 days from extraction to analysis. RB-1,RB-2 and RB-3 were extracted 15, 14 and 13 days, respectively, from date of sample collection.	Non-detection in samples RB-1, RB-2 and RB-3 are qualified as approximate (UJ).
M6	Surrogate recovery control limits: 2-Fluorophenol: 33-109% 2,4,6-Tribromophenol: 34-130% The Lab Control Sample has recovery of 2-Fluorophenol outside of the SVOC method limits (114%).	No action required. Only one surrogate out of specification.
O7	LCS/LCSD/Analyte recovery limits: 2-Chlorophenol: 117/108/43-120% 2,4-Dichlorophenol: 114/107/43-120% 2,4,6-Trichlorophenol: 116/109/48-116% 2,4,5-Trichlorophenol: 115/114/46-120% Pentachlorophenol: 99/98/23-125% RPDs ranged from 1 to 8. RPD limits: 30	
O8	Holding time for TOC analysis of soil samples was 12-14 days. Limit is 14 days from time of sample collection.	
O9	Duplicate analysis: RPD 9% for 107-GSED-C32-2.0 and 4% for 109-GSED-C01-2.0 (Limit: 20%) MS recovery: 102% for 107-GSED-C32-2.0 and 101% for 109-GSED-C01-2.0 (Limit: 75-125%)	
O10	LCS recovery: 107% (Limit: 85-115%)	
O11	Holding time for TOC analysis of water samples was 9 days. Limit is 28 days from time of sample collection.	
O12	Duplicate analysis: RPD <1 (Limit: 20%) MS recovery: 99% (Limit: 76-121%)	
O13	LCS recovery: 103% (Limit: 92-106%)	

LAB REPORT QUALITY ASSURANCE CHECKLIST

Project Information			
Project Name:	SPI Arcata	Lab Name:	Columbia Analytical
Project Number:	9329.000 Task	Lab Report Number:	K2407143
Sample Numbers: *(Attach list if needed)*	101-GSED-C09-x (x=0.5,1.0,2.0,2.5), 102-GSED-C08-x (x=0.5,1.0,2.0,3.0), 103-GSED-C07-x (x=0.5,1.0), 104-GSED-C06-x (x=0.5,1.0,2.0), 106-GSED-C31-x (x=0.5,1.0,2.0,2.5,2.0D)		

Report Completeness		Comments
Are all samples listed on the COC included in the report? *(Indicate any differences in Comments column and resolve with the lab.)*	X Yes ☐ No	
Are all analytical tests listed on the COC for each sample included in the report? *(Indicate any differences in Comments column and resolve with the lab.)*	X Yes ☐ No	
Are all items required by the contract with the lab included in the report? *(Indicate any exceptions in the Comments column.)*	X Yes ☐ No	No contract. Standard items included.

QA Review of Lab Performance	
X Attached	Organic Data Assessment Summary form
☐ Attached	Inorganic Data Assessment Summary form

Field Blank QA Review		
Are there any detections in the trip blanks? N/A	☐ Yes ☐ No	*If yes, identify associated samples:*
Are there any detections in the equipment blanks? N/A	☐ Yes ☐ No	*If yes, identify associated samples:*

Invoice Review		
Did the lab meet the promised turnaround times?	X Yes ☐ No	*If no, does a discount apply?*
Did any problems result in unusable sample results?	☐ Yes X No	*If yes, evaluate whether the lab should be paid for the analysis.*
Are all items required by the contract with the lab included in the report? *(Indicate any exceptions in the Comments column.)*	X Yes ☐ No	No contract. Standard items included.

Completed by:	Gypsy Achong	Date:	10/18/04
Reviewed by:		Date:	

ORGANIC DATA ASSESSMENT SUMMARY

Project Information			
Project Name:	SPI Arcata	Lab Name:	Columbia Analytical
Project Number:	9329 Task	Lab Report Number:	K2407143
Reviewer's Signature:		Number of Samples:	18
Review Date:	10/18/04	Matrix:	Soil

Assessment Summary

Using the codes O, M, Z, and X described below, complete the table for a single quality control batch or sample delivery group. Identify comments by means of a footnote, e.g. M(2), describe in the space provided.

Method Name:	SVOC	TOC		
Method Number:	8270C	ASTM D4129-82M		
1. Preservation/hold times	O1	O5		
2. GC/MS tune, instr. performance	--	--		
3. Calibrations	--	--		
4. Blanks	O	O		
5. Surrogates	O2	--		
6. Matrix spike/dup	O3	O6		
7. Lab QC samples	O4	O7		
8. Internal standards	--	--		
9. Compound ID	--	--		
10. System performance	--	--		
11. Field duplicates	--	--		
12. Overall assessment	O	O		

Assessment Codes:

O = No quality controls (QC) problems were identified for these criteria.

M = The results are qualified due to QC problems. The quantitative results will be qualified with a QC flag indicating that the results are estimated due to error greater than specified in the method.

Z = The results are unacceptable due to gross QC problems. The results will be qualified as rejected (R).

X = QC problems were identified, but they do not affect the results, or the reviewer is not certain of the effect on the results; or supporting documentation or data is not present in the

laboratory data package.

Assessment Code	Description	Action Required
O1	No technical holding time has been established for soil matrices. Method holding time: extraction within 10 days of laboratory receipt; analysis within 40 days of extraction.	
O2	Surrogate recovery control limits: 2-Fluorophenol: 28-109% 2,4,6-Tribromophenol: 35-138%	
O3	MS/MSD/Analyte recovery limits: 2-Chlorophenol: 78/80/35-115% 2,4-Dichlorophenol: 87/85/39-123% 2,4,6-Trichlorophenol: 105/102/38-129% 2,4,5-Trichlorophenol: 108/101/34-138% Pentachlorophenol: 86/66/10-150% RPDs ranged from 2 to 27. RPD limits: 40	
O4	LCS/LCSD/Analyte recovery limits: 2-Chlorophenol: 91/70/39-119% 2,4-Dichlorophenol: 67/74/42-120% 2,4,6-Trichlorophenol: 94/87/40-124% 2,4,5-Trichlorophenol: 97/89/44-122% Pentachlorophenol: 85/80/29-130% RPDs ranged from 6 to 25. RPD limits: 40	
O5	Holding time for TOC analysis of soil was 13 or 14 days. Limit is 14 days from time of sample collection.	
O6	Duplicate analysis: RPD 12% (Limit: 20%) MS recovery: 104% (Limit: 75-125%)	
O7	LCS recovery: 103% (Limit: 85-115%)	

Geomatrix

APPENDIX E

Quality Assurance/Quality Control Review for Fish Tissue Samples

LAB REPORT QUALITY ASSURANCE CHECKLIST

Project Information			
Project Name:	SPI	Lab Name:	Columbia
Project Number:	9329.000.0 Task 20	Lab Report Number:	K2502124
Sample Numbers: *(Attach list if needed)*	PSP-SB-00x (x=1 to 5); PSP-SB-001DUP; WSP-SB-00x (x=6 to 8); JST-SB-009		

Report Completeness		Comments
Are all samples listed on the COC included in the report? *(Indicate any differences in Comments column and resolve with the lab.)*	X Yes ☐ No	
Are all analytical tests listed on the COC for each sample included in the report? *(Indicate any differences in Comments column and resolve with the lab.)*	X Yes ☐ No	Analyzed for 1613B (Full list).
Are all items required by the contract with the lab included in the report? *(Indicate any exceptions in the Comments column.)*	X Yes ☐ No	No contract. Standard items included.

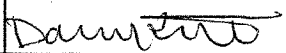
QA Review of Lab Performance	
X Attached	Organic Data Assessment Summary form ref National Functional Guidelines for Chlorinated Dioxin/Furan Data Review, August 2002, EPA-540-R-02-003
☐ Attached	Inorganic Data Assessment Summary form

Field Blank QA Review		
Are there any detections in the trip blanks? N/A	☐ Yes ☐ No	*If yes, identify associated samples:*
Are there any detections in the equipment blanks? N/A	☐ Yes ☐ No	*If yes, identify associated samples:*

Invoice Review		
Did the lab meet the promised turnaround times?	X Yes ☐ No	*If no, does a discount apply?*
Did any problems result in unusable sample results?	☐ Yes X No	*If yes, evaluate whether the lab should be paid for the analysis.*
Are all items required by the contract with the lab included in the report? *(Indicate any exceptions in the Comments column.)*	X Yes ☐ No	No contract. Standard items included.

Completed by:	Gypsy Achong	Date:	7/1/05
Reviewed by:	DCK 8/29/06	Date:	

ORGANIC DATA ASSESSMENT SUMMARY

Project Information			
Project Name:	SPI	Lab Name:	Columbia Analytical
Project Number:	9329.000.0 Task 20	Lab Report Number:	K2502124
Reviewer's Signature:		Number of Samples:	10
Review Date:	8/29/06	Matrix:	Fish Tissue

Assessment Summary

Using the codes O, M, Z, and X described below, complete the table for a single quality control batch or sample delivery group. Identify comments by means of a footnote, e.g. M(2), describe in the space provided.

Method Name:	PCDD/PCDF	PCDD/PCDF		
Method Number:	1613b	1613b		
Service Request Number:	E0500374	E0500447		
1. Preservation/hold times	M1	M8		
2. GC/MS tune, instr. performance	--	--		
3. Calibrations	M2	M2		
4. Blanks	M3	M9		
5. Surrogates	O4	O4		
6. Matrix spike/dup	--	--		
7. Lab QC samples	O5	O10		
8. Internal standards	--	--		
9. Compound ID	M6	M6		
10. System performance	--	--		
11. Field duplicates	O7	--		
12. Overall assessment	M	M		

Assessment Codes:

O = No quality controls (QC) problems were identified for these criteria.

M = The results are qualified due to QC problems. The quantitative results will be qualified with a QC flag indicating that the results are estimated due to error greater than specified in the method.

Z = The results are unacceptable due to gross QC problems. The results will be qualified as rejected (R).

X = QC problems were identified, but they do not affect the results, or the reviewer is not certain of the effect on the results; or supporting documentation or data is not present in the laboratory data package.

Assessment Code	Description	Action Required
M1	Samples collected 3/16/05; extracted 5/13/05 (holding time is less than required 1yr); analyzed 5/18/05 (samples were analyzed within required 30 days of extraction). Samples received at 5.6C on 3/16/05. Samples stored at -20C (below required limit of -10C).	Since samples were received at a temp above 4C, all detections and detection limits are estimates and should be qualified as "J" and "UJ" respectively.
M2	Lowest calibration standard used by laboratory according to the method is the reporting limit noted in report.	Detections less than the reporting limit are estimates and are qualified as "J".
M3	There were detections of the following compounds in the method blank: 1,2,3,4,6,7,8-HpCDD (0.067, 0.335), OCDD (0.938, 4.69); OCDF (0.091, 0.455); Total hepta-dioxins (0.116, 0.58); and in the first method blank for the reextraction of PSP-SB-001 and PSP-SB-001-DUP: 1,2,3,4,6,7,8-HpCDD (0.074, 0.37); OCDD (0.623, 3.115). Numbers in brackets are (1) detection, and (2) 5x the blank detection.	Detections of OCDD, 1,2,3,4,6,7,8-HpCDD, and Total hepta-dioxins are less than 5x the blank amount, therefore, all results are qualified "UJ".
O4	All surrogates are recovered within recovery limits.	None.
O5	Spike recoveries in LCS/LCSD are within QC limits (50-150%). The RPDs ranged from 2.10 to 5.53% in the primary data, and from 0.31 to 3.88% in the reextraction data for PSP-SB-001 and PSP-SB-001-DUP, which is within the limit of 35%.	None.
M6	Several detections were flagged by the laboratory as "K", indicating ion abundance ratios outside their associated QC limits. The detection is an estimated maximum possible concentration.	"K" flagged detections are reported and qualified as "U".

O7	RPDs were not calculated for PSP-SB-001 and PSP-SB-001DUP since detections were below reporting limits. However, the RPD for Total TEF-adjusted concentration was 189%. On reextraction, the RPD for Total TEF-adjusted concentration was 133%.	None.
M8	Samples collected 3/16/05; extracted 6/14/05 (holding time is less than required 1yr); analyzed 6/17/05 (samples were analyzed within required 30 days of extraction). Samples received at 5.6C on 3/16/05. Samples stored at -20C (below required limit of -10C).	Since samples were received at a temp above 4C, all detections and detection limits are estimates and should be qualified as "J" and "UJ" respectively.
M9	There were detections of the following compounds in the method blank: OCDD (0.442, 2.21); OCDF (0.341, 1.705). Numbers in brackets are (1) detection, and (2) 5x the blank detection.	The detections of OCDD and OCDF are all less than 5x the method blank concentrations, thereofore, all OCDD and OCDF results are qualified as "UJ".
O10	Spike recoveries in LCS/LCSD are within QC limits (50-150%). The RPDs ranged from 3.27 to 14.91%, which is within the limit of 35%.	None.

LAB REPORT QUALITY ASSURANCE CHECKLIST

Project Information			
Project Name:	SPI	Lab Name:	Columbia
Project Number:	9329.000.0 Task 20	Lab Report Number:	K0500590
Sample Numbers: *(Attach list if needed)*	Comp JST-SB-040/018; Comp WSP-SB-033/045; Comp WSP-SB-044/046; JST-SB-042; JST-SB-019; JST-SB-017		

Report Completeness		Comments
Are all samples listed on the COC included in the report? *(Indicate any differences in Comments column and resolve with the lab.)*	X Yes ☐ No	
Are all analytical tests listed on the COC for each sample included in the report? *(Indicate any differences in Comments column and resolve with the lab.)*	X Yes ☐ No	Analyzed for 1613B (Full list).
Are all items required by the contract with the lab included in the report? *(Indicate any exceptions in the Comments column.)*	X Yes ☐ No	No contract. Standard items included.

QA Review of Lab Performance	
X Attached	Organic Data Assessment Summary form according to National Functional Guidelines for Chlorinated Dioxin/Furan Data Review, EPA 540-R-02-003, August 2002.
☐ Attached	Inorganic Data Assessment Summary form

Field Blank QA Review		
Are there any detections in the trip blanks? N/A	☐ Yes ☐ No	*If yes, identify associated samples:*
Are there any detections in the equipment blanks? N/A	☐ Yes ☐ No	*If yes, identify associated samples:*

Invoice Review		
Did the lab meet the promised turnaround times?	X Yes ☐ No	*If no, does a discount apply?*
Did any problems result in unusable sample results?	☐ Yes X No	*If yes, evaluate whether the lab should be paid for the analysis.*
Are all items required by the contract with the lab included in the report? *(Indicate any exceptions in the Comments column.)*	X Yes ☐ No	No contract. Standard items included.

Completed by:	Gypsy Achong	Date:	7/11/05
Reviewed by:	DCK 8/29/06	Date:	

ORGANIC DATA ASSESSMENT SUMMARY

Project Information			
Project Name:	SPI	Lab Name:	Columbia Analytical
Project Number:	9329.000.0 Task 20	Lab Report Number:	K0500590
Reviewer's Signature:		Number of Samples:	6
Review Date:	8/29/06	Matrix:	Fish Tissue

Assessment Summary

Using the codes O, M, Z, and X described below, complete the table for a single quality control batch or sample delivery group. Identify comments by means of a footnote, e.g. $M^{(2)}$, describe in the space provided.

Method Name:	PCDD/PCDF			
Method Number:	1613b			
1. Preservation/hold times	O1			
2. GC/MS tune, instr. performance	--			
3. Calibrations	M2			
4. Blanks	M3			
5. Surrogates	O4			
6. Matrix spike/dup	--			
7. Lab QC samples	O5			
8. Internal standards	--			
9. Compound ID	M6			
10. System performance	--			
11. Field duplicates	--			
12. Overall assessment	M			

Assessment Codes:

O = No quality controls (QC) problems were identified for these criteria.

M = The results are qualified due to QC problems. The quantitative results will be qualified with a QC flag indicating that the results are estimated due to error greater than specified in the method.

Z = The results are unacceptable due to gross QC problems. The results will be qualified as rejected (R).

X = QC problems were identified, but they do not affect the results, or the reviewer is not certain of the effect on the results; or supporting documentation or data is not present in the

laboratory data package.

Assessment Code	Description	Action Required
O1	Samples collected 4/21, 4/22, 5/9 and 5/10/2005; extracted 6/14/05 (holding time is less than required 1yr); analyzed 6/17/05 (samples were analyzed within required 30 days of extraction).	None.
M2	Lowest calibration standard used by laboratory according to the method is the reporting limit noted in report.	Detections less than the reporting limit are estimates and are qualified as "J".
M3	There were detections of OCDD (0.442 ng/kg) and OCDF (0.341 ng/kg) in the method blank. 5x OCDD = 0.221 5x ODDF = 1.705	Detections of OCDD and OCDF are less than 5x the blank amount, therefore, all OCDD and OCDF results are qualified "UJ".
O4	All surrogates are recovered within recovery limits.	None.
O5	Spike recoveries in LCS/LCSD are within QC limits (50-150%). The RPDs ranged from 3.27 to 14.91%, which is within the limit of 35%.	None.
M6	Several detections were flagged by the laboratory as "K", indicating ion abundance ratios outside their associated QC limits. The detection is an estimated maximum possible concentration.	"K" flagged detections are reported and qualified as "U".

APPENDIX F

Calculation of 2,3,7,8-TCDD Toxicity Equivalents

Geomatrix

APPENDIX F
CALCULATION OF 2,3,7,8-TCDD
TOXIC EQUIVALENTS
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Sample Location	**North of Samoa Bridge**				**North of Samoa Bridge**				**North of Samoa Bridge**				**North of Samoa Bridge**				**North of Samoa Bridge**				**North of Samoa Bridge**			
Sample ID	**PSP-SB-001**				**PSP-SB-001 DUP[1]**				**PSP-SB-002**				**PSP-SB-003**				**PSP-SB-004**				**PSP-SB-005**			
Date	**3/16/05**				**3/16/05**				**3/16/05**				**3/16/05**				**3/16/05**				**3/16/05**			
Species	**Pile Surfperch**				**Pile Surfperch**				**Pile Surfperch**				**Pile Surfperch**				**Pile Surfperch**				**Pile Surfperch**			
	Reported Concen-tration (ng/kg)	**TEQ Calculation Conc.[2] (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**
Dioxin																								
2,3,7,8-TCDD	0.273 UJ	0.137	1	1.37E-01	0.155 UJ	0.078	1	7.75E-02	0.023 UJ	0.012	1	1.15E-02	0.02 UJ	0.010	1	1.00E-02	0.02 UJ	0.010	1	1.00E-02	0.015 UJ	0.008	1	7.50E-03
1,2,3,7,8-PeCDD	0.153 UJ	0.077	1	7.65E-02	0.139 UJ	0.070	1	6.95E-02	0.023 UJ	0.012	1	1.15E-02	0.021 UJ	0.011	1	1.05E-02	0.017 UJ	0.009	1	8.50E-03	0.020 UJ	0.010	1	1.00E-02
1,2,3,4,7,8-HxCDD	0.117 UJ	0.059	0.1	5.85E-03	0.087 UJ	0.044	0.1	4.35E-03	0.019 UJ	0.010	0.1	9.50E-04	0.019 UJ	0.010	0.1	9.50E-04	0.014 UJ	0.007	0.1	7.00E-04	0.018 UJ	0.009	0.1	9.00E-04
1,2,3,6,7,8-HxCDD	0.133 UJ	0.067	0.1	6.65E-03	0.101 UJ	0.051	0.1	5.05E-03	0.024 UJ	0.012	0.1	1.20E-03	0.022 UJ	0.011	0.1	1.10E-03	0.017 UJ	0.009	0.1	8.50E-04	0.021 UJ	0.011	0.1	1.05E-03
1,2,3,7,8,9-HxCDD	0.115 UJ	0.058	0.1	5.75E-03	0.086 UJ	0.043	0.1	4.30E-03	0.021 UJ	0.011	0.1	1.05E-03	0.02 UJ	0.010	0.1	1.00E-03	0.015 UJ	0.008	0.1	7.50E-04	0.019 UJ	0.010	0.1	9.50E-04
1,2,3,4,6,7,8-HpCDD	0.298 UJ	0.149	0.01	1.49E-03	0.211 UJ	0.106	0.01	1.06E-03	0.172 UJ	0.086	0.01	8.60E-04	0.111 UJ	0.056	0.01	5.55E-04	0.049 UJ	0.025	0.01	2.45E-04	0.058 UJ	0.029	0.01	2.90E-04
OCDD	1.575 UJ	0.788	0.0001	7.88E-05	1.071 UJ	0.536	0.0001	5.36E-05	1.3 UJ	0.650	0.0001	6.50E-05	1.063 UJ	0.532	0.0001	5.32E-05	0.277 UJ	0.139	0.0001	1.39E-05	0.467 UJ	0.234	0.0001	2.34E-05
Furan																								
2,3,7,8-TCDF	0.294 UJ	0.147	0.1	1.47E-02	0.168 UJ	0.084	0.1	8.40E-03	0.024 UJ	0.012	0.1	1.20E-03	0.021 UJ	0.011	0.1	1.05E-03	0.017 UJ	0.009	0.1	8.50E-04	0.016 UJ	0.008	0.1	8.00E-04
1,2,3,7,8-PeCDF	0.112 UJ	0.056	0.05	2.80E-03	0.090 UJ	0.045	0.05	2.25E-03	0.014 UJ	0.007	0.05	3.50E-04	0.013 UJ	0.007	0.05	3.25E-04	0.015 UJ	0.008	0.05	3.75E-04	0.011 UJ	0.006	0.05	2.75E-04
2,3,4,7,8-PeCDF	0.109 UJ	0.055	0.5	2.73E-02	0.094 UJ	0.047	0.5	2.35E-02	0.017 UJ	0.009	0.5	4.25E-03	0.013 UJ	0.007	0.5	3.25E-03	0.014 UJ	0.007	0.5	3.50E-03	0.011 UJ	0.006	0.5	2.75E-03
1,2,3,4,7,8-HxCDF	0.103 UJ	0.052	0.1	5.15E-03	0.075 UJ	0.038	0.1	3.75E-03	0.029 UJ	0.015	0.1	1.45E-03	0.035 UJ	0.018	0.1	1.75E-03	**0.036** J	0.036	0.1	3.60E-03	**0.034** J	0.034	0.1	3.40E-03
1,2,3,6,7,8-HxCDF	0.111 UJ	0.056	0.1	5.55E-03	0.083 UJ	0.042	0.1	4.15E-03	0.016 UJ	0.008	0.1	8.00E-04	0.011 UJ	0.006	0.1	5.50E-04	0.013 UJ	0.007	0.1	6.50E-04	0.010 UJ	0.005	0.1	5.00E-04
1,2,3,7,8,9-HxCDF	0.134 UJ	0.067	0.1	6.70E-03	0.090 UJ	0.045	0.1	4.50E-03	0.018 UJ	0.009	0.1	9.00E-04	0.011 UJ	0.006	0.1	5.50E-04	0.013 UJ	0.007	0.1	6.50E-04	0.010 UJ	0.005	0.1	5.00E-04
2,3,4,6,7,8-HxCDF	0.116 UJ	0.058	0.1	5.80E-03	0.087 UJ	0.044	0.1	4.35E-03	0.017 UJ	0.009	0.1	8.50E-04	0.011 UJ	0.006	0.1	5.50E-04	0.012 UJ	0.006	0.1	6.00E-04	0.010 UJ	0.005	0.1	5.00E-04
1,2,3,4,6,7,8-HpCDF	0.195 UJ	0.098	0.01	9.75E-04	0.131 UJ	0.066	0.01	6.55E-04	**0.03** J	0.030	0.01	3.00E-04	0.013 UJ	0.007	0.01	6.50E-05	0.014 UJ	0.007	0.01	7.00E-05	0.014 UJ	0.007	0.01	7.00E-05
1,2,3,4,7,8,9-HpCDF	0.277 UJ	0.139	0.01	1.39E-03	0.166 UJ	0.083	0.01	8.30E-04	0.023 UJ	0.012	0.01	1.15E-04	0.016 UJ	0.008	0.01	8.00E-05	0.019 UJ	0.010	0.01	9.50E-05	0.019 UJ	0.010	0.01	9.50E-05
OCDF	**2.854** J	2.854	0.0001	2.85E-04	0.261 UJ	0.131	0.0001	1.31E-05	0.096 UJ	0.048	0.0001	4.80E-06	0.114 UJ	0.057	0.0001	5.70E-06	0.034 UJ	0.017	0.0001	1.70E-06	0.037 UJ	0.019	0.0001	1.85E-06
Total 2,3,7,8-TCDD TEQ (ng/kg)				3.03E-01				2.14E-01				3.73E-02				3.23E-02				3.15E-02				2.96E-02

Bold values are detected concentrations. Plain text values are below detection limit shown.
1. Duplicate of sampe PSP-SB-001
2. Concentration of non-detected (U or UJ) compounds set at one-half of the detection limit

Abbreviations:
TCDD = tetrachlorodibenzo-p-dioxin
PeCDD = pentachlorodibenzo-p-dioxin
HxCDD = hexachlorodibenzo-p-dioxin
HpCDD = heptachlorodibenzo-p-dioxin
OCDD = octachlorodibenzo-p-dioxin
TCDF = tetrachlorodibenzofuran
PeCDF = pentachlorodibenzofuran
HxCDF = hexachlorodibenzofuran
HpCDF = heptachlorodibenzofuran
OCDF = octachlorodibenzofuran

2,3,7,8-TCDD TEQ = 2,3,7,8-tetrachlorodibenzodioxin toxicity equivalent
TEF = toxicity equivalency factor (unitless) (OEHHA, 2003b)
EPA = U.S. Environmental Protection Agency
NM = not measured
U = indicates compound was not detected above detection limit shown
UJ = indicates compound was estimated as a non-detect at the detection limit shown
J = indicated compounds is reported at an estimated value
ng/kg = nanograms per kilogram wet weight

APPENDIX F
CALCULATION OF 2,3,7,8-TCDD
TOXIC EQUIVALENTS
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, Califronia

Sample Location	North of Samoa Bridge				North of Samoa Bridge				North of Samoa Bridge				North of Samoa Bridge				North of Samoa Bridge			
Sample ID	JST-SB-009				JST-SB-017				Comp JST-SB-040/018				JST-SB-019				JST-SB-042			
Date	3/16/05				4/21/05				4/21/05 and 5/9/05				4/21/05				5/9/05			
Species	Jacksmelt				Jacksmelt				Jacksmelt				Jacksmelt				Jacksmelt			
	Reported Concen-tration (ng/kg)	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**
Dioxin																				
2,3,7,8-TCDD	0.033 UJ	0.017	1	1.65E-02	0.045 U	0.023	1	2.25E-02	0.046 U	0.023	1	2.30E-02	0.048 U	0.024	1	2.40E-02	0.044 U	0.022	1	2.20E-02
1,2,3,7,8-PeCDD	0.028 UJ	0.014	1	1.40E-02	0.037 U	0.019	1	1.85E-02	0.032 U	0.016	1	1.60E-02	0.042 U	0.021	1	2.10E-02	0.039 U	0.020	1	1.95E-02
1,2,3,4,7,8-HxCDD	0.017 UJ	0.009	0.1	8.50E-04	0.032 U	0.016	0.1	1.60E-03	0.039 U	0.020	0.1	1.95E-03	0.040 U	0.020	0.1	2.00E-03	0.035 U	0.018	0.1	1.75E-03
1,2,3,6,7,8-HxCDD	0.022 UJ	0.011	0.1	1.10E-03	0.037 U	0.019	0.1	1.85E-03	0.043 U	0.022	0.1	2.15E-03	0.049 U	0.025	0.1	2.45E-03	0.042 U	0.021	0.1	2.10E-03
1,2,3,7,8,9-HxCDD	0.020 UJ	0.010	0.1	1.00E-03	0.035 U	0.018	0.1	1.75E-03	0.041 U	0.021	0.1	2.05E-03	0.045 U	0.023	0.1	2.25E-03	0.039 U	0.020	0.1	1.95E-03
1,2,3,4,6,7,8-HpCDD	**0.076** J	0.076	0.01	7.60E-04	0.063 UJ	0.032	0.01	3.15E-04	0.074 UJ	0.037	0.01	3.70E-04	**0.101** J	0.101	0.01	1.01E-03	0.041 U	0.021	0.01	2.05E-04
OCDD	0.452 UJ	0.226	0.0001	2.26E-05	0.475 UJ	0.238	0.0001	2.38E-05	0.438 UJ	0.219	0.0001	2.19E-05	0.897 UJ	0.449	0.0001	4.49E-05	0.373 UJ	0.187	0.0001	1.87E-05
Furan																				
2,3,7,8-TCDF	0.037 UJ	0.019	0.1	1.85E-03	0.037 U	0.019	0.1	1.85E-03	0.041 U	0.021	0.1	2.05E-03	0.036 U	0.018	0.1	1.80E-03	0.035 U	0.018	0.1	1.75E-03
1,2,3,7,8-PeCDF	0.016 UJ	0.008	0.05	4.00E-04	0.029 U	0.015	0.05	7.25E-04	0.029 U	0.015	0.05	7.25E-04	0.029 U	0.015	0.05	7.25E-04	0.032 U	0.016	0.05	8.00E-04
2,3,4,7,8-PeCDF	0.017 UJ	0.009	0.5	4.25E-03	0.030 U	0.015	0.5	7.50E-03	0.028 U	0.014	0.5	7.00E-03	0.029 U	0.015	0.5	7.25E-03	0.031 U	0.016	0.5	7.75E-03
1,2,3,4,7,8-HxCDF	0.017 UJ	0.009	0.1	8.50E-04	0.021 U	0.011	0.1	1.05E-03	0.021 U	0.011	0.1	1.05E-03	0.023 U	0.012	0.1	1.15E-03	0.024 U	0.012	0.1	1.20E-03
1,2,3,6,7,8-HxCDF	0.020 UJ	0.010	0.1	1.00E-03	0.026 U	0.013	0.1	1.30E-03	0.024 U	0.012	0.1	1.20E-03	0.027 U	0.014	0.1	1.35E-03	0.029 U	0.015	0.1	1.45E-03
1,2,3,7,8,9-HxCDF	0.019 UJ	0.010	0.1	9.50E-04	0.025 U	0.013	0.1	1.25E-03	0.025 U	0.013	0.1	1.25E-03	0.027 U	0.014	0.1	1.35E-03	0.028 U	0.014	0.1	1.40E-03
2,3,4,6,7,8-HxCDF	0.021 UJ	0.011	0.1	1.05E-03	0.026 U	0.013	0.1	1.30E-03	0.024 U	0.012	0.1	1.20E-03	0.027 U	0.014	0.1	1.35E-03	0.028 U	0.014	0.1	1.40E-03
1,2,3,4,6,7,8-HpCDF	0.016 UJ	0.008	0.01	8.00E-05	0.035 U	0.018	0.01	1.75E-04	0.030 U	0.015	0.01	1.50E-04	0.029 U	0.015	0.01	1.45E-04	0.035 U	0.018	0.01	1.75E-04
1,2,3,4,7,8,9-HpCDF	0.019 UJ	0.010	0.01	9.50E-05	0.038 U	0.019	0.01	1.90E-04	0.036 U	0.018	0.01	1.80E-04	0.027 U	0.014	0.01	1.35E-04	0.043 U	0.022	0.01	2.15E-04
OCDF	0.118 UJ	0.059	0.0001	5.90E-06	0.285 UJ	0.143	0.0001	1.43E-05	0.409 UJ	0.205	0.0001	2.05E-05	0.202 UJ	0.101	0.0001	1.01E-05	0.151 UJ	0.076	0.0001	7.55E-06
Total 2,3,7,8-TCDD TEQ (ng/kg)				4.48E-02				6.19E-02				6.04E-02				6.80E-02				6.37E-02

APPENDIX F
CALCULATION OF 2,3,7,8-TCDD
TOXIC EQUIVALENTS
Sierra Pacific Industries
Arcata Division Sawmill
Arcata, Califronia

Sample Location	North of Samoa Bridge				North of Samoa Bridge				North of Samoa Bridge				North of Samoa Bridge				North of Samoa Bridge			
Sample ID	**WSP-SB-006**				**WSP-SB-007**				**WSP-SB-008**				**Comp WSP-SB-033/045**				**Comp WSP-SB-044/046**			
Date	**3/16/05**				**3/16/05**				**3/16/05**				**4/22/05 and 5/10/05**				**5/10/05**			
Species	**Walleye Surfperch**				**Walleye Surfperch**				**Walleye Surfperch**				**Walleye Surfperch**				**Walleye Surfperch**			
	Reported Concen-tration (ng/kg)	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**	**Reported Concen-tration (ng/kg)**	**TEQ Calculation Conc. (ng/kg)**	**TEFs**	**2,3,7,8-TCDD TEQ (ng/kg)**
Dioxin																				
2,3,7,8-TCDD	0.041 UJ	0.021	1	2.05E-02	0.051 UJ	0.026	1	2.55E-02	0.041 UJ	0.021	1	2.05E-02	0.034 U	0.017	1	1.70E-02	0.029 U	0.015	1	1.45E-02
1,2,3,7,8-PeCDD	0.045 UJ	0.023	1	2.25E-02	0.029 UJ	0.015	1	1.45E-02	0.042 UJ	0.021	1	2.10E-02	0.034 U	0.017	1	1.70E-02	0.026 U	0.013	1	1.30E-02
1,2,3,4,7,8-HxCDD	0.035 UJ	0.018	0.1	1.75E-03	0.029 UJ	0.015	0.1	1.45E-03	0.044 UJ	0.022	0.1	2.20E-03	0.028 U	0.014	0.1	1.40E-03	0.035 U	0.018	0.1	1.75E-03
1,2,3,6,7,8-HxCDD	0.039 UJ	0.020	0.1	1.95E-03	0.033 UJ	0.017	0.1	1.65E-03	0.050 UJ	0.025	0.1	2.50E-03	0.033 U	0.017	0.1	1.65E-03	0.041 U	0.021	0.1	2.05E-03
1,2,3,7,8,9-HxCDD	0.037 UJ	0.019	0.1	1.85E-03	0.031 UJ	0.016	0.1	1.55E-03	0.047 UJ	0.024	0.1	2.35E-03	0.031 U	0.016	0.1	1.55E-03	0.038 U	0.019	0.1	1.90E-03
1,2,3,4,6,7,8-HpCDD	**0.117** J	0.117	0.01	1.17E-03	**0.058** J	0.058	0.01	5.80E-04	0.047 UJ	0.024	0.01	2.35E-04	0.089 UJ	0.045	0.01	4.45E-04	**0.071** J	0.071	0.01	7.10E-04
OCDD	0.708 UJ	0.354	0.0001	3.54E-05	0.362 UJ	0.181	0.0001	1.81E-05	0.354 UJ	0.177	0.0001	1.77E-05	0.713 UJ	0.357	0.0001	3.57E-05	0.369 UJ	0.185	0.0001	1.85E-05
Furan																				
2,3,7,8-TCDF	0.042 UJ	0.021	0.1	2.10E-03	0.043 UJ	0.022	0.1	2.15E-03	0.040 UJ	0.020	0.1	2.00E-03	0.041 U	0.021	0.1	2.05E-03	0.039 U	0.020	0.1	1.95E-03
1,2,3,7,8-PeCDF	0.028 UJ	0.014	0.05	7.00E-04	0.015 UJ	0.008	0.05	3.75E-04	0.035 UJ	0.018	0.05	8.75E-04	0.024 U	0.012	0.05	6.00E-04	0.024 U	0.012	0.05	6.00E-04
2,3,4,7,8-PeCDF	0.027 UJ	0.014	0.5	6.75E-03	0.016 UJ	0.008	0.5	4.00E-03	0.035 UJ	0.018	0.5	8.75E-03	0.023 U	0.012	0.5	5.75E-03	0.023 U	0.012	0.5	5.75E-03
1,2,3,4,7,8-HxCDF	0.025 UJ	0.013	0.1	1.25E-03	0.020 UJ	0.010	0.1	1.00E-03	0.026 UJ	0.013	0.1	1.30E-03	0.022 U	0.011	0.1	1.10E-03	0.022 U	0.011	0.1	1.10E-03
1,2,3,6,7,8-HxCDF	0.03 UJ	0.015	0.1	1.50E-03	0.025 UJ	0.013	0.1	1.25E-03	0.031 UJ	0.016	0.1	1.55E-03	0.027 U	0.014	0.1	1.35E-03	0.025 U	0.013	0.1	1.25E-03
1,2,3,7,8,9-HxCDF	0.031 UJ	0.016	0.1	1.55E-03	0.025 UJ	0.013	0.1	1.25E-03	0.033 UJ	0.017	0.1	1.65E-03	0.026 U	0.013	0.1	1.30E-03	0.026 U	0.013	0.1	1.30E-03
2,3,4,6,7,8-HxCDF	0.028 UJ	0.014	0.1	1.40E-03	0.024 UJ	0.012	0.1	1.20E-03	0.029 UJ	0.015	0.1	1.45E-03	0.026 U	0.013	0.1	1.30E-03	0.025 U	0.013	0.1	1.25E-03
1,2,3,4,6,7,8-HpCDF	0.03 UJ	0.015	0.01	1.50E-04	0.025 UJ	0.013	0.01	1.25E-04	0.040 UJ	0.020	0.01	2.00E-04	0.027 U	0.014	0.01	1.35E-04	0.034 U	0.017	0.01	1.70E-04
1,2,3,4,7,8,9-HpCDF	0.038 UJ	0.019	0.01	1.90E-04	0.033 UJ	0.017	0.01	1.65E-04	0.055 UJ	0.028	0.01	2.75E-04	0.033 U	0.017	0.01	1.65E-04	0.042 U	0.021	0.01	2.10E-04
OCDF	0.274 UJ	0.137	0.0001	1.37E-05	0.128 UJ	0.064	0.0001	6.40E-06	0.145 UJ	0.073	0.0001	7.25E-06	0.208 UJ	0.104	0.0001	1.04E-05	0.195 UJ	0.098	0.0001	9.75E-06
Total 2,3,7,8-TCDD TEQ (ng/kg)				6.54E-02				5.68E-02				6.69E-02				5.28E-02				4.75E-02

Geomatrix

APPENDIX G

Risk Calculation Using 2002 Data

APPENDIX G
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS - 2002 DATA
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

FIN FISH INGESTION: RESIDENT

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	2.60E-07	1	9.0E-11	1.00E-08	9.0E-03	3.2E-11	1.30E+05	4.2E-06
Zinc	1.40E+01	1	4.8E-03	0.3	1.6E-02	1.7E-03	NA	NA
					2.5E-02			4E-06

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)}$$

$$Hazard\ Quotient = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)}$$

$$Excess\ Cancer\ Risk = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRff	21	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX G
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

FIN FISH INGESTION: ADULT ANGLER

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	3.80E-07	1	1.0E-09	1.00E-08	1.0E-01	3.6E-10	1.30E+05	4.7E-05
Zinc	1.50E+01	1	4.0E-02	0.3	1.3E-01	1.4E-02	NA	NA
					2.3E-01			5E-05

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)} \qquad \text{Hazard Quotient} = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)} \qquad \text{Excess Cancer Risk} = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRff	161	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX G
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS - 2002 DATA
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

OYSTER INGESTION: RESIDENT

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	8.50E-07	1	2.4E-12	1.00E-08	2.4E-04	8.5E-13	1.30E+05	1.1E-07
Zinc	9.40E+01	1	2.6E-04	3.00E-01	8.8E-04	9.4E-05	NA	NA
					1.1E-03			1E-07

AADD = $\frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)}$ Hazard Quotient = $\frac{AADD}{RfDo}$

LADD = $\frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)}$ Excess Cancer Risk = LADD x SFo

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRo	0.17	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX G
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

OYSTER INGESTION: ADULT ANGLER

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	2.22E-06	1	5.0E-11	1.00E-08	5.0E-03	1.8E-11	1.30E+05	2.3E-06
Zinc	1.10E+02	1	2.5E-03	3.00E-01	8.2E-03	8.8E-04	NA	NA
					1.3E-02			2E-06

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)} \qquad \text{Hazard Quotient} = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)} \qquad \text{Excess Cancer Risk} = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRo	1.36	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX G
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

SHRIMP INGESTION: RESIDENT

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	1.50E-07	1	6.4E-12	1.00E-08	6.4E-04	2.3E-12	1.30E+05	3.0E-07
Zinc	1.10E+01	1	4.7E-04	3.00E-01	1.6E-03	1.7E-04	NA	NA
					2.2E-03			3E-07

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)} \qquad \text{Hazard Quotient} = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)} \qquad \text{Excess Cancer Risk} = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRs	2.6	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX G
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

SHRIMP INGESTION: ADULT ANGLER

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	2.50E-07	1	8.5E-11	1.00E-08	8.5E-03	3.1E-11	1.30E+05	4.0E-06
Zinc	1.10E+01	1	3.8E-03	3.00E-01	1.3E-02	1.3E-03	NA	NA
					2.1E-02			4E-06

AADD = $\frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)}$ Hazard Quotient = $\frac{AADD}{RfDo}$

LADD = $\frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)}$ Excess Cancer Risk = LADD x SFo

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRs	20.8	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX G
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

CRAB INGESTION: RESIDENT

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	7.80E-07	1	3.8E-12	1.00E-08	3.8E-04	1.4E-12	1.30E+05	1.8E-07
Zinc	3.22E+01	1	1.6E-04	3.00E-01	5.3E-04	5.7E-05	NA	NA
					9.1E-04			2E-07

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)} \qquad \text{Hazard Quotient} = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)} \qquad \text{Excess Cancer Risk} = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRc	0.3	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX G
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

CRAB INGESTION: ADULT ANGLER

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	1.76E-06	1	6.9E-11	1.00E-08	6.9E-03	2.5E-11	1.30E+05	3.2E-06
Zinc	4.19E+01	1	1.7E-03	0.3	5.5E-03	5.9E-04	NA	NA
					1.2E-02			3E-06

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)} \qquad \text{Hazard Quotient} = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)} \qquad \text{Excess Cancer Risk} = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRc	2.4	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

Geomatrix

APPENDIX H

Representative Concentrations and ProUCL Output for Finfish Samples

APPENDIX H-1

ANALYTICAL RESULTS OF DIOXINS/FURANS IN FIN FISH FROM MAD RIVER SLOUGH--2005 SAMPLING EVENT

Sierra Pacific Industries
Arcata Division Sawmill
Arcata, California

Sample ID/ Station Identifier	Date	Species	% Lipids	% Solids	2,3,7,8-TCDD TEQ (ng/kg)
JST-SB-009	3/16/2005	Jacksmelt	0.249	22.07	0.04
JST-SB-017	4/21/2005	Jacksmelt	0.115	21.26	0.06
Comp JST-SB-040/018	4/21/2005, 5/9/2005	Jacksmelt	0.100	19.81	0.06
JST-SB-019	4/21/2005	Jacksmelt	0.646	22.11	0.07
JST-SB-042	5/9/2005	Jacksmelt	0.307	17.69	0.06
				Average	**0.06**
PSP-SB-001[1]	3/16/2005	Pile Surfperch	0.077	24.00	0.30
PSP-SB-002	3/16/2005	Pile Surfperch	1.565	23.90	0.04
PSP-SB-003	3/16/2005	Pile Surfperch	0.803	24.50	0.03
PSP-SB-004	3/16/2005	Pile Surfperch	0.160	22.90	0.03
PSP-SB-005	3/16/2005	Pile Surfperch	0.206	25.50	0.03
				Average	**0.09**
WSP-SB-006	3/16/2005	Walleye Surfperch	0.426	20.97	0.07
WSP-SB-007	3/16/2005	Walleye Surfperch	0.330	19.82	0.06
WSP-SB-008	3/16/2005	Walleye Surfperch	0.220	21.02	0.07
Comp WSP-SB-033/045	4/22/2005, 5/10/2005	Walleye Surfperch	0.080	18.26	0.05
Comp WSP-SB-044/046	38482	Walleye Surfperch	0.197	18.81	0.05
				Average	**0.06**

Notes:
1. Duplicate sample collected. The highest concentration of the duplicate samples is presented.

Abbreviations:
ng/kg = nanograms per kilogram wet weight
2,3,7,8-TCDD TEQ = 2,3,7,8-tetrachlorodibenzo-p-dioxin toxicity equivalent

APPENDIX H-2
REPRESENTATIVE CONCENTRATIONS AND ProUCL OUTPUT FOR FIN FISH
Sierra Pacific Industries
Arcata Saw Mill
Arcata, California

Concentrations reported in nanograms per kilogram (ng/kg)

Jacksmelt

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	3
Minimum	0.04
Maximum	0.07
Mean	0.058
Median	0.06
Standard Deviation	0.0109545
Variance	0.00012
Coefficient of Variation	0.1888698
Skewness	-1.293234

Gamma Statistics	
k hat	30.725605
k star (bias corrected)	12.423575
Theta hat	0.0018877
Theta star	0.0046685
nu hat	307.25605
nu star	124.23575
Approx.Chi Square Value (.05)	99.488877
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	89.810843

Log-transformed Statistics	
Minimum of log data	-3.218876
Maximum of log data	-2.65926
Mean of log data	-2.863674
Standard Deviation of log data	0.2094831
Variance of log data	0.0438831

RECOMMENDATION
Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.8281747
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.0684439

Gamma Distribution Test	
A-D Test Statistic	0.6900475
A-D 5% Critical Value	0.6785363
K-S Test Statistic	0.3983187
K-S 5% Critical Value	0.3570527
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.0724269
Adjusted Gamma UCL	0.0802317

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.7880301
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.0735589
95% Chebyshev (MVUE) UCL	0.0817427
97.5% Chebyshev (MVUE) UCL	0.0919876
99% Chebyshev (MVUE) UCL	0.1121116

95% Non-parametric UCLs	
CLT UCL	0.0660581
Adj-CLT UCL (Adjusted for skewness)	0.0630306
Mod-t UCL (Adjusted for skewness)	0.0679716
Jackknife UCL	0.0684439
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	0.0793542
97.5% Chebyshev (Mean, Sd) UCL	0.0885941
99% Chebyshev (Mean, Sd) UCL	0.1067442

APPENDIX H-3
REPRESENTATIVE CONCENTRATIONS AND ProUCL OUTPUT FOR FIN FISH
Sierra Pacific Industries
Arcata Saw Mill
Arcata, California

Concentrations reported in nanograms per kilogram (ng/kg)

Pile Surfperch

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	3
Minimum	0.03
Maximum	0.3
Mean	0.086
Median	0.03
Standard Deviation	0.119708
Variance	0.01433
Coefficient of Variation	1.3919532
Skewness	2.228848

Gamma Statistics	
k hat	1.0703137
k star (bias corrected)	0.5614588
Theta hat	0.0803503
Theta star	0.1531724
nu hat	10.703137
nu star	5.6145883
Approx.Chi Square Value (.05)	1.445722
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	0.7126684

Log-transformed Statistics	
Minimum of log data	-3.506558
Maximum of log data	-1.203973
Mean of log data	-2.988504
Standard Deviation of log data	1.0053311
Variance of log data	1.0106906

RECOMMENDATION
Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.5769581
Shapiro-Wilk 5% Critical Value	0.762
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.2001284

Gamma Distribution Test	
A-D Test Statistic	1.1410853
A-D 5% Critical Value	0.6906439
K-S Test Statistic	0.441253
K-S 5% Critical Value	0.3640247
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.3339885
Adjusted Gamma UCL	0.6775305

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.6330054
Shapiro-Wilk 5% Critical Value	0.762
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.993968
95% Chebyshev (MVUE) UCL	0.2119735
97.5% Chebyshev (MVUE) UCL	0.271822
99% Chebyshev (MVUE) UCL	0.389383

95% Non-parametric UCLs	
CLT UCL	0.1740573
Adj-CLT UCL (Adjusted for skewness)	0.2310756
Mod-t UCL (Adjusted for skewness)	0.2090221
Jackknife UCL	0.2001284
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	0.3193538
97.5% Chebyshev (Mean, Sd) UCL	0.4203262
99% Chebyshev (Mean, Sd) UCL	0.6186669

Recommended UCL exceeds the maximum observation

APPENDIX H-4
REPRESENTATIVE CONCENTRATIONS AND ProUCL OUTPUT FOR FIN FISH
Sierra Pacific Industries
Arcata Saw Mill
Arcata, California

Concentrations reported in nanograms per kilogram (ng/kg)

Walleye Surfperch

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	3
Minimum	0.05
Maximum	0.07
Mean	0.06
Median	0.06
Standard Deviation	0.01
Variance	0.0001
Coefficient of Variation	0.1666667
Skewness	3.53E-15

Gamma Statistics	
k hat	44.538103
k star (bias corrected)	17.948574
Theta hat	0.0013472
Theta star	0.0033429
nu hat	445.38103
nu star	179.48574
Approx.Chi Square Value (.05)	149.49319
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	137.4728

Log-transformed Statistics	
Minimum of log data	-2.995732
Maximum of log data	-2.65926
Mean of log data	-2.824679
Standard Deviation of log data	0.168354
Variance of log data	0.0283431

RECOMMENDATION
Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.8206548
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.0695339

Gamma Distribution Test	
A-D Test Statistic	0.5347942
A-D 5% Critical Value	0.6783383
K-S Test Statistic	0.2707989
K-S 5% Critical Value	0.3569146
Data follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.0720377
Adjusted Gamma UCL	0.0783365

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.8195059
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.0720639
95% Chebyshev (MVUE) UCL	0.0796759
97.5% Chebyshev (MVUE) UCL	0.0881885
99% Chebyshev (MVUE) UCL	0.1049097

95% Non-parametric UCLs	
CLT UCL	0.067356
Adj-CLT UCL (Adjusted for skewness)	0.067356
Mod-t UCL (Adjusted for skewness)	0.0695339
Jackknife UCL	0.0695339
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	0.0794936
97.5% Chebyshev (Mean, Sd) UCL	0.0879285
99% Chebyshev (Mean, Sd) UCL	0.1044972

Geomatrix

APPENDIX I

Risk Calculations Using 2002/2005 Data

APPENDIX I
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS - 2002/2005 DATA
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

FIN FISH INGESTION: RESIDENT

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	9.00E-08	1	3.1E-11	1.00E-08	3.1E-03	1.1E-11	1.30E+05	1.4E-06
Zinc	1.40E+01	1	4.8E-03	0.3	1.6E-02	1.7E-03	NA	NA
					1.9E-02			1E-06

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)} \qquad \text{Hazard Quotient} = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)} \qquad \text{Excess Cancer Risk} = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRff	21	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX I
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS - 2002/2005 DATA
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

FIN FISH INGESTION: ADULT ANGLER

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	3.00E-07	1	7.9E-10	1.00E-08	7.9E-02	2.8E-10	1.30E+05	3.7E-05
Zinc	1.50E+01	1	4.0E-02	0.3	1.3E-01	1.4E-02	NA	NA
					2.1E-01			4E-05

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)}$$

$$Hazard\ Quotient = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)}$$

$$Excess\ Cancer\ Risk = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRff	161	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX I
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS - 2002/2005 DATA
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

OYSTER INGESTION: RESIDENT

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	8.50E-07	1	2.4E-12	1.00E-08	2.4E-04	8.5E-13	1.30E+05	1.1E-07
Zinc	9.40E+01	1	2.6E-04	3.00E-01	8.8E-04	9.4E-05	NA	NA
					1.1E-03			1E-07

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)}$$

$$Hazard\ Quotient = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)}$$

$$Excess\ Cancer\ Risk = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRo	0.17	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

APPENDIX I
HUMAN HEALTH RISK ASSESSMENT CALCULATIONS - 2002/2005 DATA
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
Project #9329
FINAL

OYSTER INGESTION: ADULT ANGLER

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	2.22E-06	1	5.0E-11	1.00E-08	5.0E-03	1.8E-11	1.30E+05	2.3E-06
Zinc	1.10E+02	1	2.5E-03	3.00E-01	8.2E-03	8.8E-04	NA	NA
					1.3E-02			2E-06

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)} \qquad Hazard\ Quotient = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)} \qquad Excess\ Cancer\ Risk = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRo	1.36	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

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HUMAN HEALTH RISK ASSESSMENT CALCULATIONS - 2002/2005 DATA
Sierra Pacific Industries Arcata Division Sawmill
Arcata, California
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SHRIMP INGESTION: RESIDENT

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	1.50E-07	1	6.4E-12	1.00E-08	6.4E-04	2.3E-12	1.30E+05	3.0E-07
Zinc	1.10E+01	1	4.7E-04	3.00E-01	1.6E-03	1.7E-04	NA	NA
					2.2E-03			3E-07

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)} \qquad \text{Hazard Quotient} = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)} \qquad \text{Excess Cancer Risk} = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRs	2.6	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

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HUMAN HEALTH RISK ASSESSMENT CALCULATIONS - 2002/2005 DATA
Sierra Pacific Industries Arcata Division Sawmill
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SHRIMP INGESTION: ADULT ANGLER

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	2.50E-07	1	8.5E-11	1.00E-08	8.5E-03	3.1E-11	1.30E+05	4.0E-06
Zinc	1.10E+01	1	3.8E-03	3.00E-01	1.3E-02	1.3E-03	NA	NA
					2.1E-02			4E-06

AADD = $\frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)}$ Hazard Quotient = $\frac{AADD}{RfDo}$

LADD = $\frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)}$ Excess Cancer Risk = LADD x SFo

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRs	20.8	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

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HUMAN HEALTH RISK ASSESSMENT CALCULATIONS - 2002/2005 DATA
Sierra Pacific Industries Arcata Division Sawmill
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CRAB INGESTION: RESIDENT

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	7.80E-07	1	3.8E-12	1.00E-08	3.8E-04	1.4E-12	1.30E+05	1.8E-07
Zinc	3.22E+01	1	1.6E-04	3.00E-01	5.3E-04	5.7E-05	NA	NA
					9.1E-04			2E-07

AADD = $\frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)}$ Hazard Quotient = $\frac{AADD}{RfDo}$

LADD = $\frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)}$ Excess Cancer Risk = LADD x SFo

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRc	0.3	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g

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Sierra Pacific Industries Arcata Division Sawmill
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CRAB INGESTION: ADULT ANGLER

Chemical	Concentration in Fish Tissue (Cf) (mg/kg)	Oral Absorption Factor (ABSo) (--)	Annual Average Daily Dose (AADD) (mg/kg-d)	Oral Chronic Reference Dose (RfDo) (mg/kg-d)	Hazard Quotient (--)	Lifetime Average Daily Dose (LADD) (mg/kg-d)	Oral Slope Factor (SFo) $(mg/kg\text{-}d)^{-1}$	Excess Cancer Risk (--)
2,3,7,8-TCCD TEQs	1.76E-06	1	6.9E-11	1.00E-08	6.9E-03	2.5E-11	1.30E+05	3.2E-06
Zinc	4.19E+01	1	1.7E-03	0.3	5.5E-03	5.9E-04	NA	NA
					1.2E-02			3E-06

$$AADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATnc)} \qquad \text{Hazard Quotient} = \frac{AADD}{RfDo}$$

$$LADD = \frac{(Cs \times IRs \times ABSos \times EFig \times ED \times CFmg\text{-}kg)}{(BW \times ATca)} \qquad \text{Excess Cancer Risk} = LADD \times SFo$$

Parameter	Symbol	Value	Units
Exposure Frequency	EFig	350	d/yr
Exposure Duration	ED	30	yr
Body Weight	BW	70	kg
Averaging Time-Non-cancer	ATnc	9,125	days
Averaging Time-Cancer	ATca	25,550	days
Ingestion Rate	IRc	2.4	g/day
Conversion Factor from mg to kg	$CF_{g\text{-}kg}$	1E-03	kg/g