KLEINFELDER

Copyright 2007

PACIFICORP

A MIDAMERICAN ENERGY HOLDINGS COMPANY

# SEDIMENT SAMPLING AND ANALYSIS REPORT

## NORTHWESTERN LAKE
## CONDIT HYDROELECTRIC PROJECT
## FERC PROJECT No. 2342
## WHITE SALMON, WASHINGTON
## KLEINFELDER PROJECT NO. 53886 / 4

March, 2007

KLEINFELDER
EXPECT MORE®

# SEDIMENT SAMPLING AND ANALYSIS REPORT
# NORTHWESTERN LAKE
# CONDIT HYDROELECTRIC PROJECT
# FERC PROJECT No. 2342
# WHITE SALMON, WASHINGTON
# KLEINFELDER PROJECT NO. 53886 / 4

**March 21, 2007**

**This document was prepared for use only by the client, only for the purposes stated, and within a reasonable time from issuance. Non-commercial, educational and scientific use of this report by regulatory agencies is regarded as a "fair use" and not a violation of copyright. Regulatory agencies may make additional copies of this document for internal use. Copies may also be made available to the public as required by law. The reprint must acknowledge the copyright and indicate that permission to reprint has been received.**



KLEINFELDER 15050 S.W. Koll Parkway, Suite L, Beaverton, OR 97006-6028 (503) 644-9447 (503) 643-1905 fax

KLEINFELDER
EXPECT MORE®

March 21, 2007
Kleinfelder Project Number 53886 / 4

Mr. Tim Hemstreet, P.E.
PacifiCorp Hydro Resources
825 N.E. Multnomah, 1500 LCT
Portland, Oregon 97232

**Subject: Sediment Sampling and Analysis Report**
**Northwestern Lake – Condit Hydroelectric Project**
**FERC Project No. 2342**
**White Salmon, Washington**

Dear Mr. Hemstreet:

We are pleased to present our Sediment Sampling and Analysis report for Northwestern Lake of the Condit Hydroelectric Project. We trust the information contained in this report will meet your needs at this time.

We appreciate this opportunity to provide our services to you. Should you require additional information or have any questions regarding this report, please contact us at (503) 644-9447.

Sincerely,

**KLEINFELDER, INC.**

David Earl King, R.G.
Senior Professional Geologist

State of Washington
649
Licensed Geologist
DAVID EARL KING


Copyright 2007 Kleinfelder, Inc.

KLEINFELDER 15050 S.W. Koll Parkway, Suite L, Beaverton, OR 97006-6028 (503) 644-9447 (503) 643-1905 fax

# TABLE OF CONTENTS

**1.0 INTRODUCTION** ..... **1**
**2.0 PROJECT DESCRIPTION** ..... **3**
2.1 PROJECT DESCRIPTION ..... 3
2.2 PREVIOUS INVESTIGATIONS ..... 4
2.3 SITE RANKING ..... 5
**3.0 SITE EXPLORATION METHODOLOGY** ..... **7**
3.1 SAMPLING AND ANALYSIS PLAN ..... 7
3.2 SAMPLING LOCATIONS ..... 8
3.3 DIRECT-PUSH EXPLORATION METHODS ..... 8
3.4 FIELD DOCUMENTATION ..... 9
3.5 SAMPLE TRANSPORT AND CHAIN-OF-CUSTODY PROCEDURES ..... 11
**4.0 LABORATORY CHEMICAL AND PHYSICAL ANALYSES** ..... **12**
4.1 CHEMICAL LABORATORY ANALYSES ..... 12
4.2 GEOTECHNICAL LABORATORY ANALYSES ..... 13
4.3 TIER III BIOLOGICAL TESTING ..... 13
**5.0 CHEMICAL AND PHYSICAL FINDINGS** ..... **15**
5.1 RESULTS OF CHEMICAL ANALYSES ..... 15
5.2 RESULTS OF PHYSICAL ANALYSES ..... 16
5.3 BIOASSAY ANALYSIS METHODS ..... 17
5.4 QUALITY ASSURANCE AND QUALITY CONTROL ..... 17
**6.0 CONCLUSIONS** ..... **19**
**8.0 LIMITATIONS** ..... **22**

## TABLES

1. Probe Locations
2. Probe B-1 Analytical Results
3. Probe B-2 Analytical Results
4. Probe B-3 Analytical Results
5. Probe B-4 Analytical Results
6. White Salmon River Reference Samples

## FIGURES

1. Site Location Map
2. Site Map
3. Sediment Sample Locations

## APPENDICES

A. 1994 and 1997 Data
B. Correspondance and Approval Letters
C. Boring Logs
D. Chemical Laboratory Results
E. Physical Parameter Laboratory Results
F. Northwestern Aquatic Sciences Report


Copyright 2007 Kleinfelder, Inc.

## INTRODUCTION

This document presents the results of the sampling and analysis performed on sediment samples taken from Northwestern Lake at the Condit Hydroelectric Project in December 2006. The purpose of the sediment sampling was to determine whether the sediment meets established criteria for "open-water" release following the proposed removal of the Condit Dam. The Condit Hydroelectric Project is listed by the Federal Energy Regulatory Commission (FERC) as FERC Project No. 2342.

Northwestern Lake was formed in 1913 by the construction of Condit Dam. Since the construction of the dam and formation of the lake, the natural transport of sediments by the White Salmon River has been disrupted and the sediments previously transported to the Columbia River have been deposited in the slack water of Northwestern Lake. In 2006, the volume of sediment in the reservoir was estimated by others to be 2.3 million cubic yards.

The removal of Condit Dam would initiate the discharge of impounded sediment into the lower White Salmon River, a tributary of the Columbia River. The U.S. Army Corps of Engineers (USACOE), Portland District stated in a letter dated December 15, 2004, "Because the sediment will settle out within the river systems, the project would result in unconfined aquatic disposal of sediments into the Lower Columbia River system". Unconfined aquatic disposal of sediments is regulated by the USACOE. The USACOE, Portland District has developed a framework for evaluating sediments and the suitability of disposing those sediments in the Columbia River. This framework is presented in the *Dredged Material Evaluation Framework* (*DMEF*), *Lower Columbia River Management Area (November 1998)*. The *DMEF* provides a "Tiered Approach" to addressing the suitability of sediment for open-water disposal.

The sediments of Northwestern Lake were also investigated with a program of borings in 1994. The results of that investigation were presented in a report prepared by Squier Associates, entitled *"Condit Hydroelectric Project (FERC Project No. 2342) Northwestern Lake Sediment Characterization Study, White Salmon, Washington,"* and dated April 29, 1994 (hereafter referred to as the *1994 Condit Study*). An additional investigation of the sediments was also conducted by Squier Associates in 1997. The results of that additional investigation were presented in a report entitled *"Additional Geotechnical Exploration and Laboratory Testing at the Condit Hydroelectric Project (Contract No. P018780)"* and dated November 20, 1997. Analytical data from the 1994


Copyright 2007 Kleinfelder, Inc.

and 1997 reports are summarized in tables in Appendix A.

The data presented in this document is intended to satisfy the requirements of the USACOE in accordance with the applicable Tier IIB and Tier III testing guidelines as presented in the DMEF.


Copyright 2007 Kleinfelder, Inc.

# 2.0 PROJECT DESCRIPTION

The following sections describe the project location and description, the site ranking, and proposed dredging and sampling parameters.

## 2.1 PROJECT DESCRIPTION

The Condit Hydroelectric Project is located on the White Salmon River above Washington State Highway 14 on the border of Klickitat and Skamania Counties, approximately 3.3 miles upstream of the confluence of the White Salmon and Columbia Rivers (refer, Figure 1). The U.S. Geological Survey (USGS) topographic coordinates for the reservoir are Sections 2 and 3, Township 3 North, Range 10 East, Willamette Meridian (Sec. 2 and 3/T3N/R10E W.M.). The Condit Hydroelectric Project includes a 125-foot high concrete dam across the White Salmon River that diverts water into a 1-mile long woodstave flowline. The woodstave flowline conveys water to a surge tank, where the water is diverted into two pipes (penstocks) for delivery to two turbine generators in the powerhouse downstream of the dam.

The Condit Hydroelectric Project is owned and operated by PacifiCorp. It has been in operation since its construction in 1913. The name of the reservoir behind the dam is Northwestern Lake. Northwestern Lake is approximately 10,380 feet long with a surface area of approximately 92 acres (refer, Figure 2). The pool elevation listed on the USGS Northwestern Lake topographic map (1983 Edition) is 294 feet above mean sea level (msl). At the time of its construction, the depth of water in the reservoir ranged from approximately 15 to 110 feet. Since the construction of the dam, the reservoir has been collecting sediments brought in by the White Salmon River. As of 1990, the depth of water in the reservoir reportedly ranged from approximately 3 to 85 feet.

Following the construction of the dam, a sawmill was established on a bay on the east shore of the reservoir, immediately upstream of the dam. This sawmill remained in operation for several decades. The exact start up and shut down dates of the sawmill operation are unknown, except that it closed sometime prior to 1960. As part of the development of the *Work Plan for Sediment Characterization* in 1994, a site reconnaissance was conducted of the upland areas around Northwestern Lake and upstream along the White Salmon River. No industrial activity was observed. Land use consisted primarily of residential usage, with some orchards located on the eastern bank of the reservoir. A site reconnaissance of the upstream area of the White Salmon River


Copyright 2007 Kleinfelder, Inc.

was also conducted on March 2, 2005 to confirm that no new sources of possible environmental contaminants had been developed since 1994. This site reconnaissance identified a new rock quarry just east of Highway 141 (about 0.5 miles east of the northern end of the Lower Basin of Northwestern Lake). This new activity could be considered a new source for fine sediment, but not environmental contaminants. No new sources that would introduce contaminants were discovered during the March 2, 2005, reconnaissance as compared to the 1994 Condit Study.

## 2.2 PREVIOUS INVESTIGATIONS

A bathymetric survey of the reservoir was conducted in 1990 by PacifiCorp. Based upon a comparison of preconstruction and bathymetric topography, a channel profile, showing the existing water depths and sediment thicknesses, was developed by others. Based upon this document, the existing water depth within the reservoir appears to vary from approximately 3 to 85 feet, with an accumulated sediment thickness that varies from approximately 13 to 65 feet and an average thickness of approximately 31 feet. Additional bathymetry work was conducted in 1997 and 2006. The volume of these sediments has been estimated by others to be more than 2 million cubic yards (mcy).

In 1994, exploratory borings were drilled from a barge at 10 locations in Northwestern Lake. Eight of those locations were chosen using a random number selection process. The remaining two borings were located at the extreme upstream and downstream limits of barge access within the reservoir. As part of the *1994 Condit Study*, 45 geotechnical and 39 environmental samples were collected at various depths from the 10 sample points.

The *1994 Condit Study* sediment characterization testing program consisted of both geotechnical and environmental testing. The geotechnical testing included the following:

- soil classification,
- moisture content,
- grain-size analysis, and
- unit weight determination.

The environmental testing included a chemical analytical testing program for inorganic metals and organic compounds considered to be of concern by the Washington Department of Ecology at that time.

The 1994 and 1997 geotechnical testing results indicated that the reservoir sediments


Copyright 2007 Kleinfelder, Inc.

consist mainly of fine-grained materials in the downstream deep pool area (Lower Basin), and granular materials in the upstream area (Upper Reservoir). Located in the middle of the reservoir is a transition area where the upstream granular sediments have overridden the deep pool fine-grained sediments.

Our review of the environmental testing results and pertinent geological literature indicated that the detected metal concentrations (particularly mercury) were within expected background levels. However, remnant pesticides and herbicides were detected in the intermediate-aged sediments in the reservoir.

## 2.3 SITE RANKING

The *DMEF* Tier I protocol relies on existing information to conclude whether or not there is "enough information to determine if project meets exclusion ranking". Exclusionary Ranking is a Management Area Ranking that provides the least stringent characterization requirements. Projects from specific areas listed in the *DMEF* may be awarded the Exclusionary Ranking. Northwestern Lake currently is not one of the listed zones for Exclusionary Ranking. The Exclusionary Criteria also includes sediments that will be used for beach enhancement and sediments whose final placement will be the same underlying layer of rock (substrate) as was their substrate prior to being dredged. The Northwestern Lake sediments do not meet either criterion.

Exclusionary Ranking is also given to locations whose sediments have at least 80% sand retained on a number (No.) 230 sieve (i.e., less than 20% fines) and a Total Volatile Solids (TVS) content of less than 5.0 percent. Mechanical sieve analysis of the sediments collected from the upstream portion of Northwestern Lake (Upper Reservoir) demonstrates that those sediments meet the criterion of having less than 20% fines. The sediments collected from the downstream portion (Lower Basin) of Northwestern Lake do not meet the grain size criterion for Exclusionary Ranking.

Since the Lower Basin sediments did not meet the Exclusionary Ranking criterion, Kleinfelder next evaluated if the existing chemical data was suitable for comparison to the *DMEF* Tiers II and IIB criteria. Kleinfelder determined that the *DMEF's* Low Management Area Ranking was appropriate, since the sediment source location met the following criteria for Low Management Area Ranking:

- Low concentrations of chemicals of concern (COC),


Copyright 2007 Kleinfelder, Inc.

- Some locations of higher percentages of fines, and
- Few sources of potential contamination.

Kleinfelder submitted the Low Management Area Ranking for the Lower Basin of Northwestern Lake to the USACOE in a March 23, 2005 letter addressing the suitability of the *1994 Condit Study* for further work. The *Sampling and Analysis Plan* submitted to the USACOE for the work described in this document was based on the Low Management Area Ranking for the Lower Basin of Northwestern Lake.


Copyright 2007 Kleinfelder, Inc.

# 3.0 SITE EXPLORATION METHODOLOGY

The following sections discuss the various methodologies and protocols used to complete the field portion of this project.

## 3.1 SAMPLING AND ANALYSIS PLAN

Kleinfelder prepared a *Sampling and Analysis Plan* in August 2006 *(August 2006 SAP)* that was submitted to USACOE for review and approval. Supplemental information on specific sampling locations and direct-push probe methodology was submitted on September 15, 2006. The objective of the *August 2006 SAP* was to provide a systematic approach to collecting sediment characterization data that would supplement the existing data presented in the *1994 Condit Study.* The data collected during implementation of the *August 2006 SAP* is intended to satisfy the requirements of the USACOE in accordance with the applicable Tier IIB and Tier III testing guidelines as presented in the *DMEF*.

The *DMEF* allows for the creation of Dredged Material Management Units (DMMUs), which are subdivisions of a sediment-generating project site that represent sediments similar in nature. The Northwestern Lake sediments were segregated into two DMMUs: the lower basin sediments and the upstream gravels. The segregation into two DMMUs provides for one Low Management Area Ranking of homogenous sediments (Lower Basin) and one area of Exclusionary Ranking (Upper Reservoir). The homogeneity of the sediments is supported by the 1994 mechanical sieve data. PacifiCorp previously estimated that the sediment volume in Northwestern Lake was approximately 2.2 million cubic yards, based on measured accretion rates and the 1990 bathymetric survey. Using this information and the information presented in the *1994 Condit Study*, the Lower Basin was determined to include about 51% of the sediments or 1.122 mcy.

The *DMEF* requirement for a homogeneous Low Management Area Ranking DMMU is one sample per 100,000 cubic yards. Accordingly, 12 samples were proposed in the *August 2006 SAP* for 1.122 mcy of sediments. Subsequent bathymetry work conducted in August 2006 resulted in a sediment estimate of 2.3 mcy, which does not change the requirement for 12 samples.

USACOE approved the *August 2006 SAP* on October 16, 2006 in an electronic mail (e-mail) transmittal to PacifiCorp (refer, Appendix B). The Washington Department of Fish and Wildlife provided a *Hydraulic Project Approval* on November 13, 2006 that


Copyright 2007 Kleinfelder, Inc.

authorized the sampling program to proceed in Northwestern Lake. A copy of the *Hydraulic Project Approval* is also included in Appendix B. In addition, the Klickitat County Planning Department provided an *Exemption From Shoreline Management Act Substantial Development Permit Requirement* on November 29, 2006 (refer, Appendix B).

Prior to field work, Kleinfelder contacted the Utility Notification Center on December 6, 2006. A member of the Kleinfelder field staff also met with a representative of the City of White Salmon, Washington. Telephone clearance was provided by the other interested utilities.

### 3.2 Sampling Locations

Four sample locations (B-1 through B-4) were selected for the collection of sediment samples for *DMEF* evaluation (refer, Figure 3). Each sample location, illustrated on Figure 3, was selected to represent the thickest sediment column in an area representing approximately one quarter of the area of the Lower Basin. Three samples from different depth zones, typically at a minimum of 10-foot intervals, were obtained at each general sample location from three different depth zones in the boring, typically at a minimum of 10-foot intervals. Multiple holes were required for general sample locations B-2, B-3, and B-4 due to either poor recovery or inability of the barge to properly anchor due to the strength of the current at that time. The locations of the sample points were measured with a Global Positioning System (GPS) unit with a minimum of three satellite points for reference (refer to Table 1 and Boring Logs, Appendix C).

### 3.3 Direct-Push Exploration Methods

On December 13, 14, 15, and 18, 2006, the four probes were advanced using a remote-controlled, limited access track rig-mounted, direct-push drill rig mounted on a barge. The direct-push probe was owned and operated by Boart Longyear of Tualatin, Oregon. The direct push rig was secured to a barge owned and operated by Mark Marine Services, Inc., of Camas, Washington. The barge consisted of two U.S. Army surplus floating bridge sections. One of the floating bridge sections was modified with the addition of a "moon-pool" (hole for extending the drill line through the barge) and the removal of the pedestrian pathway side-wing extensions. The barge was moved between exploration points by a 24-foot aluminum sled with twin outboard motors and


Copyright 2007 Kleinfelder, Inc.

acnhored with 4 lead anchors extended from each corner of the barge.

Surface casing was used between the barge and the mudline for probes B-1 and B-4. Direct sampling (no surface casing) was used in probes B-2 and B-3. Down-hole exploration and sampling equipment was steam-cleaned prior to being introduced into each new exploratory sampling location. Water depths to the mudline (top of submerged sediments) at the probe locations were measured for each probe directly with steel tape. All probes were extended until refusal, which is assumed to indicate gravels or bedrock (refer, Appendix C).

Sediments were sampled continuously using a 2.0-inch diameter, 5-foot long, stainless steel core sampler fitted with new, clean, disposable, rigid acetate liners. The sampler was fitted with a new liner for each sample collected. Following sample collection, sample collection devices were thoroughly cleaned according to the following procedure:

- Wash with brush and trisodium phosphate or non-phosphate detergent
- Tap water rinse
- Distilled water rinse

A hydraulic hammer drove the core sampler to refusal or bedrock. Several additional probe holes were placed in the same general vicinity of probes B-3 and B-4 when refusal was encountered at a depth significantly shallower than expected (based on known bathymetry). Additional probes were also advanced when an insufficient volume of sediment was retreived from the sampler. Samples of the same relative depth from different boring locations for probe B-4 were composited to obtain adequate sample volume (refer, Table 1).

### 3.4 FIELD DOCUMENTATION

A Kleinfelder geologist was present on the barge during the advancement of the probes to maintain a log each of the exploration holes, collect the sediment samples, and provide technical assistance, as appropriate. The sample numbering convention used the name of the probe (B-3 or B-4, for example) and the depth below the water surface, in feet. Therefore sample B-3-27 is the sample collected from probe B-3 at a depth of 27 feet below the water surface, which is 11 feet into the sediment column. The boring logs are included in Appendix C. Each core section was inspected and described by the Kleinfelder Geologist on to the field notes and logs, which were maintained during


Copyright 2007 Kleinfelder, Inc.

sampling operations. Included in the field notes is the following information:

- Names of the sample equipment operator and person(s) collecting and logging the sediment samples
- Weather conditions
- Depth to top of sediments (mudline) of each sampling station as measured from a fixed point on the sampling barge
- Reservoir elevation
- Date and time of collection of each core sample
- The sample station number
- Descriptions of cores (including the following)
    - Depth interval of each core section as measured from mudline
    - Percent sample recovery
    - Physical sediment description in accordance with the U.S. Soil Classification System, ASTM D 2487 (includes sediment type, density/consistency of sediment, color)
    - Odor
    - Visual stratifications and lenses
    - Vegetation
    - Debris
    - Biological activity (e.g., detritus, shells, tubes, bioturbation, live or dead organisms)
    - Presence of oil sheen
    - Any other distinguishing characteristics or features
- Any deviation from the approved sampling plan

Three duplicate samples were collected during the field activities for quality assurance and quality control (QA/QC) purposes. The duplicate samples were identified as DUPE-1 (collected on December 14, 2006), DUPE-2 (collected on December 15, 2006), and Dup-3 (collected on December 18, 2006). The duplicate samples were obtained for the samples collected from probe B-3 at 27 feet from the reservoir surface (sample B-3-27) or 11 feet below the sediment surface (mudline), probe B-2 at 30 feet from the reservoir surface (sample B-2-30) or 10 feet below the mudline, and probe B-1 at 85 feet below the reservoir surface (sample B-1-85) or 14 feet below the mudline. Additional clarification of the duplicate samples is included in Table 1.

The sediment cores were immediately placed in properly labeled, laboratory-supplied,


Copyright 2007 Kleinfelder, Inc.

glass jars with teflon-lined lids, and placed on ice. Sediment samples collected for semivolatile organics testing were placed into two separate 4-ounce, laboratory-supplied containers immediately upon removing the first sediment sample from each sample point. The samples for semivolatile analysis were completely filled with the sediment sample, with no headspace allowed. The two sediment samples were collected to add greater certainty that an acceptable sample with no headspace was submitted to the laboratory for analysis. To minimize headspace in the containers, sample containers were filled in one of two ways. If there was an adequate amount of water in the sediment, the container was filled to overflowing so that a convex meniscus formed at the top. Once sealed, the container was inverted to verify the seal by demonstrating the absence of air bubbles. If there was little or no water in the sediment, containers were filled as tightly as possible, eliminating obvious air pockets. With the cap liner's Teflon side down, the cap was carefully placed on the opening of the container, displacing any excess material.

The sampling containers were labeled with: the project name, sample identification, date, and time; and referenced by entry onto the field logs. New, disposable nitrile gloves were worn and replaced for each sample collected.

### 3.5 Sample Transport and Chain-of-Custody Procedures

Following sample collection, samples were packed on ice in coolers. A signed and dated chain-of-custody seal was placed on all coolers prior to removal from the site. The chain-of-custody records were maintained throughout all sampling activities and accompanied samples during shipment to the laboratory. Information tracked by the chain-of-custody records included: sample identification number, date and time of sample receipt, and analytical parameters requested.

The coolers were delivered to Columbia Analytical Services in Kelso, Washington for chemical analysis.


Copyright 2007 Kleinfelder, Inc.

# 4.0 LABORATORY CHEMICAL AND PHYSICAL ANALYSES

Each sediment sample was analyzed for the physical and chemical parameters included in Table 8-1 of the *DMEF* and described below. The sediment testing methods conform with the methods listed in Table 8-2 of the *DMEF*, unless an updated analytical method has been developed since the *DMEF* was published in 1998. The *DMEF* required method reporting limits (MRLs) and screening levels were provided to the analytical laboratory, so that they could utilize the appropriate MRLs and method detection limits (MDLs).

## 4.1 CHEMICAL LABORATORY ANALYSES

The chemical analytical testing included the following set of contaminants of concern (COCs) and other analytical parameters.

- total volatile solids using U.S. Environmental Protection Agency (EPA) Method 160.4M;
- total organic carbon using American Society for Testing and Materials (ASTM) D 4129-98M;
- total sulfides using Standard Method (SM) 9030M;
- ammonia using EPA Method 350.1M;
- organochlorine pesticides by EPA Method 8081A;
- polychlorinated biphenyls by EPA Method 8082;
- antimony, arsenic, cadmium, chromium, copper, lead, nickel, silver, and zinc by EPA Method 200.8; and
- semivolatile organic compounds (including polynuclear aromatic hydrocarbons, phthalates, phenols, and the other *DMEF*-required semivolatile organic compounds) using EPA Method 8270.

The sediments were not tested for the presence of butyl tins (also referred to as organotins). The Tier I evaluation demonstrated that butyl tins are not a concern for Northwestern Lake. This determination is based on the known historical activities in the vicinity and the known processes that have historically used butyl tins. Specifically, tributyl tin (the contaminant of concern) is an additive for marine paint to control the growth of marine organisms on ocean-going ship hulls and is not expected to occur in a freshwater lake.


Copyright 2007 Kleinfelder, Inc.

## 4.2 GEOTECHNICAL LABORATORY ANALYSES

Geotechnical analytical protocols for the physical parameters of the sediments were also conducted according to the recommendations presented in the *DMEF*. Specifically, particle size was evaluated by ASTM Method D-422, using the following sieve sizes: 5-inch; 2.5-inch; 1.25-inch; 0.63-inch; 0.31-inch; and numbers 5, 10, 18, 35, 60, 120, and 230. The fine-grained fraction (finer than No. 230 sieve) was classified using hydrometer analysis. The physical parameter analyses were conducted by Kleinfelder's geotechnical laboratory in Beaverton, Oregon.

Hydrogen peroxide was not used in the preparation for grain-size analysis. Sediment classification designations were made in accordance with USCS and ASTM D 2487. Water content was evaluated in accordance with ASTM D 2216.

## 4.3 TIER III BIOLOGICAL TESTING

Mercury was identified above the bioaccumulation screening level listed in the *DMEF* in one sample (sample B1-72); therefore Tier III Biological Testing (bioassay) was conducted. The Tier III Biological Testing was conducted by Northwestern Aquatic Sciences of Newport, Oregon. To satisfy the *DMEF* requirements, the Freshwater Bioassays were conducted with the amphipod *Hyallella azteca* and the midge *Chironomus tentans*. The amphipods are small (about 0.25-inch) aquatic crustaceans. Midges are tiny (about 0.05-inch) 2-winged flying insects. The testing protocol for the *Hyallella azteca* and *Chironomous tentans* testing was based on EPA Methods 100.1 and 100.2, respectively, and ASTM Method E 1706-00 (for both).

Bioassays were conducted on one sample representative of the Northwestern Lake sediments and a reference sample. The Northwestern Lake sediment sample for the Tier III biological sampling was developed by obtaining a discrete 8-ounce jar at each sampling interval during the field activities. A single composite sample was then created using the twelve 8-ounce jars collected from probes B-1 through B-4. The reference sample was obtained at the mouth of the White Salmon River near the Columbia River, at the Underwood In Lieu Fishing Access Site managed by the U.S. Department of Interior's Bureau of Indian Affairs (BIA). The letter granting permission for sampling access from the Northwest Regional Office of the BIA is included in Appendix B.

In addition to the bioassay, five replicate samples were "referenced" for total solids,


Copyright 2007 Kleinfelder, Inc.

TVS, total organic carbon, ammonia, sulfides, and grain size following *DMEF* guidelines. Replicate samples are samples collected from the same medium at the same time. The samples would be considered duplicates if only two were collected. The replicate reference samples and reference bioassay sample were identified with the prefix "B5".


Copyright 2007 Kleinfelder, Inc.

# 5.0 CHEMICAL AND PHYSICAL FINDINGS

As stated in the previous section, each sediment sample was analyzed for the physical and chemical parameters outlined in the *DMEF.* The results of those analyses are discussed below.

## 5.1 RESULTS OF CHEMICAL ANALYSES

Columbia Analytical Services, Inc., of Kelso, Washington provided the chemical analyses for this sediment characterization. Their complete laboratory package includes analytical results, various QA/QC documentations, calibration sheets, and work sheets. The complete package is 4,133 pages in length, which conforms with their Tier III Validation Package, and is included on the attached compact disc (CD). For brevity, we have included only the Case Narratives, chain-of-custody forms, laboratory results, and key QA/QC documents in Appendix D.

Sample results are also presented in Tables 2, 3, 4, 5, and 6 for the probes B-1, B-2, B-3, B-4, and the reference sample (B5), respectively. In Tables 2 through 5, the sample concentrations are compared to the published *DMEF* Screening Levels, Bioaccumulation (Bioaccum) Trigger Levels, and Maximum Levels. In addition, an average concentration for each analyte of the Northwestern Lake sediments is also presented in the Tables 2 through 6. The tabulated concentrations are bolded when concentration levels exceed screening levels. Notable detected concentrations include the following:

- Mercury was detected in 8 of the 12 sample points at concentrations above the *DMEF* Screening Level (0.41 mg/Kg) and in one sample above the Bioaccumulation Trigger Level (1.5 mg/Kg).

- The organochlorine 4,4'-dichlorodiphenyldichloroethylene (4,4'-DDE) was detected in 7 of the 12 sample points, but in only 2 of the sample points at a concentration above the *DMEF* Screening Level (0.0069 mg/Kg). Specifically, 4,4'-DDE concentrations in sample B-2-30 (collected 10 feet below the mudline) as well as its duplicate (DUPE-2) and the duplicate sample (DUPE-1) collected from probe B-3 at 11 feet below the sediment surface exceeded the *DMEF* Screening Level. No concentrations of 4,4'-DDE exceeded the Bioaccumulation Trigger Level.

- The organochlorine pesticide 1,1-dichloro-2,2-bis(p-chlorophenyl)ethane (4,4'-DDD) was also detected in 6 of the 12 sample points, but in only one sample was the concentration above *DMEF* Screening Levels (sample B-3-27). No concentrations of 4,4'-DDD exceeded the Bioaccumulation Trigger Level.


Copyright 2007 Kleinfelder, Inc.

- The organochlorine pesticides 4,4'-DDD and 4,4'-DDE are both discrete products and degradation daughters of dichloro diphenyl trichloroethane (4,4'-DDT). The organochlorine pesticide 4,4-DDT was also detected in 7 of the 12 sample locations. However, no concentrations of 4,4'-DDT exceeded the *DMEF* Screening Level.

- The organochlorine pesticides dieldrin and aldrin were also detected in one of the 12 sample points (B1-106). In addition, dieldrin was detected in the duplicate sample collected at sample point B-2-30 (DUPE-2). The detected concentrations of dieldrin and aldrin did not exceed the *DMEF* Screening Levels for those two compounds.

- The analytical results indicated that no analytes were detected at concentrations exceeding *DMEF* Maximum Levels.

Most analytes were not detected at or above the laboratory's MRLs. For those samples, the concentrations listed in Tables 2 through 5 are shown as less than (<) the MRL. For those tests where the laboratory's MRLs exceeded the *DMEF*-recommended MRLs, the laboratory MDLs are presented in Tables 2 through 5.

### 5.2 RESULTS OF PHYSICAL ANALYSES

Particle size was evaluated by ASTM Method D-422 and water content was evaluated in accordance with ASTM D 2216. The results of the physical analyses are incorporated into the boring logs in Appendix C. The full results of the sediment analysis are included in Appendix E.

The results indicate that over 20% of the sediment in the samples passed the number 230 sieve, which allows particles less than 0.063 millimeter (mm) to pass. Since sand or coarser particles are defined as being greater than 0.0625 mm, this physical analysis result confirms that the exclusionary management ranking was not warranted. Of the 17 sediment samples (12 project samples and 5 replicate samples) evaluated for particle size only three had less than 95% passing the number 230 sieve, which indicates that only three samples had a sand percentage greater than 5%. All three of these samples were from probe B-4, the furthest upstream of the sample locations. The sample collected from probe B-4 at 23 feet into the sediment column (B-4-35) had 14% passing the number 230 sieve and 96% passing the 2 mm sieve, which indicates sand. Similarly, sample B-4-15 (collected 3 feet below the sediment surface) had 55 % passing the 230 sieve and 99% passing the 2 mm sieve. Only the sample collected from 12 feet below the sediment surface from probe B-4 (sample B-4-24) had some gravel with 77% passing the 1-inch sieve, 66% passing the 2 mm sieve, and 20% passing the 230 sieve.


Copyright 2007 Kleinfelder, Inc.

Hydrometer analysis was completed on the fines for the samples collected at 35 feet below the sediment surface from probe B-1 (sample B-1-106), 10 feet below the sediment surface from probe B-2 (sample B-2-30), and 19 feet below the sediment surface from probe B-3 (sample B-3-35). Evaluation of the clay fraction was completed using ASTM D 4318. Hydrometer testing was also completed for the five replicate samples, which all had 100% passing the 230 sieve. The hydrometer testing indicated that those samples were clayey silts, with about 20 to 15% clay particles.

### 5.3 BIOASSAY ANALYSIS METHODS

Based on the guidelines in the *DMEF*, the bioassay analyses were required due to a single mercury concentration of 2.03 milligrams per kilogram (mg/Kg) detected in probe B-1 collected at 72 feet depth or 1 foot below mudline. The concentration of 2.03 mg/Kg exceeds the *DMEF* Trigger for bioaccumualtive effects of 1.5 mg/Kg. Northwestern Aquatic Sciences' bioassay report is included in Appendix F. Details of the mortality rates and observations are included in the report. In summary, Northwestern Aquatic Sciences determined that the Northwestern Lake sediment "did not meet the criteria for test failure" and "was not considered a failure". In other words, the sediments passed the test and did not adversely affect the life-cycle of the test organisms.

### 5.4 QUALITY ASSURANCE AND QUALITY CONTROL

Columbia Analytical Services has provided a Case Narrative for each of the three lab packages that they have submitted. The Case Narratives confirm that chain-of-custody protocols were followed and that proper sample temperatures were maintained.

The Case Narratives detail anomalies and notable incidences that occurred during the analytical testing. No anomalies are noted for the third data package which included the testing of the five replicate samples for the bioassay testing. The anomalies described in the Case Narratives for the other two data packages include some Matrix Spike Recoveries (antimony and some organochlorine pesticides), calibration issues (4,4'-DDT), and occasional raised reporting limits due to matrix interference. The complete Case Narratives are included in Appendix D. Columbia Analytical Services has reported that based on their QA/QC, the reported concentrations of organochlorine pesticides may be reported on a high bias.

It appears that with one exception, all samples for physical and chemical analysis were analyzed within the holding times shown in *Table 7-1 of the DMEF*. The exception, as


Copyright 2007 Kleinfelder, Inc.

documented in the Case Narrative, is the reanalysis of Dup-3 and B1-85 by EPA Method 8270C. Apparently, the re-extraction was conducted 32 days after the recommended holding time.

Kleinfelder's QA/QC review included an evaluations of both the laboratory and field QA/QC procedures and results. Relative Percent Differences (RPDs) for the field duplicate samples were also calculated and are also included in Appendix D.

The RPDs calculated from the field duplicates range from 0.0 to 123.9 percent (%), indicating some results were outside of control limits (25% being the default). Specifically, 23 out of 59 calculated RPDs were greater than 25%. Please note this ratio does not include all "no-detects". Most of the analytes tested for in this evaluation were not detected. Duplicate analyses that report no detectable concentrations would provide a 0.0% RPD. Interestingly, one of the tests for 4,4'-DDE that produced a high RPD (96.3% for B-3-27/DUPE-1 pair) also produced the low RPD (0.0% for the B-2-30/DUPE-2 pair).

Our review of laboratory data indicates that the paired concentrations resulting in the reported high RPDs typically were relatively low concentrations. Minor differences in considerably low concentrations near the method reporting limits can easily result in notable RPDs and are generally acceptable.

Except for some metals (chromium, lead, and silver), the laboratory reported no detectable target analytes in the method blanks. For those metals the concentrations reported for the blanks were greater than the MDL but less than the MRL.

Based on the QA/QC review, the analytical data appear to be acceptable.


Copyright 2007 Kleinfelder, Inc.

## 6.0 CONCLUSIONS

Sediment sampling and analysis for environmental and physical characteristics of sediments located in Northwestern Lake has been conducted according to guidelines in the *DMEF*. The following conclusions are based on the information presented in this report.

- Chemical analysis of sediments in Northwestern Lake indicates that most contaminants of concern (COCs) were not present in the sediments. Those COCs that were detected were typically (with three exceptions, discussed below) present at relatively low concentrations of contaminants of concern compared to the *DMEF* Screening Levels (refer, Tables 2 through 5).

- Mercury was detected above the *DMEF* Screening Level in 11 of the 15 sediment samples. Mercury is a native element commonly found in rocks associated with Cascade Range volcanic activity. The White Salmon River receives direct runoff from nearby Mount Adams, a Cascades Range volcano. According to U.S. Geological Services (USGS) Professional Paper 1270, background mercury concentrations are considered to be between 0.32 mg/Kg and 2.0 mg/Kg in the White Salmon River area. The range of mercury concentrations encountered in the 2006 sediment samples is from 0.020 mg/Kg to 2.030 mg/Kg. In 1994, the mercury concentrations ranged from < 0.025 mg/Kg to 1.1 mg/Kg. Concentrations above 0.41 mg/Kg exceed the *DMEF* Screening Level for mercury and the one concentration greater than 1.5 mg/Kg exceeded the *DMEF* Bioaccumulation Trigger Level. Mercury was not detected above the *DMEF* Maximum Level of 2.3 mg/Kg.

- Two organochlorine pesticides (4,4'-DDD and 4,4'DDE) were detected in 10 of the 15 samples at concentrations ranging from 0.0017 to 0.019 mg/Kg. Concentrations greater than 0.0069 mg/Kg exceed the *DMEF* Screening Levels, but this range does not exceed the *DMEF* Bioaccumulation Trigger Level of 0.05 mg/Kg. The organochlorine pesticides were detected about 10 feet below the mudline in probes B-2 and B-3. It is important to note that our QA review found that the results of the organochlorine analyses may be biased high. The organochlorine pesticides 4,4'-DDD and 4,4'-DDE are both discrete products and degradation daughters of 4,4'-DDT. Organochlorine pesticides are known to have been used by the agricultural industry. Orchards exist near the east side of Northwestern Lake. Information on the use of organochlorine pesticides in the White Salmon River watershed north of


Copyright 2007 Kleinfelder, Inc.

Northwestern Lake is sparse. The general use of DDT was curtailed in 1973.

- Chemical analysis did not indicate analytes above *DMEF* Maximum Levels. One sample had a mercury concentration detected above the *DMEF* Bioaccumulation Trigger Level, which initiated the bioassay testing. The bioassay testing indicates that the sediments will not adversely impact the biota of the Columbia River system.

- The physical parameter testing indicates that the sediments in the Lower Basin are predominantly fine grained. This testing confirmed the appropriateness of not applying exclusionary criteria.


Copyright 2007 Kleinfelder, Inc.

## 7.0 REFERENCES

Squier Associates, 1994. *Condit Hydroelectric Project (FERC Project No. 2342) Northwestern Lake Sediment Characterization Study, White Salmon, Washington.*

Squier Associates, 1997. *Additional Geotechnical Exploration and Laboratory Testing at the Condit Hydroelectric Project (Contract No. P018780).*

Squier | Kleinfelder, 2005. *Suitability Evaluation of Northwestern Lake Sediment Characterization Study, Squier Associates, April 1994.*

United States Army Corps of Engineers (USACOE), 1998. *Dredged Material Evaluation Framework, Lower Columbia River Management Area, November 1998.*

USACOE, 2006. *Draft Letter to PacifiCorp Hydro Licensing / Hydro Resources, April 12, 2006.*

United States Geological Survey (USGS), 1982. *Element Concentrations Soils and Other Surficial Materials Conterminous United States*, USGS Professional Paper 1270.


Copyright 2007 Kleinfelder, Inc.

## 8.0 LIMITATIONS

We have prepared this report for use by PacifiCorp, their authorized agents, and regulatory agencies for specific application to this site. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, Kleinfelder should be notified for review of the recommendations of this report, if necessary.

This report may be used only by PacifiCorp, their authorized agents, and regulatory agencies and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on- and off-site), or other factors may change over time and could materially affect our recommended sampling scheme. The *DMEF* provides for a period of 7 years as the length of time that an analytical set may be considered to validly represent a Low Management Ranking Dredged Material Management Unit.

Therefore, this report should not be relied upon after 7 years from its date of issue. Kleinfelder should be notified if use of the report is delayed by more than 7 years from the date of this report so that a review of site conditions can be made, and recommendations revised, if appropriate.

Any party other than PacifiCorp, their authorized agents, and regulatory agencies who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the clients or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

No warranty, expressed or implied, is made.


Copyright 2007 Kleinfelder, Inc.

# Important Information About Your Geoenvironmental Report

Geoenvironmental studies are commissioned to gain information about environmental conditions on and beneath the surface of a site. The more comprehensive the study, the more reliable the assessment is likely to be. But remember: Any such assessment is to a greater or lesser extent based on professional opinions about conditions that cannot be seen or tested. Accordingly, no matter how many data are developed, risks created by unanticipated conditions will always remain. *Have realistic expectations.* Work with your geoenvironmental consultant to manage known and unknown risks. Part of that process should already have been accomplished, through the risk allocation provisions you and your geoenvironmental professional discussed and included in your contract's general terms and conditions. This document is intended to explain some of the concepts that may be included in your agreement, and to pass along information and suggestions to help you manage your risk.

## Beware of Change; Keep Your Geoenvironmental Professional Advised

The design of a geoenvironmental study considers a variety of factors that are subject to change. Changes can undermine the applicability of a report's findings, conclusions, and recommendations. *Advise your geoenvironmental professional about any changes you become aware of.* Geoenvironmental professionals cannot accept responsibility or liability for problems that occur because a report fails to consider conditions that did not exist when the study was designed. Ask your geoenvironmental professional about the types of changes you should be particularly alert to. Some of the most common include:

- modification of the proposed development or ownership group,
- sale or other property transfer,
- replacement of or additions to the financing entity,
- amendment of existing regulations or introduction of new ones, or
- changes in the use or condition of adjacent property.

Should you become aware of any change, *do not rely on a geoenvironmental report.* Advise your geoenvironmental professional immediately; follow the professional's advice.

## Recognize the Impact of Time

A geoenvironmental professional's findings, recommendations, and conclusions cannot remain valid indefinitely. The more time that passes, the more likely it is that important latent changes will occur. *Do not rely on a geoenvironmental report if too much time has elapsed since it was completed.* Ask your environmental professional to define "too much time." In the case of Phase I Environmental Site Assessments (ESAs), for example, more than 180 days after submission is generally considered "too much."

## Prepare To Deal with Unanticipated Conditions

The findings, recommendations, and conclusions of a Phase I ESA report typically are based on a review of historical information, interviews, a site "walkover," and other forms of noninvasive research. When site subsurface conditions are not sampled in any way, the risk of unanticipated conditions is higher than it would otherwise be.

While borings, installation of monitoring wells, and similar invasive test methods can help reduce the risk of unanticipated conditions, *do not overvalue the effectiveness of testing.* Testing provides information about actual conditions only at the precise locations where samples are taken, and only when they are taken. Your geoenvironmental professional has applied that specific information to develop a general opinion about environmental conditions. *Actual conditions in areas not sampled may differ (sometimes sharply) from those predicted in a report.* For example, a site may contain an unregistered underground storage tank that shows no surface trace of its existence. *Even conditions in areas that were tested can change,* sometimes suddenly, due to any number of events, not the least of which include occurrences at

adjacent sites. Recognize, too, that *even some conditions in tested areas may go undiscovered,* because the tests or analytical methods used were designed to detect only those conditions assumed to exist.

Manage your risks by retaining your geoenvironmental professional to work with you as the project proceeds. Establish a contingency fund or other means to enable your geoenvironmental professional to respond rapidly, in order to limit the impact of unforeseen conditions. And to help prevent any misunderstanding, identify those empowered to authorize changes and the administrative procedures that should be followed.

## Do Not Permit Any Other Party To Rely on the Report

Geoenvironmental professionals design their studies and prepare their reports to meet the specific needs of the clients who retain them, in light of the risk management methods that the client and geoenvironmental professional agree to, and the statutory, regulatory, or other requirements that apply. The study designed for a developer may differ sharply from one designed for a lender, insurer, public agency...or even another developer. *Unless the report specifically states otherwise, it was developed for you and only you.* Do not unilaterally permit any other party to rely on it. The report and the study underlying it may not be adequate for another party's needs, and you could be held liable for shortcomings your geoenvironmental professional was powerless to prevent or anticipate. Inform your geoenvironmental professional when you know or expect that someone else—a third-party—will want to use or rely on the report. *Do not permit third-party use or reliance until you first confer with the geoenvironmental professional who prepared the report.* Additional testing, analysis, or study may be required and, in any event, appropriate terms and conditions should be agreed to so both you and your geoenvironmental professional are protected from third-party risks. *Any party who relies on a geoenvironmental report without the express written permission of the professional who prepared it and the client for whom it was prepared may be solely liable for any problems that arise.*

## Avoid Misinterpretation of the Report

Design professionals and other parties may want to rely on the report in developing plans and specifications. They need to be advised, in writing, that their needs may not have been considered when the study's scope was developed, and, even if their needs were considered, they might misinterpret geoenvironmental findings, conclusions, and recommendations. *Commission your geoenvironmental professional to explain pertinent elements of the report to others who are permitted to rely on it, and to review any plans, specifications or other instruments of professional service that incorporate any of the report's findings, conclusions, or recommendations.* Your geoenvironmental professional has the best understanding of the issues involved, including the fundamental assumptions that underpinned the study's scope.

## Give Contractors Access to the Report

Reduce the risk of delays, claims, and disputes by giving contractors access to the full report, *providing that it is accompanied by a letter of transmittal that can protect you* by making it unquestionably clear that: 1) the study was not conducted and the report was not prepared for purposes of bid development, and 2) the findings, conclusions, and recommendations included in the report are based on a variety of opinions, inferences, and assumptions and are subject to interpretation. Use the letter to also advise contractors to consult with your geoenvironmental professional to obtain clarifications, interpretations, and guidance (a fee may be required for this service), and that—in any event—they should conduct additional studies to obtain the specific type and extent of information each prefers for preparing a bid or cost estimate. Providing access to the full report, with the appropriate caveats, helps prevent formation of adversarial attitudes and claims of concealed or differing conditions. If a contractor elects to ignore the warnings and advice in the letter of transmittal, it would do so at its own risk. Your geoenvironmental professional should be able to help you prepare an effective letter.

## Do Not Separate Documentation from the Report

Geoenvironmental reports often include supplemental documentation, such as maps and copies of regulatory files, permits, registrations, citations, and correspondence with regulatory agencies. If subsurface explorations were performed, the report may contain final boring logs and copies of laboratory data. If remediation activities occurred on site, the report may include: copies of daily field reports; waste manifests; and information about the disturbance of subsurface materials, the type and thickness of any fill placed on site, and fill placement practices, among other types of documentation. *Do not separate supplemental documentation from the report. Do not, and do not permit any other party to redraw or modify any of the supplemental documentation for incorporation into other professionals' instruments of service.*

## Understand the Role of Standards

Unless they are incorporated into statutes or regulations, standard practices and standard guides developed by the American Society for Testing and Materials (ASTM) and other recognized standards-developing organizations (SDOs) are little more than aspirational methods agreed to by a consensus of a committee. The committees that develop standards may not comprise those best-qualified to establish methods and, no matter what, no standard method can possibly consider the infinite client- and project-specific variables that fly in the face of the theoretical "standard conditions" to which standard practices and standard guides apply. In fact, these variables can be so pronounced that geoenvironmental professionals who comply with every directive of an ASTM or other standard procedure could run afoul of local custom and practice, thus violating the standard of care.

Accordingly, when geoenvironmental professionals indicate in their reports that they have performed a service "in general compliance" with one standard or another, it means they have applied professional judgement in creating and implementing a scope of service designed for the specific client and project involved, and which follows some of the general precepts laid out in the referenced standard. To the extent that a report indicates "general compliance" with a standard, you may wish to speak with your geoenvironmental professional to learn more about what was and was not done. *Do not assume a given standard was followed to the letter.* Research indicates that that seldom is the case.

### Realize That Recommendations May Not Be Final

The technical recommendations included in a geoenvironmental report are based on assumptions about actual conditions, and so are preliminary or tentative. Final recommendations can be prepared only by observing actual conditions as they are exposed. For that reason, you should retain the geoenvironmental professional of record to observe construction and/or remediation activities on site, to permit rapid response to unanticipated conditions. *The geoenvironmental professional who prepared the report cannot assume responsibility or liability for the report's recommendations if that professional is not retained to observe relevant site operations.*

### Understand That Geotechnical Issues Have Not Been Addressed

Unless geotechnical engineering was specifically included in the scope of professional service, a report is not likely to relate any findings, conclusions, or recommendations about the suitability of subsurface materials for construction purposes, especially when site remediation has been accomplished through the removal, replacement, encapsulation, or chemical treatment of on-site soils. The equipment, techniques, and testing used by geotechnical engineers differ markedly from those used by geoenvironmental professionals; their education, training, and experience are also significantly different. If you plan to build on the subject site, but have not yet had a geotechnical engineering study conducted, your geoenvironmental professional should be able to provide guidance about the next steps you should take. The same firm may provide the services you need.

### Read Responsibility Provisions Closely

Geoenvironmental studies cannot be exact; they are based on professional judgement and opinion. Nonetheless, some clients, contractors, and others assume geoenvironmental reports are or certainly should be unerringly precise. Such assumptions have created unrealistic expectations that have led to wholly unwarranted claims and disputes. To help prevent such problems, geoenvironmental professionals have developed a number of report provisions and contract terms that explain who is responsible for what, and how risks are to be allocated. Some people mistake these for "exculpatory clauses," that is, provisions whose purpose is to transfer one party's rightful responsibilities and liabilities to someone else. Read the responsibility provisions included in a report and in the contract you and your geoenvironmental professional agreed to. *Responsibility provisions are not "boilerplate."* They are important.

### Rely on Your Geoenvironmental Professional for Additional Assistance

Membership in ASFE exposes geoenvironmental professionals to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a geoenvironmental project. Confer with your ASFE-member geoenvironmental professional for more information.

ASFE

THE BEST PEOPLE ON EARTH

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

*Copyright 2000 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only ASFE Member Firms may insert this document in their reports.*

IIGR06055.0M

**TABLE 1**
**PROBE LOCATIONS AND SAMPLE INFORMATION**
**CONDIT DAM HYDROELECTRIC PROJECT**
**NORTHWESTERN LAKE SEDIMENT EVALUATION**
**WHITE SALMON, WASHINGTON**

| Boring | Latitude | Longitude | Northing | Easting | Sample | Sample Depth Range | | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | feet below water surface | feet below sediment surface | |
| B-1 | 45.76825 | 121.53781 | 160342.884 | 1375567.890 | B1-72 | 72 - 73 | 1 - 2 | |
| | | | | | B1-85 | 85 - 87 | 14 - 16 | |
| | | | | | DUP-3 | 85 - 87 | 14 - 16 | |
| | | | | | B1-106 | 106 - 108 | 35 - 37 | |
| B-2a | Not Recorded | Not Recorded | Not Recorded | Not Recorded | No Sample | No Recovery | No Recovery | |
| B-2b | Not Recorded | Not Recorded | Not Recorded | Not Recorded | No Sample | No Recovery | No Recovery | |
| B-2c | 45.77139 | 121.53683 | 161484.527 | 1375833.022 | B2-20 | 19 - 20 | 0 - 1 | |
| | | | | | B2-30 | 30 - 32 | 10 - 12 | |
| | | | | | DUP-2 | 30 - 32 | 10 - 12 | |
| | | | | | B2-40 | 38 - 40 | 20 - 22 | |
| B-3a | 45.772587 | 121.533767 | 161910.728 | 1376620.330 | B3-27 | 26 - 29 | 11 - 14 | |
| | | | | | DUP-1 | 26 - 29 | 11 - 14 | |
| B-3b | Not Recorded | Not Recorded | Not Recorded | Not Recorded | No Sample | No Recovery | No Recovery | |
| B-3c | Not Recorded | Not Recorded | Not Recorded | Not Recorded | No Sample | No Recovery | No Recovery | |
| B-3d | 45.77237 | 121.53389 | 161833.1193 | 1376587.069 | B-3-16 | 16 - 18 | 0 - 2 | River current too strong for barge positioning to stabilize. |
| B-3e | Not Recorded | Not Recorded | Not Recorded | Not Recorded | B-3-35 | 33 - 35 | 19 - 21 | River current too strong for barge positioning to stabilize. |
| B-4a | 45.77422 | 121.53046 | 162495.124 | 1377471.941 | No Sample | No Recovery | No Recovery | |
| B-4b | 45.77414 | 121.53024 | 162465.559 | 1377527.376 | B-4-24 | 24 - 25 | 12 - 13 | Subsequent attempt in same location as B-4a |
| B-4c | 45.77401 | 121.52978 | 162417.515 | 1377645.637 | B-4-24 | 24 - 25 | 12 - 13 | Subsequent attempt in same location as B-4a |
| B-4d | Not Recorded | Not Recorded | Not Recorded | Not Recorded | No Sample | No Recovery | No Recovery | |
| B-4e | 45.77469 | 121.52949 | 162609.451 | 1377721.681 | B-4-24 | 24 - 25 | 12 - 13 | Composite of 4b,4c and 4e |
| | | | | | B-4-35 | 26 - 35 | 23 - 32 | |
| B-4f | 45.77481 | 121.52957 | 162653.743 | 1377701.839 | B-4-15 | 14 - 15 | 3 - 4 | |

Northings and Eastings based on Washington State Plane Coordinate System

H:\Environmental\53886 - Condit\Report pieces\sample locals
Copyright 2007 Kleinfelder

# TABLE 2
# PROBE B-1 ANALYTICAL RESULTS
# CONDIT DAM HYDROELECTRIC PROJECT
# NORTHWESTERN LAKE SEDIMENT EVALUATION

| | Boring | B-1 | | | | Average (B1, B2, B3, B4) | Dredged Material Evaluation Framework [1] | | |
|---|---|---|---|---|---|---|---|---|---|
| | Sample # | B1-72 | B1-85 | B1-106 | Dup-3 | | Screening Levels | Bioaccum Trigger Levels | Maximum Levels |
| | Depth Below Water Surface (feet) | 72 | 85 | 106 | 85 | | | | |
| | Depth Below Sediment Surface (feet) | 1 | 14 | 35 | 14 | | | | |
| | Date | 18-Dec-06 | 18-Dec-06 | 18-Dec-06 | 18-Dec-06 | | | | |
| General | Total Solids | 48.0 | 59.0 | 69.4 | 56.2 | 60.0 | --- | --- | --- |
| | Total Volatile Solids | 4.01 | 9.34 | 7.33 | 6.32 | 5.3 | --- | --- | --- |
| | Total Organic Carbons | 1.05 | 2.57 | 1.68 | 2.82 | 1.4 | --- | --- | --- |
| | Ammonia | 2.88 | 244 | 154 | 181 | 103 | --- | --- | --- |
| | Sulfide | <0.5 | 22.5 | 103 | 95.8 | 69.9 | --- | --- | --- |
| Pesticides | Lindane | <0.0010 | <0.0010 | <0.00099 | <0.0010 | <0.001 | 0.01 | --- | --- |
| | Heptachlor | <0.0010 | <0.0010 | <0.00099 | <0.0010 | <0.001 | 0.01 | 0.037 | --- |
| | Aldrin | <0.0010 | <0.0010 | 0.00037 | <0.0010 | 0.00037 | 0.01 | 0.037 | --- |
| | Diedrin | <0.0010 | <0.0010 | 0.00020 | <0.0010 | 0.00032 | 0.01 | 0.037 | --- |
| | 4,4'-DDE | <0.0010 | 0.0065 | 0.0013 | 0.0055 | 0.0056 | 0.0069 | 0.05 | 0.069 |
| | 4,4'-DDD | <0.0010 | 0.0028 | <0.00099 | 0.0022 | 0.0054 | 0.0069 | 0.05 | 0.069 |
| | 4,4'-DDT | 0.00084 | 0.0020 | 0.00012 | 0.0020 | 0.0016 | 0.0069 | 0.05 | 0.069 |
| | Chlordane | <0.0086 | <0.0070 | <0.0074 | <0.011 | <0.01 | 0.01 | 0.037 | |
| PCB | Polychlorinated Biphenyls | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.130 | 0.038 | 3.1 |
| Metals | Antimony | <0.04 | <0.04 | <0.04 | <0.04 | 0.09 | 150 | 150 | 200 |
| | Arsenic | 2.18 | 1.05 | 1.79 | 1.16 | 1.51 | 57 | 507.1 | 700 |
| | Cadmium | 0.112 | 0.169 | 0.139 | 0.114 | 0.100 | 5.1 | --- | 14 |
| | Chromium | 7.59 | 10.4 | 10.6 | 8.78 | 9.29 | --- | --- | --- |
| | Copper | 46.2 | 13.7 | 17.5 | 16.3 | 17.4 | 390 | --- | 1,300 |
| | Lead | 3.03 | 6.42 | 5.37 | 4.17 | 4.73 | 450 | --- | 1,200 |
| | **Mercury** | **2.030** | **0.715** | **0.702** | **1.240** | 0.797 | **0.41** | **1.5** | 2.3 |
| | Nickel | 10.0 | 8.59 | 11.5 | 10.2 | 10.4 | 140 | 370 | 370 |
| | Silver | 0.124 | 0.134 | 0.101 | 0.106 | 0.091 | 6.1 | 6.1 | 8.4 |
| | Zinc | 18.0 | 37.3 | 53.5 | 158 | 42.8 | 410 | --- | 3,800 |
| Organics | Naphthalene | <0.011 | 0.0028 | 0.011 | 0.0026 | 0.0047 | 2.1 | --- | 2.4 |
| | Acenaphthylene | <0.011 | <0.01 | 0.0043 | <0.01 | 0.0043 | 0.56 | --- | 1.3 |
| | Acenanaphthene | <0.011 | <0.01 | 0.0024 | <0.01 | 0.0024 | 0.5 | --- | 2 |
| | Fluorene | <0.011 | <0.01 | 0.0035 | <0.01 | 0.0035 | 0.54 | --- | 3.6 |
| | Phenanthrene | <0.011 | 0.0087 | 0.011 | 0.0029 | 0.0059 | 1.5 | --- | 21 |
| | Anthracene | <0.011 | <0.01 | 0.005 | <0.01 | 0.0050 | 0.96 | --- | 13 |
| | 2-Methylnaphthalene | <0.011 | 0.0021 | 0.0038 | 0.0025 | 0.0027 | 0.67 | --- | 1.9 |
| | Fluoranthene | <0.011 | 0.0085 | 0.010 | <0.01 | 0.0093 | 1.7 | 4.6 | 30 |
| | Pyrene | <0.011 | 0.0070 | 0.012 | <0.01 | 0.0054 | 2.6 | --- | 16 |
| | Benz(a)anthracene | <0.011 | 0.0037 | 0.0045 | <0.01 | 0.0037 | 1.6 | 3.6 | 3.6 |
| | Chrysene | <0.011 | 0.0055 | 0.0079 | <0.01 | 0.0058 | 1.4 | --- | 21 |
| | Benzofluoranthene | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 3.2 | --- | 9.9 |
| | Benzo(a)pyrene | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 1.6 | 3.6 | 3.6 |
| | Indeno(1,2,3-cd)pyrene | <0.011 | <0.01 | 0.0034 | <0.01 | 0.0034 | 0.6 | --- | 16 |
| | Dibenzo(a,h)anthracene | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 0.23 | --- | 1.9 |
| | Benzo(g,h,I)perylene | <0.011 | <0.01 | 0.0043 | <0.01 | 0.0043 | 0.67 | --- | 3.2 |
| Phthalates | Dimethyl Phthalate | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 1.4 | 1.4 | --- |
| | Diethyl Phthalate | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 1.2 | --- | --- |
| | Di-n-butyl Phthalate | <0.011 | 0.0071 | 0.0079 | 0.0076 | 0.0065 | 5.1 | 10.22 | --- |
| | Butyl benzyl Phthalate | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 0.97 | --- | --- |
| | Bis(2-ethylhexyl) Phthalate | <0.11 | 0.038 | 0.021 | <0.1 | 0.036 | 8.3 | 13.87 | --- |
| | Di-n-octyl Phthalate | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 6.2 | --- | --- |
| Phenols | Phenol | <0.0040 | <0.0033 | 0.0058 | <0.0034 | 0.013 | 0.42 | 0.876 | 1.2 |
| | 2-Methylphenol | <0.0071 | <0.0058 | <0.0049 | <0.0061 | <0.01 | 0.063 | --- | 0.077 |
| | 4-Methylphenol | <0.011 | <0.01 | 0.047 | <0.01 | 0.032 | 0.67 | --- | 3.6 |
| | 2,4-Dimethylphenol | <0.012 | <0.0094 | <0.0080 | <0.0098 | <0.05 | 0.029 | --- | 0.21 |
| | Pentachlorophenol | <0.018 | <0.015 | <0.013 | <0.016 | <0.1 | 0.4 | 0.504 | 0.69 |
| Chlroinated Hydrocarbons/Misc. | 1,2,4-Trichlorobenzene | <0.0032 | <0.0026 | <0.0022 | <0.0027 | <0.01 | 0.031 | --- | 0.064 |
| | Hexachlorobenzene | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 0.022 | 0.168 | 0.23 |
| | 1,3-Dichlorobenzene | <0.0034 | <0.0028 | <0.0024 | <0.0029 | <0.01 | 0.17 | 1.241 | --- |
| | 1,4-Dichlorobenzene | <0.0040 | <0.0033 | <0.0028 | <0.0034 | <0.01 | 0.11 | 0.12 | 0.12 |
| | 1,2-Dichlorobenzene | <0.0028 | <0.0023 | <0.0019 | <0.0024 | <0.01 | 0.035 | 0.037 | 0.11 |
| | Benzyl Alcohol | <0.0078 | <0.0063 | <0.0054 | <0.0066 | <0.02 | 0.057 | --- | 0.87 |
| | Benzoic Acid | <0.200 | <0.170 | 0.210 | <0.180 | 0.20 | 0.65 | --- | 0.76 |
| | Dibenzofuran | <0.011 | <0.01 | 0.0022 | <0.01 | 0.0022 | 0.54 | --- | 1.7 |
| | Hexachloroethane | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 1.4 | 10.2 | 14 |
| | Hexachlorobutadiene | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 0.029 | 0.212 | 0.27 |
| | n-Nitrosodiphenylamine | <0.011 | <0.01 | <0.01 | <0.01 | <0.01 | 0.028 | 0.13 | 0.13 |

Concentrations in milligrams per kilogram (mg/kg)

[1] U.S. Army Corps of Engineers et al - Dredged Material Evaluation Framework - Lower Columbia River Management Area, November 1998

-- = No value

# TABLE 3
# PROBE B-2 ANALYTICAL RESULTS
# CONDIT DAM HYDROELECTRIC PROJECT
# NORTHWESTERN LAKE SEDIMENT EVALUATION

| | Boring | B-2 | | | | Average (B1, B2, B3, B4) | Dredged Material Evaluation Framework [1] | | |
|---|---|---|---|---|---|---|---|---|---|
| | Sample # | B-2-20 | B-2-30 | B-2-40 | DUPE-2 | | Screening Levels | Bioaccum Trigger Levels | Maximum Levels |
| | Depth Below Water Surface (feet) | 20 | 30 | 40 | 30 | | | | |
| | Depth Below Sediment Surface (feet) | 0 | 10 | 20 | 10 | | | | |
| | Date | 15-Dec-06 | 15-Dec-06 | 15-Dec-06 | 15-Dec-06 | | | | |
| General | Total Solids | 63.5 | 54.7 | 77.2 | 55 | 60.0 | --- | --- | --- |
| | Total Volatile Solids | 2.6 | 7.04 | 3.68 | 7.23 | 5.29 | --- | --- | --- |
| | Total Organic Carbons | 0.58 | 2.06 | 0.17 | 2.14 | 1.38 | --- | --- | --- |
| | Ammonia | 1.30 | 154 | 10.4 | 188 | 103 | --- | --- | --- |
| | Sulfide | <0.37 | 148 | <0.37 | 92.3 | 69.9 | --- | --- | --- |
| Pesticides | Lindane | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.001 | 0.01 | --- | --- |
| | Heptachlor | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.001 | 0.01 | 0.037 | --- |
| | Aldrin | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0004 | 0.01 | 0.037 | --- |
| | Diedrin | <0.0010 | <0.0010 | <0.0010 | 0.00044 | 0.0003 | 0.01 | 0.037 | --- |
| | **4,4'-DDE** | <0.0010 | **0.011** | <0.0013 | **0.011** | 0.0056 | **0.0069** | 0.05 | 0.069 |
| | 4,4'-DDD | <0.0010 | 0.0039 | <0.0010 | 0.0038 | 0.0054 | 0.0069 | 0.05 | 0.069 |
| | 4,4'-DDT | <0.0010 | 0.0025 | <0.0010 | 0.0021 | 0.0016 | 0.0069 | 0.05 | 0.069 |
| | Chlordane | <0.0065 | <0.0086 | <0.0054 | <0.014 | <0.01 | 0.01 | 0.037 | |
| PCB | Polychlorinated Biphenyls | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.130 | 0.038 | 3.1 |
| Metals | Antimony | <0.05 | <0.04 | 0.14 | <0.04 | 0.09 | 150 | 150 | 200 |
| | Arsenic | 1.09 | 1.33 | 3.96 | 1.25 | 1.51 | 57 | 507.1 | 700 |
| | Cadmium | 0.048 | 0.133 | 0.075 | 0.132 | 0.10 | 5.1 | --- | 14 |
| | Chromium | 5.43 | 9.85 | 15.3 | 10.0 | 9.29 | --- | --- | --- |
| | Copper | 21.9 | 18.1 | 11.2 | 16.8 | 17.4 | 390 | --- | 1,300 |
| | Lead | 1.23 | 4.84 | 9.80 | 5.38 | 4.73 | 450 | --- | 1,200 |
| | **Mercury** | **0.790** | **1.320** | 0.020 | **1.110** | **0.80** | **0.41** | 1.5 | 2.3 |
| | Nickel | 9.45 | 12.6 | 9.26 | 11.8 | 10.4 | 140 | 370 | 370 |
| | Silver | 0.057 | 0.106 | 0.107 | 0.116 | 0.09 | 6.1 | 6.1 | 8.4 |
| | Zinc | 13.6 | 77.4 | 43.8 | 35.3 | 42.8 | 410 | --- | 3,800 |
| Organics | Naphthalene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0047 | 2.1 | --- | 2.4 |
| | Acenaphthylene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0043 | 0.56 | --- | 1.3 |
| | Acenanaphthene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0024 | 0.5 | --- | 2 |
| | Fluorene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0035 | 0.54 | --- | 3.6 |
| | Phenanthrene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0059 | 1.5 | --- | 21 |
| | Anthracene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0050 | 0.96 | --- | 13 |
| | 2-Methylnaphthalene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0027 | 0.67 | --- | 1.9 |
| | Fluoranthene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0093 | 1.7 | 4.6 | 30 |
| | Pyrene | <0.01 | <0.01 | <0.01 | 0.0038 | 0.0054 | 2.6 | --- | 16 |
| | Benz(a)anthracene | <0.01 | <0.01 | <0.01 | 0.0029 | 0.0037 | 1.6 | 3.6 | 3.6 |
| | Chrysene | <0.01 | <0.01 | <0.01 | 0.0040 | 0.0058 | 1.4 | --- | 21 |
| | Benzofluoranthene | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 3.2 | --- | 9.9 |
| | Benzo(a)pyrene | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 1.6 | 3.6 | 3.6 |
| | Indeno(1,2,3-cd)pyrene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0034 | 0.6 | --- | 16 |
| | Dibenzo(a,h)anthracene | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 0.23 | --- | 1.9 |
| | Benzo(g,h,I)perylene | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0043 | 0.67 | --- | 3.2 |
| Phthalates | Dimethyl Phthalate | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 1.4 | 1.4 | --- |
| | Diethyl Phthalate | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 1.2 | --- | --- |
| | Di-n-butyl Phthalate | <0.01 | <0.01 | 0.0035 | <0.0099 | 0.0065 | 5.1 | 10.22 | --- |
| | Butyl benzyl Phthalate | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 0.97 | --- | --- |
| | Bis(2-ethylhexyl) Phthalate | 0.0048 | 0.035 | 0.027 | 0.021 | 0.036 | 8.3 | 13.87 | --- |
| | Di-n-octyl Phthalate | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 6.2 | --- | --- |
| Phenols | Phenol | 0.0044 | 0.0085 | <0.0025 | <0.0035 | 0.0129 | 0.42 | 0.876 | 1.2 |
| | 2-Methylphenol | <0.0054 | <0.0063 | <0.0045 | <0.0062 | <0.01 | 0.063 | --- | 0.077 |
| | 4-Methylphenol | <0.01 | 0.038 | <0.01 | <0.010 | 0.032 | 0.67 | --- | 3.6 |
| | 2,4-Dimethylphenol | <0.0087 | <0.011 | <0.0072 | <0.010 | <0.05 | 0.029 | --- | 0.21 |
| | Pentachlorophenol | <0.014 | <0.016 | <0.012 | <0.016 | <0.1 | 0.4 | 0.504 | 0.69 |
| Chlroinated Hydrocarbons/Misc. | 1,2,4-Trichlorobenzene | <0.0024 | <0.0028 | <0.0020 | <0.0028 | <0.01 | 0.031 | --- | 0.064 |
| | Hexachlorobenzene | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 0.022 | 0.168 | 0.23 |
| | 1,3-Dichlorobenzene | <0.0026 | <0.0030 | <0.0021 | <0.0030 | <0.01 | 0.17 | 1.241 | --- |
| | 1,4-Dichlorobenzene | <0.0030 | <0.0035 | <0.0025 | <0.0035 | <0.01 | 0.11 | 0.12 | 0.12 |
| | 1,2-Dichlorobenzene | <0.021 | <0.0024 | <0.0017 | <0.0024 | <0.01 | 0.035 | 0.037 | 0.11 |
| | Benzyl Alcohol | <0.0059 | <0.0068 | <0.0048 | <0.0068 | <0.02 | 0.057 | --- | 0.87 |
| | Benzoic Acid | <0.160 | 0.230 | <0.130 | 0.200 | 0.20 | 0.65 | --- | 0.76 |
| | Dibenzofuran | <0.01 | <0.01 | <0.01 | <0.0099 | 0.0022 | 0.54 | --- | 1.7 |
| | Hexachloroethane | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 1.4 | 10.2 | 14 |
| | Hexachlorobutadiene | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 0.029 | 0.212 | 0.27 |
| | n-Nitrosodiphenylamine | <0.01 | <0.01 | <0.01 | <0.0099 | <0.01 | 0.028 | 0.13 | 0.13 |

Concentrations in milligrams per kilogram (mg/kg)

[1] U.S. Army Corps of Engineers et al - Dredged Material Evaluation Framework - Lower Columbia River Management Area, November 1998

-- = No value

# TABLE 4
# PROBE B-3 ANALYTICAL RESULTS
# CONDIT DAM HYDROELECTRIC PROJECT
# NORTHWESTERN LAKE SEDIMENT EVALUATION

| | Boring | B-3 | | | | Average (B1, B2, B3, B4) | Dredged Material Evaluation Framework [1] | | |
|---|---|---|---|---|---|---|---|---|---|
| | Sample # | B-3-16 | B-3-27 | B-3-35 | DUPE-1 | | Screening Levels | Bioaccum Trigger Levels | Maximum Levels |
| | Depth Below Water Surface (feet) | 16 | 27 | 35 | 27 | | | | |
| | Depth Below Sediment Surface (feet) | 0 | 11 | 19 | 11 | | | | |
| | Date | 14-Dec-06 | 14-Dec-06 | 15-Dec-06 | 14-Dec-06 | | | | |
| General | Total Solids | 66 | 58 | 73.1 | 56.9 | 60.0 | --- | --- | --- |
| | Total Volatile Solids | 2.76 | 7.17 | 3.24 | 8.15 | 5.29 | --- | --- | --- |
| | Total Organic Carbons | 0.70 | 2.34 | 0.19 | 2.59 | 1.38 | --- | --- | --- |
| | Ammonia | 1.66 | 220 | 12.4 | 236 | 103 | --- | --- | --- |
| | Sulfide | <0.37 | 134 | <0.37 | 68.8 | 69.9 | --- | --- | --- |
| Pesticides | Lindane | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.001 | 0.01 | --- | --- |
| | Heptachlor | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.001 | 0.01 | 0.037 | --- |
| | Aldrin | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0004 | 0.01 | 0.037 | --- |
| | Diedrin | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0003 | 0.01 | 0.037 | --- |
| | 4,4'-DDE | <0.0010 | 0.0035 | <0.0010 | **0.010** | 0.0056 | **0.0069** | 0.05 | 0.069 |
| | 4,4'-DDD | <0.0010 | **0.0090** | <0.0010 | **0.019** | 0.0054 | **0.0069** | 0.05 | 0.069 |
| | 4,4'-DDT | <0.0010 | 0.0014 | <0.0010 | 0.0023 | 0.0016 | 0.0069 | 0.05 | 0.069 |
| | Chlordane | <0.0063 | <0.012 | <0.0057 | <0.0081 | <0.01 | 0.01 | 0.037 | |
| PCB | Polychlorinated Biphenyls | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.130 | 0.038 | 3.1 |
| Metals | Antimony | <0.04 | <0.04 | 0.08 | 0.04 | 0.09 | 150 | 150 | 200 |
| | Arsenic | 0.96 | 1.68 | 2.10 | 1.72 | 1.51 | 57 | 507.1 | 700 |
| | Cadmium | 0.040 | 0.112 | 0.101 | 0.149 | 0.100 | 5.1 | --- | 14 |
| | Chromium | 5.59 | 7.80 | 16.0 | 10.3 | 9.29 | --- | --- | --- |
| | Copper | 17.6 | 18.0 | 12.2 | 17.0 | 17.4 | 390 | --- | 1,300 |
| | Lead | 1.07 | 7.05 | 7.57 | 8.56 | 4.73 | 450 | --- | 1,200 |
| | **Mercury** | **0.738** | **1.280** | 0.024 | **0.915** | **0.797** | **0.41** | 1.5 | 2.3 |
| | Nickel | 9.91 | 9.50 | 10.7 | 9.75 | 10.4 | 140 | 370 | 370 |
| | Silver | 0.034 | 0.099 | 0.137 | 0.113 | 0.091 | 6.1 | 6.1 | 8.4 |
| | Zinc | 13.4 | 26.1 | 36.5 | 53.0 | 42.8 | 410 | --- | 3,800 |
| Organics | Naphthalene | <0.0099 | 0.004 | <0.01 | 0.0030 | 0.0047 | 2.1 | --- | 2.4 |
| | Acenaphthylene | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.0043 | 0.56 | --- | 1.3 |
| | Acenanaphthene | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.0024 | 0.5 | --- | 2 |
| | Fluorene | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.0035 | 0.54 | --- | 3.6 |
| | Phenanthrene | <0.0099 | 0.0033 | <0.01 | 0.0037 | 0.0059 | 1.5 | --- | 21 |
| | Anthracene | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.0050 | 0.96 | --- | 13 |
| | 2-Methylnaphthalene | <0.0099 | 0.0024 | <0.01 | <0.01 | 0.0027 | 0.67 | --- | 1.9 |
| | Fluoranthene | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.0093 | 1.7 | 4.6 | 30 |
| | Pyrene | <0.0099 | 0.0035 | <0.01 | 0.0039 | 0.0054 | 2.6 | --- | 16 |
| | Benz(a)anthracene | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.0037 | 1.6 | 3.6 | 3.6 |
| | Chrysene | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.0058 | 1.4 | --- | 21 |
| | Benzofluoranthene | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 3.2 | --- | 9.9 |
| | Benzo(a)pyrene | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 1.6 | 3.6 | 3.6 |
| | Indeno(1,2,3-cd)pyrene | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.0034 | 0.6 | --- | 16 |
| | Dibenzo(a,h)anthracene | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 0.23 | --- | 1.9 |
| | Benzo(g,h,I)perylene | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.0043 | 0.67 | --- | 3.2 |
| Phthalates | Dimethyl Phthalate | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 1.4 | 1.4 | --- |
| | Diethyl Phthalate | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 1.2 | --- | --- |
| | Di-n-butyl Phthalate | 0.0089 | 0.0061 | <0.01 | 0.0049 | 0.0065 | 5.1 | 10.22 | --- |
| | Butyl benzyl Phthalate | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 0.97 | --- | --- |
| | Bis(2-ethylhexyl) Phthalate | 0.010 | 0.015 | 0.027 | 0.021 | 0.036 | 8.3 | 13.87 | --- |
| | Di-n-octyl Phthalate | >0.0099 | >0.0099 | <0.01 | <0.01 | <0.01 | 6.2 | --- | --- |
| Phenols | Phenol | 0.0095 | 0.016 | <0.0026 | 0.037 | 0.013 | 0.42 | 0.876 | 1.2 |
| | 2-Methylphenol | <0.0052 | <0.0059 | <0.0047 | <0.0060 | <0.01 | 0.063 | --- | 0.077 |
| | 4-Methylphenol | <0.0099 | 0.022 | <0.01 | 0.069 | 0.032 | 0.67 | --- | 3.6 |
| | 2,4-Dimethylphenol | <0.0084 | <0.0095 | <0.0076 | <0.0097 | <0.05 | 0.029 | --- | 0.21 |
| | Pentachlorophenol | <0.013 | <0.015 | <0.012 | <0.015 | <0.1 | 0.4 | 0.504 | 0.69 |
| Chlroinated Hydrocarbons/Misc. | 1,2,4-Trichlorobenzene | <0.0023 | <0.0026 | <0.0021 | <0.0027 | <0.01 | 0.031 | --- | 0.064 |
| | Hexachlorobenzene | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 0.022 | 0.168 | 0.23 |
| | 1,3-Dichlorobenzene | <0.0025 | <0.0028 | <0.0022 | <0.0029 | <0.01 | 0.17 | 1.241 | --- |
| | 1,4-Dichlorobenzene | <0.0029 | <0.0033 | <0.0026 | <0.0034 | <0.01 | 0.11 | 0.12 | 0.12 |
| | 1,2-Dichlorobenzene | <0.0020 | <0.0023 | <0.0018 | <0.0023 | <0.01 | 0.035 | 0.037 | 0.11 |
| | Benzyl Alcohol | <0.0057 | <0.0064 | <0.0051 | <0.0066 | <0.02 | 0.057 | --- | 0.87 |
| | Benzoic Acid | 0.150 | 0.210 | <0.01 | 0.380 | 0.20 | 0.65 | --- | 0.76 |
| | Dibenzofuran | <0.0099 | <0.0099 | <0.01 | <0.01 | 0.00 | 0.54 | --- | 1.7 |
| | Hexachloroethane | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 1.4 | 10.2 | 14 |
| | Hexachlorobutadiene | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 0.029 | 0.212 | 0.27 |
| | n-Nitrosodiphenylamine | <0.0099 | <0.0099 | <0.01 | <0.01 | <0.01 | 0.028 | 0.13 | 0.13 |

Concentrations in milligrams per kilogram (mg/kg)

[1] U.S. Army Corps of Engineers et al - Dredged Material Evaluation Framework - Lower Columbia River Management Area, November 1998

-- = No value

**TABLE 5**
**PROBE B-4**
**CONDIT DAM HYDROELECTRIC PROJECT**
**NORTHWESTERN LAKE SEDIMENT EVALUATION**

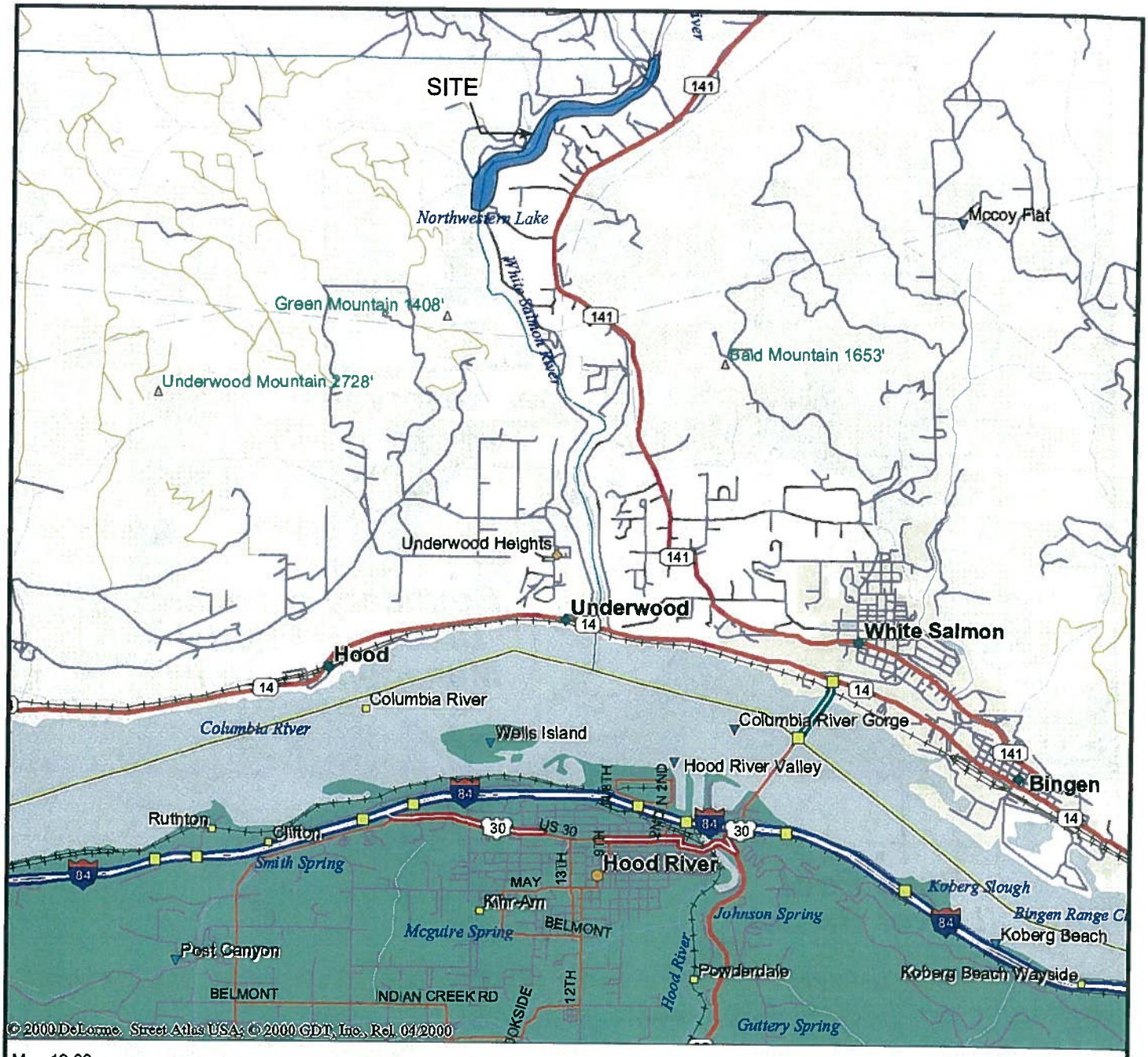
| | Boring | B-4 | | | Average (B1, B2, B3, B4) | Dredged Material Evaluation Framework [1] | | |
|---|---|---|---|---|---|---|---|---|
| | Sample # | B-4-15 | B-4-24 | B-4-35 | | Screening Levels | Bioaccum Trigger Levels | Maximum Levels |
| | Depth Below Water Surface (feet) | 15 | 24 | 35 | | | | |
| | Depth Below Sediment Surface (feet) | 3 | 12 | 23 | | | | |
| | Date | 14-Dec-06 | 14-Dec-06 | 14-Dec-06 | | | | |
| General | Total Solids | 7 | 80.8 | 75.2 | 60.0 | --- | --- | --- |
| | Total Volatile Solids | 2.94 | 4.37 | 3.24 | 5.29 | --- | --- | --- |
| | Total Organic Carbons | 0.66 | 0.63 | 0.47 | 1.38 | --- | --- | --- |
| | Ammonia | 57.9 | 52.9 | 29.9 | 103 | --- | --- | --- |
| | Sulfide | 9.2 | 7.0 | 18.3 | 69.9 | --- | --- | --- |
| Pesticides | Lindane | <0.0010 | <0.0010 | <0.0010 | <0.001 | 0.01 | --- | --- |
| | Heptachlor | <0.0010 | <0.0010 | <0.0010 | <0.001 | 0.01 | 0.037 | --- |
| | Aldrin | <0.0010 | <0.0010 | <0.0010 | 0.0004 | 0.01 | 0.037 | --- |
| | Diedrin | <0.0010 | <0.0010 | <0.0010 | 0.0003 | 0.01 | 0.037 | --- |
| | 4,4'-DDE | 0.0028 | 0.0017 | 0.0028 | 0.0056 | 0.0069 | 0.05 | 0.069 |
| | 4,4'-DDD | 0.0014 | 0.0034 | 0.0030 | 0.0054 | 0.0069 | 0.05 | 0.069 |
| | 4,4'-DDT | 0.0020 | 0.00094 | <0.0010 | 0.0016 | 0.0069 | 0.05 | 0.069 |
| | Chlordane | <0.0087 | <0.0051 | <0.0055 | <0.01 | 0.01 | 0.037 | |
| PCB | Polychlorinated Biphenyls | <0.01 | <0.01 | <0.01 | <0.01 | 0.130 | 0.038 | 3.1 |
| Metals | Antimony | <0.05 | <0.05 | <0.04 | 0.09 | 150 | 150 | 200 |
| | Arsenic | 0.87 | 0.78 | 0.78 | 1.51 | 57 | 507.1 | 700 |
| | Cadmium | 0.050 | 0.071 | 0.052 | 0.10 | 5.1 | --- | 14 |
| | Chromium | 8.04 | 7.38 | 6.31 | 9.29 | --- | --- | --- |
| | Copper | 14.1 | 11.0 | 9.85 | 17.43 | 390 | --- | 1,300 |
| | Lead | 1.80 | 2.59 | 2.07 | 4.73 | 450 | --- | 1,200 |
| | **Mercury** | **0.449** | 0.238 | 0.378 | **0.80** | **0.41** | 1.5 | 2.3 |
| | Nickel | 12.2 | 10.6 | 10.6 | 10.4 | 140 | 370 | 370 |
| | Silver | 0.056 | 0.038 | 0.043 | 0.09 | 6.1 | 6.1 | 8.4 |
| | Zinc | 25.1 | 26.2 | 24.5 | 42.78 | 410 | --- | 3,800 |
| Organics | Naphthalene | <0.0099 | <0.01 | <0.01 | 0.0047 | 2.1 | --- | 2.4 |
| | Acenaphthylene | <0.0099 | <0.01 | <0.01 | 0.0043 | 0.56 | --- | 1.3 |
| | Acenanaphthene | <0.0099 | <0.01 | <0.01 | 0.0024 | 0.5 | --- | 2 |
| | Fluorene | <0.0099 | <0.01 | <0.01 | 0.0035 | 0.54 | --- | 3.6 |
| | Phenanthrene | <0.0099 | <0.01 | <0.01 | 0.0059 | 1.5 | --- | 21 |
| | Anthracene | <0.0099 | <0.01 | <0.01 | 0.0050 | 0.96 | --- | 13 |
| | 2-Methylnaphthalene | <0.0099 | <0.01 | <0.01 | 0.0027 | 0.67 | --- | 1.9 |
| | Fluoranthene | <0.0099 | <0.01 | <0.01 | 0.0093 | 1.7 | 4.6 | 30 |
| | Pyrene | <0.0099 | <0.01 | 0.0023 | 0.0054 | 2.6 | --- | 16 |
| | Benz(a)anthracene | <0.0099 | <0.01 | <0.01 | 0.0037 | 1.6 | 3.6 | 3.6 |
| | Chrysene | <0.0099 | <0.01 | <0.01 | 0.0058 | 1.4 | --- | 21 |
| | Benzofluoranthene | <0.0099 | <0.01 | <0.01 | <0.01 | 3.2 | --- | 9.9 |
| | Benzo(a)pyrene | <0.0099 | <0.01 | <0.01 | <0.01 | 1.6 | 3.6 | 3.6 |
| | Indeno(1,2,3-cd)pyrene | <0.0099 | <0.01 | <0.01 | 0.0034 | 0.6 | --- | 16 |
| | Dibenzo(a,h)anthracene | <0.0099 | <0.01 | <0.01 | <0.01 | 0.23 | --- | 1.9 |
| | Benzo(g,h,I)perylene | <0.0099 | <0.01 | <0.01 | 0.0043 | 0.67 | --- | 3.2 |
| Phthalates | Dimethyl Phthalate | <0.0099 | <0.01 | <0.01 | <0.01 | 1.4 | 1.4 | --- |
| | Diethyl Phthalate | <0.0099 | <0.01 | <0.01 | <0.01 | 1.2 | --- | --- |
| | Di-n-butyl Phthalate | 0.0060 | 0.0065 | 0.0064 | 0.0065 | 5.1 | 10.22 | --- |
| | Butyl benzyl Phthalate | <0.0099 | <0.01 | <0.01 | <0.01 | 0.97 | --- | --- |
| | Bis(2-ethylhexyl) Phthalate | 0.071 | 0.120 | 0.061 | 0.036 | 8.3 | 13.87 | --- |
| | Di-n-octyl Phthalate | <0.0099 | <0.01 | <0.01 | <0.01 | 6.2 | --- | --- |
| Phenols | Phenol | 0.010 | 0.015 | 0.0099 | 0.0129 | 0.42 | 0.876 | 1.2 |
| | 2-Methylphenol | <0.0049 | <0.0043 | <0.0046 | <0.01 | 0.063 | --- | 0.077 |
| | 4-Methylphenol | 0.025 | 0.010 | 0.01 | 0.03 | 0.67 | --- | 3.6 |
| | 2,4-Dimethylphenol | <0.0079 | <0.0069 | <0.0074 | <0.05 | 0.029 | --- | 0.21 |
| | Pentachlorophenol | <0.013 | <0.011 | <0.012 | <0.1 | 0.4 | 0.504 | 0.69 |
| Chlroinated Hydrocarbons/Misc. | 1,2,4-Trichlorobenzene | <0.0022 | <0.0019 | <0.002 | <0.01 | 0.031 | --- | 0.064 |
| | Hexachlorobenzene | <0.0099 | <0.01 | <0.0022 | <0.01 | 0.022 | 0.168 | 0.23 |
| | 1,3-Dichlorobenzene | <0.0023 | <0.0020 | <0.0026 | <0.01 | 0.17 | 1.241 | --- |
| | 1,4-Dichlorobenzene | <0.0028 | <0.0024 | <0.0018 | <0.01 | 0.11 | 0.12 | 0.12 |
| | 1,2-Dichlorobenzene | <0.0019 | <0.0017 | <0.01 | <0.01 | 0.035 | 0.037 | 0.11 |
| | Benzyl Alcohol | <0.0053 | <0.0046 | <0.0050 | <0.02 | 0.057 | --- | 0.87 |
| | Benzoic Acid | 0.150 | 0.140 | 0.170 | 0.20 | 0.65 | --- | 0.76 |
| | Dibenzofuran | <0.0099 | <0.01 | <0.01 | 0.0022 | 0.54 | --- | 1.7 |
| | Hexachloroethane | <0.0099 | <0.01 | <0.01 | <0.01 | 1.4 | 10.2 | 14 |
| | Hexachlorobutadiene | <0.0099 | <0.01 | <0.01 | <0.01 | 0.029 | 0.212 | 0.27 |
| | n-Nitrosodiphenylamine | <0.0099 | <0.01 | <0.01 | <0.01 | 0.028 | 0.13 | 0.13 |

Concentrations in milligrams per kilogram (mg/kg)
[1] U.S. Army Corps of Engineers et al - Dredged Material Evaluation Framework - Lower Columbia River Management Area, November 1998
-- = No value

# TABLE 6
# WHITE SALMON RIVER REFERENCE SAMPLES
# CONDIT DAM HYDROELECTRIC PROJECT
# NORTHWESTERN LAKE SEDIMENT EVALUATION

| **Boring** | B-5 | | | | | Average (B5) | Average (B1, B2, B3, B4) |
|---|---|---|---|---|---|---|---|
| **Sample #** | B5-011507a | B5-011507b | B5-011507c | B5-011507d | B5-011507e | | |
| **Depth Below Water Surface (feet)** | 2 | 2 | 2 | 2 | 2 | | |
| **Depth Below Sediment Surface (feet)** | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | | |
| **Date** | 15-Jan-07 | 15-Jan-07 | 15-Jan-07 | 15-Jan-07 | 15-Jan-07 | | |
| Total Solids | 29.6 | 29.8 | 27.5 | 38.2 | 36.6 | 32.3 | 60.0 |
| Total Volatile Solids | 12.1 | 15.8 | 8.08 | 13.2 | 11.8 | 12.2 | 5.29 |
| Total Organic Carbons | 12.2 | 3.7 | 5.19 | 1.68 | 5.37 | 5.63 | 1.38 |
| Ammonia | 8.12 | 37.1 | 23.7 | 39.9 | 4.2 | 22.6 | 103 |
| Sulfide | 1.6 | 1.1 | 1.9 | 0.8 | 0.9 | 1.26 | 69.9 |

Concentrations in milligrams per kilogram (mg/kg)




Mag 13.00
Tue Jun 27 08:54 2006
Scale 1:62,500 (at center)

1 Miles

2 KM

N W E S

Local Road
Major Connector
State Route
Trail
Interstate/Limited Access
Toll Highway
US Highway
Exit

Utility/Pipe
Railroad
Point of Interest
County Seat
Small Town
Summit
Geographic Feature
Locale

Private Airport
Cemetery
County Boundary
State Boundary
Population Center
Land
Water
National Park

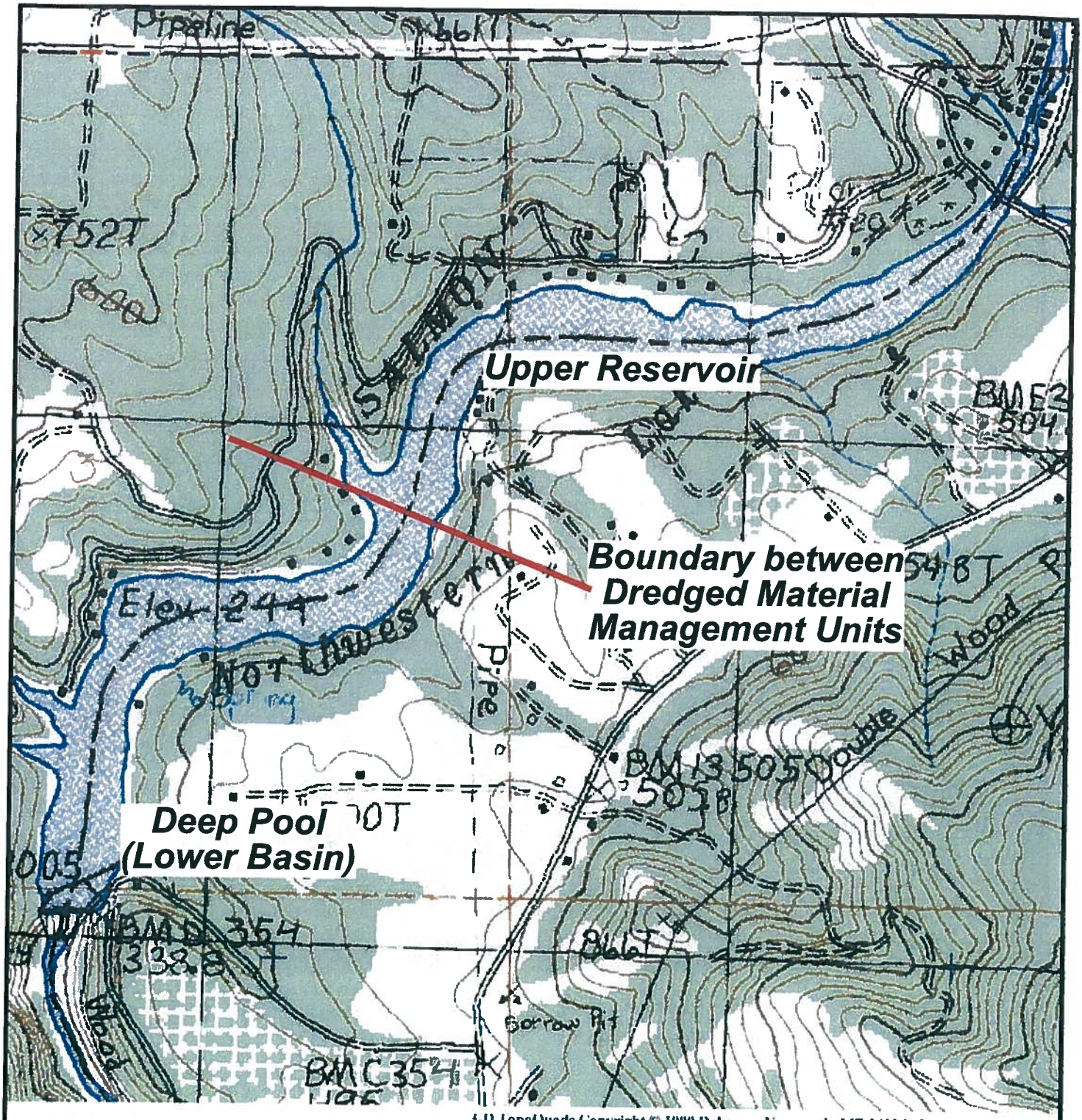
KLEINFELDER
Copyright 2007

L:\Projects\2007\53886 05/07 TLK

**SITE LOCATION MAP**
NORTHWESTERN LAKE
CONDIT DAM SAMPLING AND ANALYSIS
WHITE SALMON, WASHINGTON

PROJECT # 53886

FIGURE 1




3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS

N W E S

Scale
650 ft.

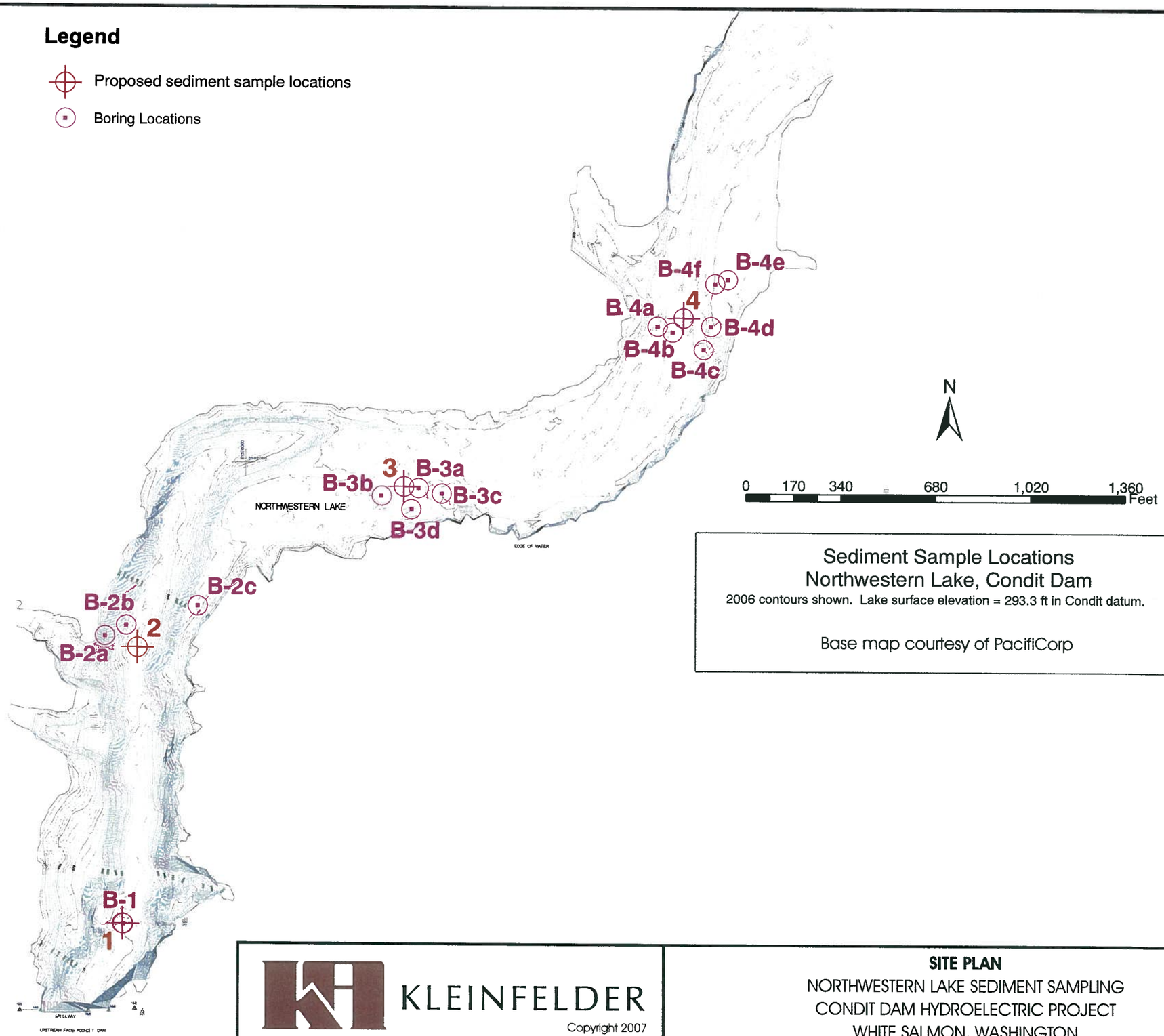
KLEINFELDER
Copyright 2007

L:\Projects\2007\53886 05/07 TLK

**SITE MAP**
NORTHWESTERN LAKE
CONDIT DAM SAMPLING AND ANALYSIS
WHITE SALMON, WASHINGTON

PROJECT # 53886

FIGURE 2




Sediment Sample Locations
Northwestern Lake, Condit Dam
2006 contours shown. Lake surface elevation = 293.3 ft in Condit datum.

Base map courtesy of PacifiCorp

KLEINFELDER
Copyright 2007

L:\PROJECTS\2007\53386 TLK 03/07

**SITE PLAN**
NORTHWESTERN LAKE SEDIMENT SAMPLING
CONDIT DAM HYDROELECTRIC PROJECT
WHITE SALMON, WASHINGTON

PROJECT # 53886

FIGURE 3

# Appendix A
# 1994 and 1997 Data

## Organic Chemical Analytical Results
parts per million (ppm)

| | Average Depth | VOCs | PAHs | TOC | dioxin | PCP | WHCID | WTPH | 413.2 |
|---|---|---|---|---|---|---|---|---|---|
| 940303B1S-1 | 2.1 feet | not tested | not tested | not tested | ND | ND | not tested | not tested | not tested |
| 940308B1A1S-1 | 3.4 feet | ND | not tested | not tested | not tested | ND | not tested | not tested | not tested |
| 940307B2S-1 | 4.0 feet | ND | not tested | not tested | not tested | not tested | ND | 19 | 55 |
| 940307B2AS-1 | 4.0 feet | ND | not tested | not tested | not tested | not tested | not tested | not tested | not tested |
| 940324B1A4-S1 | 7.4 feet | not tested | not tested | 23,000 | not tested | ND | not tested | not tested | not tested |
| 940303B1+2S-3 | 11.1 feet | not tested | ND | 23,000 | not tested | not tested | not tested | not tested | not tested |
| 940308B1A2S-3 | 12.7 feet | not tested | ND | 11,000 | not tested | not tested | not tested | not tested | not tested |
| 940309B1A3S-3 | 16.4 feet | not tested | ND | 22,000 | not tested | not tested | not tested | not tested | not tested |
| 940303B1+2S-6 | 18.6 feet | not tested | ND | 16,000 | not tested | not tested | not tested | not tested | not tested |
| 940303B1+2S-8 | 25.1 feet | not tested | ND | 2,800 | not tested | not tested | not tested | not tested | not tested |
| 940324B1A5-S3 | 28.4 feet | ND | not tested | 5,200 | not tested | not tested | not tested | not tested | not tested |
| 940309B3S1A | 1.9 feet | ND | not tested | not tested | not tested | not tested | not tested | not tested | not tested |
| 940309B3+4S-1 | 2.0 feet | not tested | ND | 6,900 | not tested | not tested | not tested | not tested | not tested |
| 940309B3+4S-3 | 12.1 feet | not tested | ND | 650 | not tested | not tested | not tested | not tested | not tested |
| 940309B3+4AS-3 | 12.1 feet | not tested | ND | 820 | not tested | not tested | not tested | not tested | not tested |
| 940315B4S-7 | 29.0 feet | not tested | not tested | not tested | not tested | ND | not tested | not tested | not tested |
| 940315B4AS-7 | 29.0 feet | not tested | not tested | not tested | not tested | ND | not tested | not tested | not tested |
| 940315B4S-8 | 35.1 feet | not tested | ND | 2,400 | not tested | not tested | not tested | not tested | not tested |
| 940316B4S-11 | 49.0 feet | not tested | ND | 1,800 | not tested | not tested | not tested | not tested | not tested |
| 940317B5S-1 | 1.8 feet | ND | not tested | not tested | not tested | not tested | not tested | not tested | not tested |
| 940317B5+6S-2 | 8.8 feet | not tested | ND | 740 | not tested | not tested | not tested | not tested | not tested |
| 940317B5S-5 | 29.1 feet | not tested | ND | 3,200 | not tested | not tested | not tested | not tested | not tested |
| 940317B5S-8 | 42.8 feet | not tested | ND | 1,000 | not tested | not tested | not tested | not tested | not tested |
| 940319B7S-1 | 2.8 feet | ND | not tested | not tested | not tested | not tested | not tested | not tested | not tested |
| 940319B7S-2 | 6.6 feet | not tested | ND | 1,800 | not tested | not tested | not tested | not tested | not tested |
| 940228B7AS-3 | 6.8 feet | not tested | ND | 350 | not tested | not tested | not tested | not tested | not tested |
| 940228B7AS-6 | 9.8 feet | not tested | ND | 150 | not tested | not tested | not tested | not tested | not tested |
| 940301B7AS-8 | 15.2 feet | not tested | ND | 1,100 | not tested | not tested | not tested | not tested | not tested |
| 940321B7S-4 | 16.3 feet | not tested | ND | 910 | not tested | not tested | not tested | not tested | not tested |
| 940321B7S-6 | 25.8 feet | not tested | ND | 4,400 | not tested | not tested | not tested | not tested | not tested |
| 940322B8S-2 | 7.2 feet | not tested | ND | 220 | not tested | not tested | not tested | not tested | not tested |
| 940322B8S-5 | 21.5 feet | not tested | ND | 390 | not tested | not tested | not tested | not tested | not tested |

VOCs = volatile organic compounds by EPA Method 8240
PAHs = polynuclear aromatic hydrocarbons by EPA Method 8310
TOC = total organic carbon by EPA Method 9060
PCP = pentachlorophenol by EPA Method 8270
WHCID = Washington's hydrocarbon identification scan
WTPH = total petroleum hydrocarbons by Washington's modified EPA Method 418.1
413.2 = oil and grease by EPA Method 413.2
ND = not detected

H:\Environmental\53886 - Condit\Report pieces\Appendix A Organics
COPYRIGHT 2007 KLEINFELDER

**1994 DATA**

Pesticide, Polychlorinated Biphenyls, and Herbicide Concentrations
parts per million (ppm)

| | Average Depth | 8080 | | | | | 8150 | 8141 |
|---|---|---|---|---|---|---|---|---|
| | | 4,4'-DDD | 4,4'-DDE | 4,4'-DDT | Lindane | PCBs | dinoseb | - |
| 940324B1A4-S1 | 7.4 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940303B1+2S-3 | 11.1 feet | ND | ND | ND | ND | ND | ND | ND |
| 940308B1A2S-3 | 12.7 feet | 0.0035 | 0.0039 | ND | ND | ND | ND | not tested |
| 940309B1A3S-3 | 16.4 feet | 0.026 | 0.016 | ND | ND | ND | ND | not tested |
| 940303B1+2S-6 | 18.6 feet | ND | ND | ND | ND | ND | ND | ND |
| 940303B1+2S-8 | 25.1 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940324B1A5-S3 | 28.4 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940309B3+4S-1 | 2.0 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940309B3+4AS-1 | 2.0 feet | not tested | not tested | not tested | not tested | not tested | ND | not tested |
| 940309B3+4S-3 | 12.1 feet | ND | ND | ND | not tested | ND | ND | not tested |
| 940315B4S-8 | 35.1 feet | 0.06 | 0.033 | ND | ND | ND | ND | not tested |
| 940316B4S-11 | 49.0 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940317B5+6S-2 | 8.8 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940317B5A+6AS-2 | 8.8 feet | ND | ND | ND | ND | ND | not tested | not tested |
| 940317B5S-5 | 29.1 feet | 0.0081 | 0.0026 | ND | ND | ND | ND | not tested |
| 940317B5S-8 | 42.8 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940319B7S-2 | 6.6 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940228B7AS-3 | 6.8 feet | ND | ND | ND | ND | ND | 0.34 | not tested |
| 940228B7AS-6 | 9.8 feet | ND | ND | ND | ND | ND | 0.40 | not tested |
| 940301B7AS-8 | 15.2 feet | ND | ND | ND | ND | ND | 0.37 | not tested |
| 940321B7S-4 | 16.3 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940321B7S-6 | 25.8 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940322B8S-2 | 7.2 feet | ND | ND | ND | ND | ND | ND | not tested |
| 940322B8AS-5 | 21.5 feet | ND | ND | ND | ND | ND | ND | not tested |
| MTCA Method A | | not listed | not listed | 1 | 1 | 1 | not listed | - |
| MTCA Method B | | no data | no data | NA | NA | NA | 80 | - |
| PSQG (Low Effect/Severe Effect) | | 0.008 / 6 | 0.005 / 19 | 0.007 / 12 | 0.003 / 1 | 0.07 / 530 | not listed | - |
| WDNR | | not listed | not listed | 0.01 | 0.05 | 0.05 | not listed | - |
| HSQG | | 0.8 | 0.5 | 0.5 | 0.3 | 4 | not listed | - |
| EPA Region V (Nonpolluted) | | not listed | not listed | not listed | not listed | not listed | not listed | - |
| EPA Region V (Mod Polluted) | | not listed | not listed | not listed | not listed | not listed | not listed | - |
| EPA Region V (Heavy Pollution) | | not listed | not listed | not listed | not listed | not listed | not listed | - |
| OMEDMDCC (open water) | | not listed | not listed | not listed | not listed | 0.05 | not listed | - |

8080 = analytes detected using EPA Method 8080 (chlorinated pesticides) and polychlorinated biphenyls (PCBs)
8150 = analytes detected using EPA Method 8150 (chlorinated herbicides)
8140 = analytes detected using EPA Method 8140 (organophosphatic pesticides)
ND = not detected
MTCA = Model Toxics Control Act (WAC 173-340-740)
NA = not applicable
PSQG = Provincial Sediment Quality Guidelines
WDNR = Wisconsin Dept of Natural Resources
HSQG = Hart Sediment Quality Guidelines
EPA V = EPA Region V Guidelines for Pollutional Classification
OMEDM = Ontario Min. Environ Mat'l Disposal


COPYRIGHT 2007 KLEINFELDER

**1994 DATA**

Metal Concentrations
parts per million (ppm)

| | Average Depth | Antimony | Arsenic | Beryllium | Cadmium | Chromium | Copper | Lead | Mercury | Nickel | Selenium | Silver | Thallium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 940324B1A4-S1 | 7.4 feet | ND | ND | ND | ND | 7.6 | 13 | ND | 0.52 | 8.2 | ND | ND | ND | 29 |
| 940303B1+2S-3 | 11.1 feet | ND | ND | ND | ND | 7.9 | 15 | ND | ND | 5.9 | ND | ND | ND | 41 |
| 940308B1A2S-3 | 12.7 feet | ND | ND | ND | ND | 10 | 14 | 18 | 0.33 | 11 | ND | ND | ND | 33 |
| 940309B1A3S-3 | 16.4 feet | ND | ND | ND | ND | 14 | 2.6 | 13 | 0.4 | 12 | ND | ND | ND | 53 |
| 940303B1+2S-6 | 18.6 feet | ND | ND | ND | ND | 9.1 | 22 | ND | ND | 9.5 | ND | ND | ND | 35 |
| 940303B1+2S-8 | 25.1 feet | ND | ND | ND | ND | 6.6 | 36 | ND | 0.21 | 7.7 | ND | ND | ND | 23 |
| 940324B1A5-S3 | 28.4 feet | ND | ND | ND | ND | 3.7 | 17 | ND | 1.1 | 5.3 | ND | ND | ND | 15 |
| 940309B3+4S-1 | 2.0 feet | ND | ND | ND | ND | 7.8 | 12 | 9 | 0.19 | 9.5 | ND | ND | ND | 28 |
| 940309B3+4S-3 | 12.1 feet | ND | ND | ND | ND | 6.5 | 8 | ND | 0.22 | 13 | ND | ND | ND | 21 |
| 940315B4S-8 | 35.1 feet | ND | ND | ND | ND | 15 | 26 | 5.6 | 0.71 | 14 | ND | ND | ND | 62 |
| 940315B4AS-8 | 35.1 feet | ND | ND | ND | ND | 12 | 23 | ND | 0.65 | 12 | ND | ND | ND | 44 |
| 940316B4S-11 | 49.9 feet | ND | ND | ND | ND | 6.5 | 14 | ND | 0.43 | 12 | ND | ND | ND | 29 |
| 940317B5+6S-2 | 8.8 feet | ND | ND | ND | ND | 12 | 8.8 | 5.1 | ND | 6.5 | ND | ND | ND | 28 |
| 940317B5S-5 | 29.1 feet | ND | ND | ND | ND | 7 | 13 | ND | 0.32 | 9.50 | ND | ND | ND | 28 |
| 940317B5S-8 | 42.8 feet | ND | ND | ND | ND | 6.9 | 13 | ND | 0.38 | 9.80 | ND | ND | ND | 25 |
| 940319B7S-2 | 6.6 feet | ND | ND | ND | ND | 7.1 | 10 | ND | 0.34 | 11 | ND | ND | ND | 11 |
| 940228B7+7AS-3 | 6.7 feet | ND | ND | ND | ND | 3.9 | 10 | ND | 0.26 | 6.6 | ND | ND | ND | 17 |
| 940228B7A+7S-6 | 10.3 feet | ND | ND | ND | 0.82 | 29 | 39 | 84 | 0.35 | 33 | ND | ND | ND | 110 |
| 940301B7A+7S-8 | 15.7 feet | ND | ND | ND | ND | 8.5 | 10 | ND | 0.35 | 11 | ND | ND | ND | 15 |
| 940321B7S-4 | 16.3 feet | ND | ND | ND | ND | 6.3 | 9.8 | ND | 0.48 | 13 | ND | ND | ND | 13 |
| 940321B7S-6 | 25.8 feet | ND | ND | ND | ND | 4.8 | 9.8 | ND | 0.34 | 13 | ND | ND | ND | 15 |
| 940322B8S-2 | 7.2 feet | ND | ND | ND | ND | 4.1 | 9.3 | ND | 0.15 | 8.5 | ND | ND | ND | 16 |
| 940322B8S-5 | 21.5 feet | ND | ND | ND | ND | 4.1 | 7 | ND | 0.28 | 8.9 | ND | ND | ND | 13 |
| BACKGROUND | | <1 | 1.6 | <1 | not listed | 50 | 30 | 30 | 0.2-1.3 | 20 | <0.1 | not listed | not listed | 74 |
| MTCA Method A | | not listed | 20 | not listed | 2 | 100 | not listed | 250 | 1 | not listed | not listed | not listed | not listed | not listed |
| MTCA Method B | | 32 | NA | 400 | NA | NA | 2968 | NA | NA | 1600 | 400 | 400 | 6.4 | 24000 |
| PSQG (No Effect/Severe Effect) | | not listed | 6/33 | not listed | 0.6/10 | 26/110 | 16/110 | 31/250 | 0.2/2 | 16/75 | not listed | not listed | not listed | 120/820 |
| WDNR | | not listed | 10 | not listed | 1 | 100 | 16 | 50 | 0.1 | 100 | 1 | not listed | not listed | 100 |
| HSQG | | not listed | 17 | not listed | 2.5 | 100 | 85 | 55 | 0.6 | 92 | not listed | not listed | not listed | 143 |
| EPA Region V (Nonpolluted) | | not listed | <3 | not listed | not listed | <25 | <25 | <40 | <1 | <20 | not listed | not listed | not listed | <90 |
| EPA Region V (Mod Polluted) | | not listed | 3-8 | not listed | not listed | 25-75 | 25-50 | 40-60 | not listed | 20-50 | not listed | not listed | not listed | 90-200 |
| EPA Region V (Heavy Pollution) | | not listed | >8 | not listed | >6 | >75 | >50 | >60 | >1 | >50 | not listed | not listed | not listed | >200 |
| OMEDMDCC (open water) | | not listed | 8 | not listed | 1 | 25 | 25 | 50 | 0.3 | 25 | not listed | 0.5 | not listed | 100 |

ND = not detected
BACKGROUND = values obtained from U.S.G.S Professional paper 1270 Element Concentrations in Soils and Other Surficial Materials f the Conterminous United States,
MTCA Method A = Soil Cleanup values listed in WAC 173-340-740
MTCA Method B = calculated value per WAC 173-340-740
NA = not applicable since there is a listed value
PSQG = Provincial Sediment Quality Guidelines
HSQG = Hart Sedimnet Quality Guidelines
WDNR = Wisconsin Dept of Natural Resources
EPA V = EPA Region V Guidelines for Pollutional Classification
OMEDM = Ontario Min. Environ Mat'l Disposal


COPYRIGHT 2007 KLEINFELDER

**1994 DATA**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/10/97 |
| Boring/Test Pit | TP-8 | Calc. By/Date | AR 10/10/97 |
| Sample | S-1(A&B) | Check. By/Date | |
| Depth, ft. | 1.0 - 2.0 | | |

**CLASSIFICATION:**

Gray-brown sandy GRAVEL; moist

**USCS Classification:** GW

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | Q-1 & #11 | Weight Container + Moist Soil | 10632.0 |
| Weight Container | 663.7 | Weight Container + Dry Soil | 10170.0 |
| | | Water Content, % | 4.9 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | Q-1 & #11 |
| Weight Container | 663.7 |
| Weight Container + Dry Soil | 10170 |
| Weight Dry Soil (Before Wash) | 9506.3 |

AFTER WASH:

| | |
|---|---|
| Container Number | Q-1 & #11 |
| Weight Container | 663.7 |
| Weight Container + Dry Soil | 10129.0 |
| Weight Dry Soil (After Wash) | 9465.3 |

Soil Washed out No. 200 Sieve, grams **41.0** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | | | | | | |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 444.0 | 444.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 444.0 | 1865.6 | 1421.6 | 14.93 | 14.93 | 85.07 |
| 3/4-inch | 444.0 | 3218.4 | 2774.4 | 29.14 | 44.07 | 55.93 |
| 3/8-inch | 444.0 | 1859.2 | 1415.2 | 14.87 | 58.94 | 41.06 |
| No. 4 | 444.0 | 1237.3 | 793.3 | 8.33 | 67.27 | 32.73 |
| No. 10 | 1237.3 | 1961.0 | 723.7 | 7.60 | 74.87 | 25.13 |
| No. 20 | 1961.0 | 2951.1 | 990.1 | 10.40 | 85.27 | 14.73 |
| No. 40 | 2951.1 | 3860.6 | 909.5 | 9.55 | 94.83 | 5.17 |
| No. 60 | 444.0 | 759.7 | 315.7 | 3.32 | 98.14 | 1.86 |
| No. 100 | 759.7 | 858.4 | 98.7 | 1.04 | 99.18 | 0.82 |
| No. 200 | 858.4 | 890.7 | 32.3 | 0.34 | 99.52 | 0.48 |
| Pan | 890.7 | 895.4 | 41.0 + 4.7 | 0.48 | 100.00 | 0.00 |
| | | TOTALS: | 9520.2 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA8_1
10:28 AM 3/7/2007

**FIGURE 10**

# MA

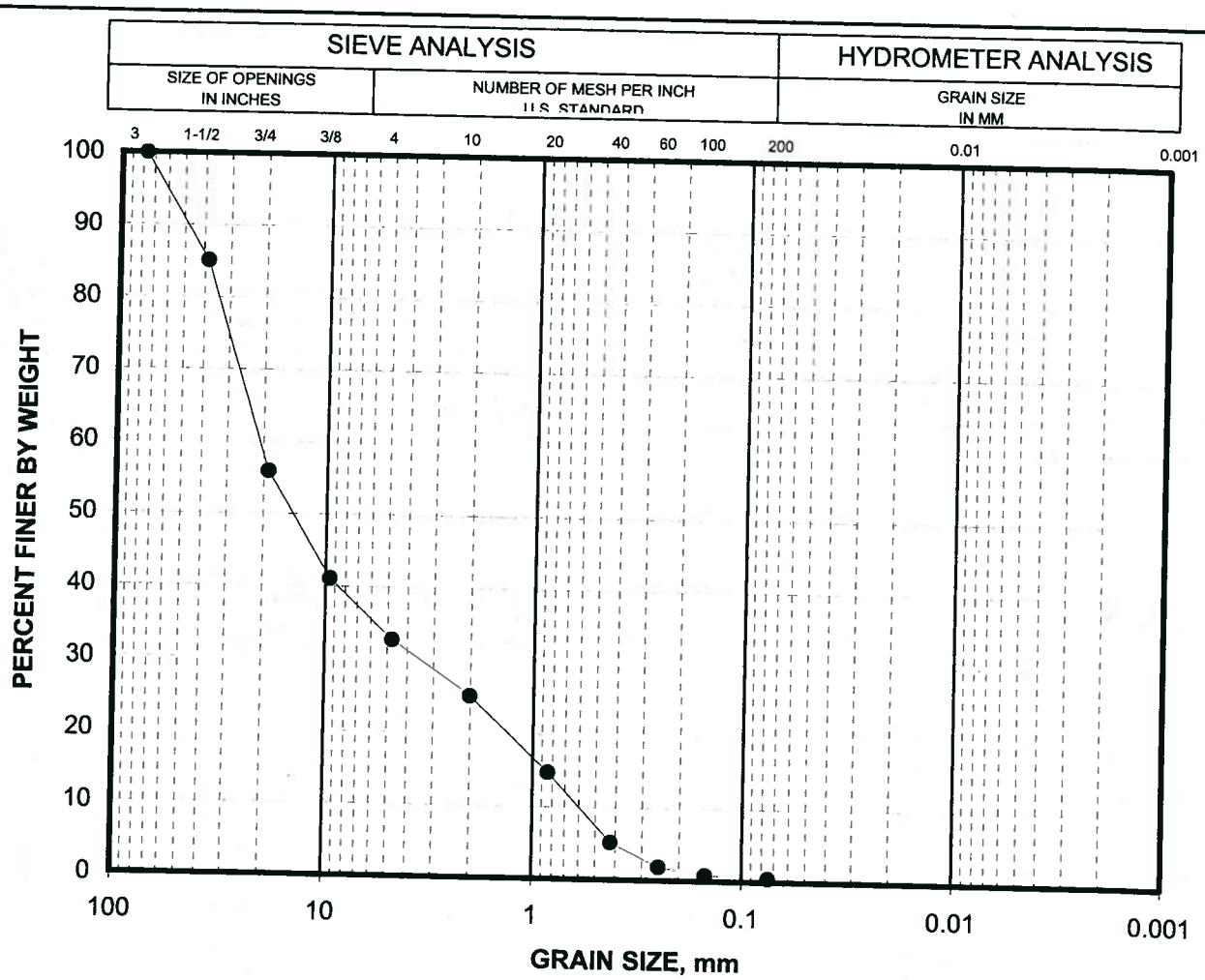
## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/10/97 |
| Boring/Test Pit | TP-8 | Calc. By/Date | AR 10/10/97 |
| Sample | S-1(A&B) | Check. By/Date | _____ |
| Depth, ft. | 1.0 - 2.0 | | |

**CLASSIFICATION:**

Gray-brown sandy GRAVEL; moist

**USCS Classification:** GW




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| COARSE | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** | PROJECT: **Condit Hydroelectric Project** | **MA**

MA8_1
10:28 AM 3/7/2007

**FIGURE 10**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-8 | Calc. By/Date | AR 10/10/97 |
| Sample | S-2 | Check. By/Date | |
| Depth, ft. | 2.5 - 3.0 | | |

**CLASSIFICATION:**

Gray-brown sandy GRAVEL; moist

**USCS Classification:** GP

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #4 | Weight Container + Moist Soil | 708.9 |
| Weight Container | 167.4 | Weight Container + Dry Soil | 666.4 |
| | | Water Content, % | 8.5 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #4 |
| Weight Container | 167.4 |
| Weight Container + Dry Soil | 666.4 |
| Weight Dry Soil (Before Wash) | 499.0 |

AFTER WASH:

| | |
|---|---|
| Container Number | #4 |
| Weight Container | 167.4 |
| Weight Container + Dry Soil | 663.8 |
| Weight Dry Soil (After Wash) | 496.4 |

Soil Washed out No. 200 Sieve, grams **2.6** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.0 | 423.9 | 201.9 | 40.42 | 40.42 | 59.58 |
| 3/8-inch | 423.9 | 494.4 | 70.5 | 14.11 | 54.53 | 45.47 |
| No. 4 | 494.4 | 531.7 | 37.3 | 7.47 | 62.00 | 38.00 |
| No. 10 | 531.7 | 576.8 | 45.1 | 9.03 | 71.03 | 28.97 |
| No. 20 | 576.8 | 635.8 | 59.0 | 11.81 | 82.84 | 17.16 |
| No. 40 | 635.8 | 695.8 | 60.0 | 12.01 | 94.85 | 5.15 |
| No. 60 | 695.8 | 713.3 | 17.5 | 3.50 | 98.36 | 1.64 |
| No. 100 | 713.3 | 717.3 | 4.0 | 0.80 | 99.16 | 0.84 |
| No. 200 | 717.3 | 718.7 | 1.4 | 0.28 | 99.44 | 0.56 |
| Pan | 718.7 | 718.9 | 2.6 + 0.2 | 0.56 | 100.00 | 0.00 |
| | | TOTALS: | 499.5 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA8_2
10:28 AM 3/7/2007

**FIGURE 11**

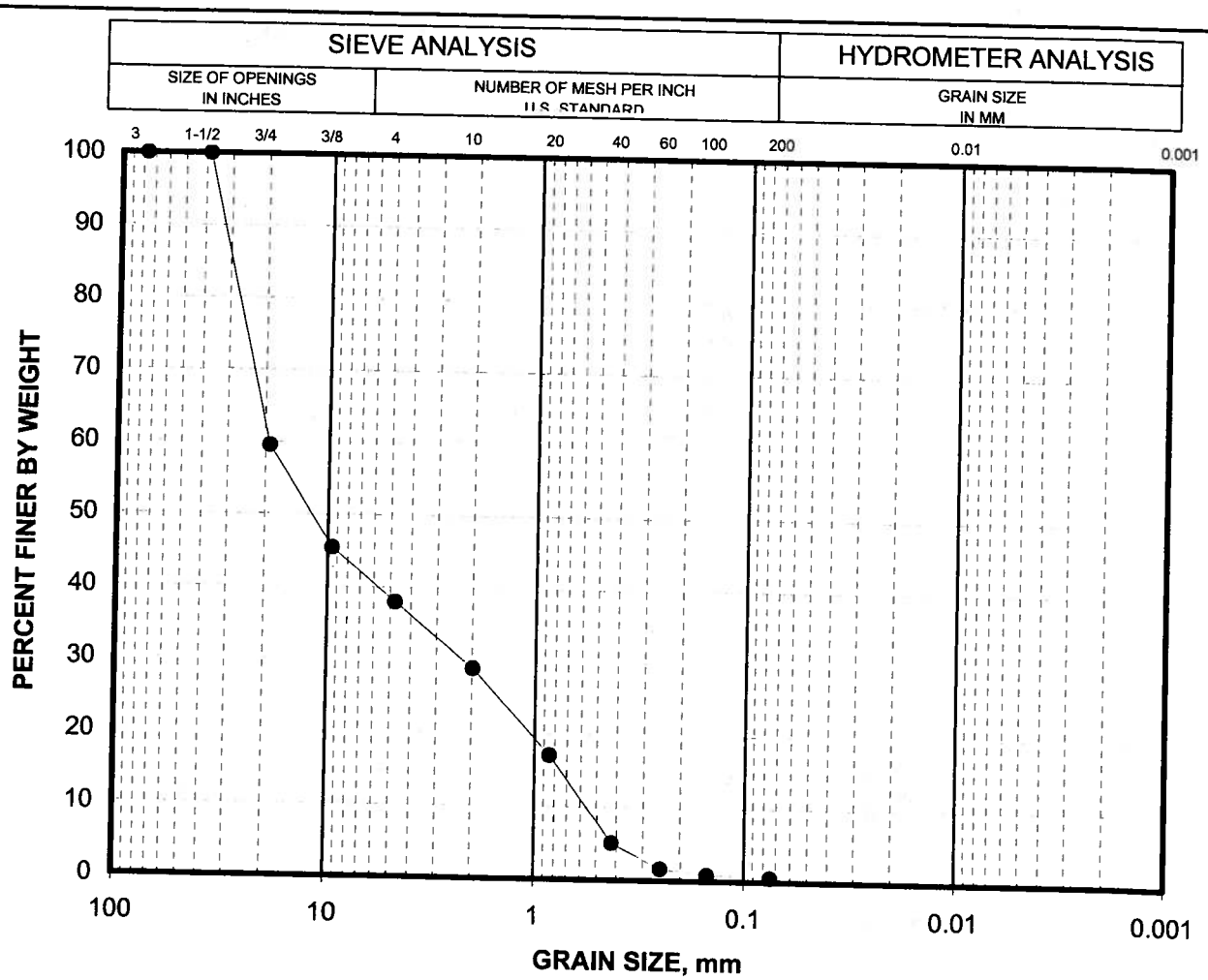
# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-8 | Calc. By/Date | AR 10/10/97 |
| Sample | S-2 | Check. By/Date | _____ |
| Depth, ft. | 2.5 - 3.0 | | |

**CLASSIFICATION:**
Gray-brown sandy GRAVEL; moist

**USCS Classification:** GP




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

| | | |
|---|---|---|
| **SQUIER ASSOCIATES** | PROJECT: **Condit Hydroelectric Project** | **MA** |

MA8_2
10:28 AM 3/7/2007

**FIGURE 11**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/10/97 |
| Boring/Test Pit | TP-9 | Calc. By/Date | AR 10/10/97 |
| Sample | S-0 | Check. By/Date | |
| Depth, ft. | 0.0 - 1.0 | | |

**CLASSIFICATION:**

Gray sandy GRAVEL; dry to moist

**USCS Classification:** GP

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | MT-1 | Weight Container + Moist Soil | 7580.0 |
| Weight Container | 483.2 | Weight Container + Dry Soil | 7384.0 |
| | | Water Content, % | 2.8 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | MT-1 |
| Weight Container | 483.2 |
| Weight Container + Dry Soil | 7384 |
| Weight Dry Soil (Before Wash) | 6900.8 |

AFTER WASH:

| | |
|---|---|
| Container Number | MT-1 |
| Weight Container | 483.2 |
| Weight Container + Dry Soil | 7384.0 |
| Weight Dry Soil (After Wash) | 6900.8 |

Soil Washed out No. 200 Sieve, grams **0.0** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 2178.1 | 1956.1 | 28.35 | 28.35 | 71.65 |
| 3/4-inch | 222.0 | 1795.8 | 1573.8 | 22.81 | 51.17 | 48.83 |
| 3/8-inch | 222.0 | 1046.3 | 824.3 | 11.95 | 63.11 | 36.89 |
| No. 4 | 222.0 | 628.6 | 406.6 | 5.89 | 69.01 | 30.99 |
| No. 10 | 628.6 | 1013.4 | 384.8 | 5.58 | 74.58 | 25.42 |
| No. 20 | 1013.4 | 1783.0 | 769.6 | 11.16 | 85.74 | 14.26 |
| No. 40 | 1783.0 | 2539.1 | 756.1 | 10.96 | 96.70 | 3.30 |
| No. 60 | 222.0 | 358.7 | 136.7 | 1.98 | 98.68 | 1.32 |
| No. 100 | 358.7 | 415.9 | 57.2 | 0.83 | 99.51 | 0.49 |
| No. 200 | 415.9 | 444.1 | 28.2 | 0.41 | 99.92 | 0.08 |
| Pan | 444.1 | 449.7 | 0.0 + 5.6 | 0.08 | 100.00 | 0.00 |
| | | TOTALS: | 6899.0 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA9_0
10:28 AM 3/7/2007

**FIGURE 12**

# MA

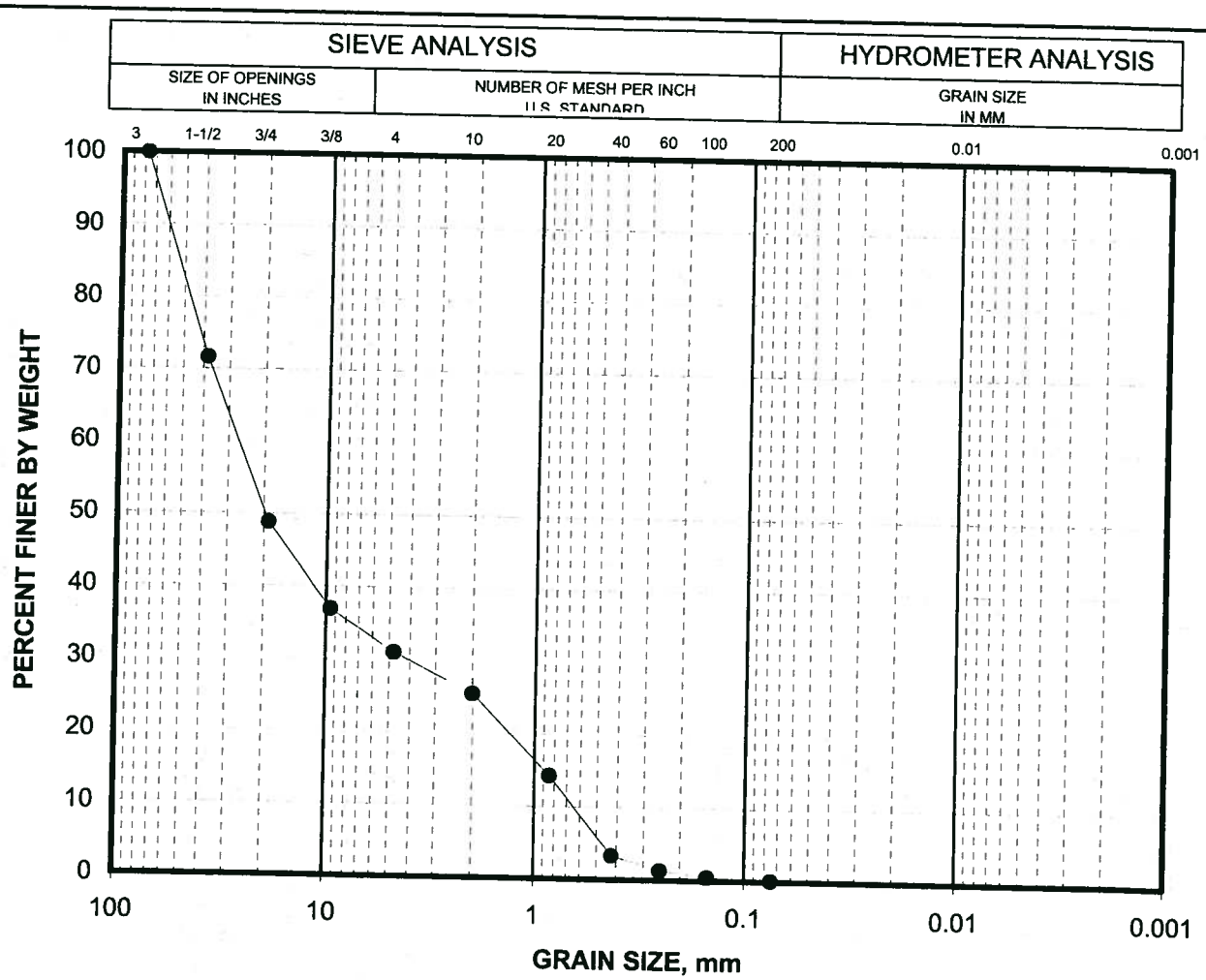
## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/10/97 |
| Boring/Test Pit | TP-9 | Calc. By/Date | AR 10/10/97 |
| Sample | S-0 | Check. By/Date | _____ |
| Depth, ft. | 0.0 - 1.0 | | |

**CLASSIFICATION:**

Gray sandy GRAVEL; dry to moist

**USCS Classification:** GP




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA9_0
10:28 AM 3/7/2007

**FIGURE 12**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-9 | Calc. By/Date | AR 10/10/97 |
| Sample | S-1 | Check. By/Date | |
| Depth, ft. | 3.5 - 4.0 | | |

**CLASSIFICATION:**

Black-brown fine to coarse SAND; moist

**USCS Classification:** SP

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #5 | Weight Container + Moist Soil | 889.4 |
| Weight Container | 165.7 | Weight Container + Dry Soil | 832.9 |
| | | Water Content, % | 8.5 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #5 |
| Weight Container | 165.7 |
| Weight Container + Dry Soil | 832.9 |
| Weight Dry Soil (Before Wash) | 667.2 |

AFTER WASH:

| | |
|---|---|
| Container Number | #5 |
| Weight Container | 165.7 |
| Weight Container + Dry Soil | 830.5 |
| Weight Dry Soil (After Wash) | 664.8 |

Soil Washed out No. 200 Sieve, grams **2.4** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | | | | | | |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/8-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 4 | 222.0 | 224.7 | 2.7 | 0.40 | 0.40 | 99.60 |
| No. 10 | 224.7 | 230.3 | 5.6 | 0.84 | 1.24 | 98.76 |
| No. 20 | 230.3 | 335.5 | 105.2 | 15.76 | 17.00 | 83.00 |
| No. 40 | 335.5 | 731.0 | 395.5 | 59.24 | 76.24 | 23.76 |
| No. 60 | 731.0 | 849.4 | 118.4 | 17.74 | 93.98 | 6.02 |
| No. 100 | 849.4 | 879.9 | 30.5 | 4.57 | 98.55 | 1.45 |
| No. 200 | 879.9 | 886.3 | 6.4 | 0.96 | 99.51 | 0.49 |
| Pan | 886.3 | 887.2 | 2.4 + 0.9 | 0.49 | 100.00 | 0.00 |
| | | TOTALS: | 667.6 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA9_1
10:28 AM 3/7/2007

**FIGURE 13**

# MA

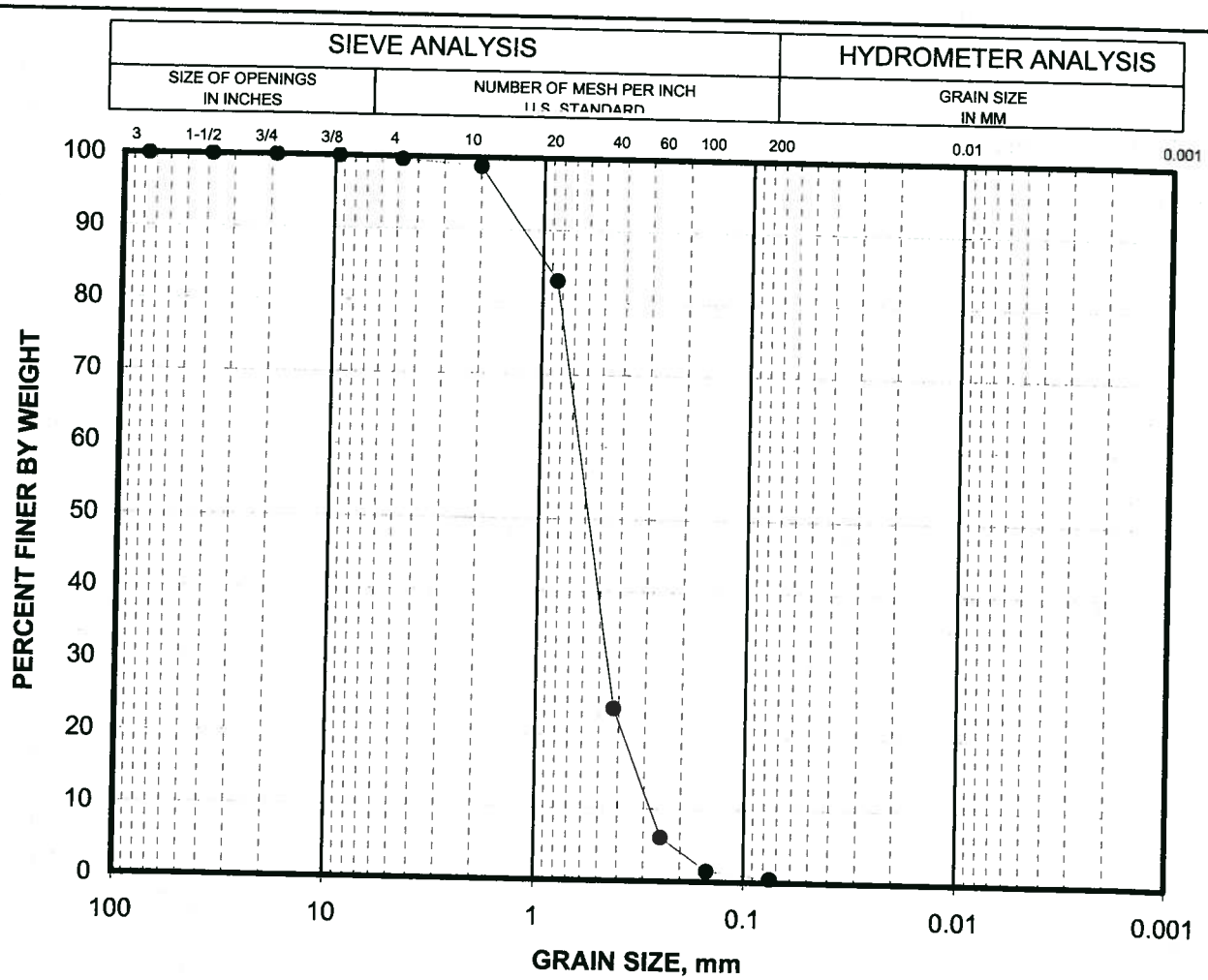
## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-9 | Calc. By/Date | AR 10/10/97 |
| Sample | S-1 | Check. By/Date | _____ |
| Depth, ft. | 3.5 - 4.0 | | |

**CLASSIFICATION:**

Black-brown fine to coarse SAND; moist

**USCS Classification:** SP




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA9_1
10:28 AM 3/7/2007

**FIGURE 13**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-9 | Calc. By/Date | AR 10/10/97 |
| Sample | S-3 | Check. By/Date | |
| Depth, ft. | 8.0 - 8.5 | | |

**CLASSIFICATION:**

Dark brown silty fine SAND with numerous organics; wet

**USCS Classification:** SM

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #1 | Weight Container + Moist Soil | 396.6 |
| Weight Container | 83.2 | Weight Container + Dry Soil | 271.9 |
| | | Water Content, % | 66.1 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #1 |
| Weight Container | 83.2 |
| Weight Container + Dry Soil | 271.9 |
| Weight Dry Soil (Before Wash) | 188.7 |

AFTER WASH:

| | |
|---|---|
| Container Number | #1 |
| Weight Container | 83.2 |
| Weight Container + Dry Soil | 234.8 |
| Weight Dry Soil (After Wash) | 151.6 |

ashed out No. 200 Sieve, grams **37.1** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | | | | | | |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/8-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 4 | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 10 | 222.0 | 222.3 | 0.3 | 0.16 | 0.16 | 99.84 |
| No. 20 | 222.3 | 226.3 | 4.0 | 2.12 | 2.28 | 97.72 |
| No. 40 | 226.3 | 233.3 | 7.0 | 3.70 | 5.98 | 94.02 |
| No. 60 | 233.3 | 237.2 | 3.9 | 2.06 | 8.04 | 91.96 |
| No. 100 | 237.2 | 262.3 | 25.1 | 13.28 | 21.32 | 78.68 |
| No. 200 | 262.3 | 358.1 | 95.8 | 50.69 | 72.01 | 27.99 |
| Pan | 358.1 | 373.9 | 37.1 + 15.8 | 27.99 | 100.00 | 0.00 |
| | | TOTALS: | 189.0 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA9_3
10:29 AM 3/7/2007

**FIGURE 14**

# MA

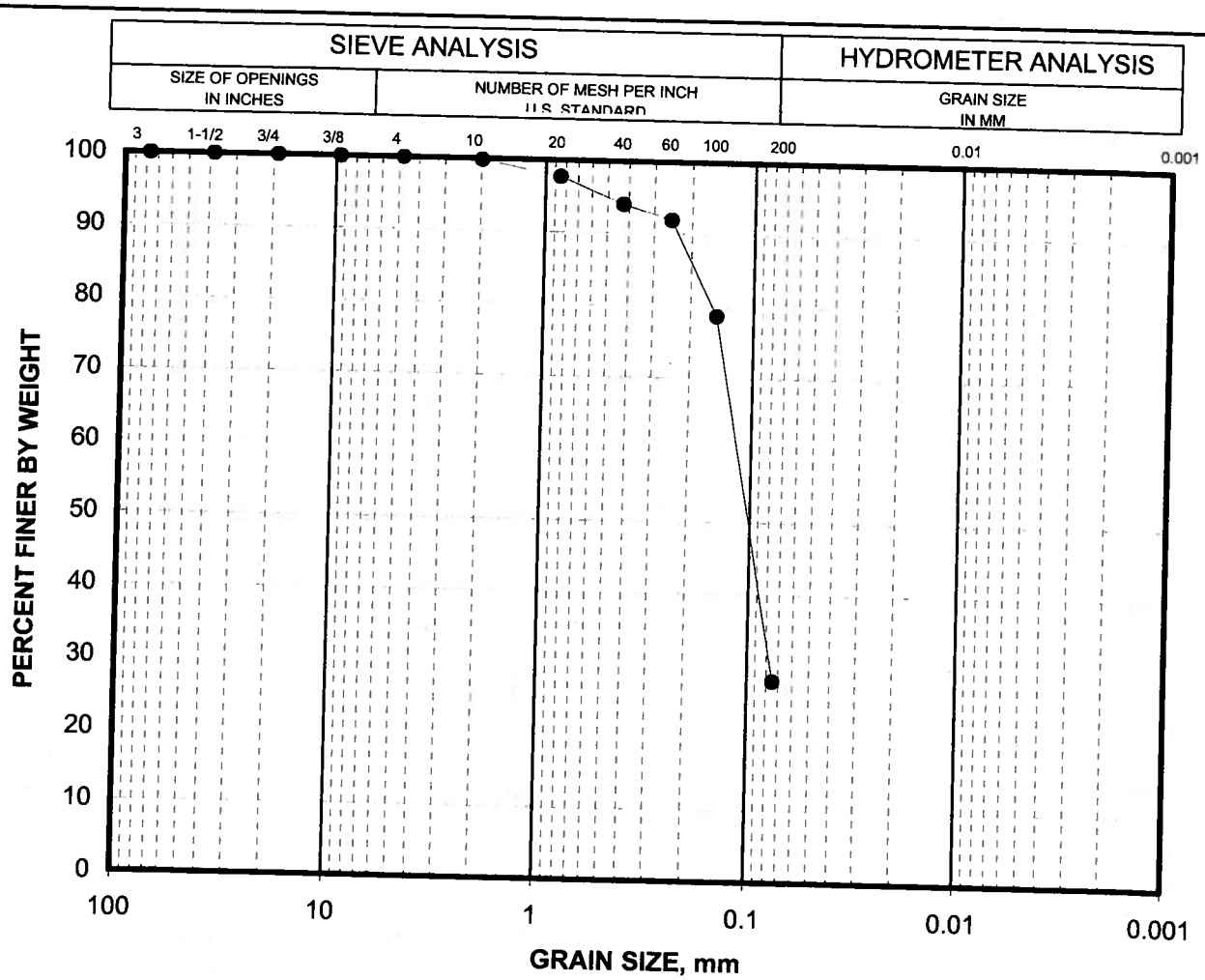
## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-9 | Calc. By/Date | AR 10/10/97 |
| Sample | S-3 | Check. By/Date | _____ |
| Depth, ft. | 8.0 - 8.5 | | |

**CLASSIFICATION:**

Dark brown silty fine SAND with numerous organics; wet

**USCS Classification:** SM




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA9_3
10:29 AM 3/7/2007

**FIGURE 14**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-11 | Calc. By/Date | AR 10/10/97 |
| Sample | S-1 | Check. By/Date | |
| Depth, ft. | 1.0 - 1.5 | | |

**CLASSIFICATION:**

Brown SILT; trace fine sand; scattered organics; moist

**USCS Classification:** ML

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #2 | Weight Container + Moist Soil | 256.6 |
| Weight Container | 82.8 | Weight Container + Dry Soil | 220.5 |
| | | Water Content, % | 26.2 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #2 |
| Weight Container | 82.8 |
| Weight Container + Dry Soil | 220.5 |
| Weight Dry Soil (Before Wash) | 137.7 |

AFTER WASH:

| | |
|---|---|
| Container Number | #2 |
| Weight Container | 82.8 |
| Weight Container + Dry Soil | 107.2 |
| Weight Dry Soil (After Wash) | 24.4 |

Soil Washed out No. 200 Sieve, grams **113.3** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/8-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 4 | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 10 | 222.0 | 222.2 | 0.2 | 0.14 | 0.14 | 99.86 |
| No. 20 | 222.2 | 222.5 | 0.3 | 0.22 | 0.36 | 99.64 |
| No. 40 | 222.5 | 224.1 | 1.6 | 1.16 | 1.52 | 98.48 |
| No. 60 | 224.1 | 225.7 | 1.6 | 1.16 | 2.68 | 97.32 |
| No. 100 | 225.7 | 229.3 | 3.6 | 2.61 | 5.29 | 94.71 |
| No. 200 | 229.3 | 243.4 | 14.1 | 10.22 | 15.51 | 84.49 |
| Pan | 243.4 | 246.7 | 113.3 + 3.3 | 84.49 | 100.00 | 0.00 |
| | | TOTALS: | 138.0 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA11_1
10:29 AM 3/7/2007

**FIGURE 15**

# MA

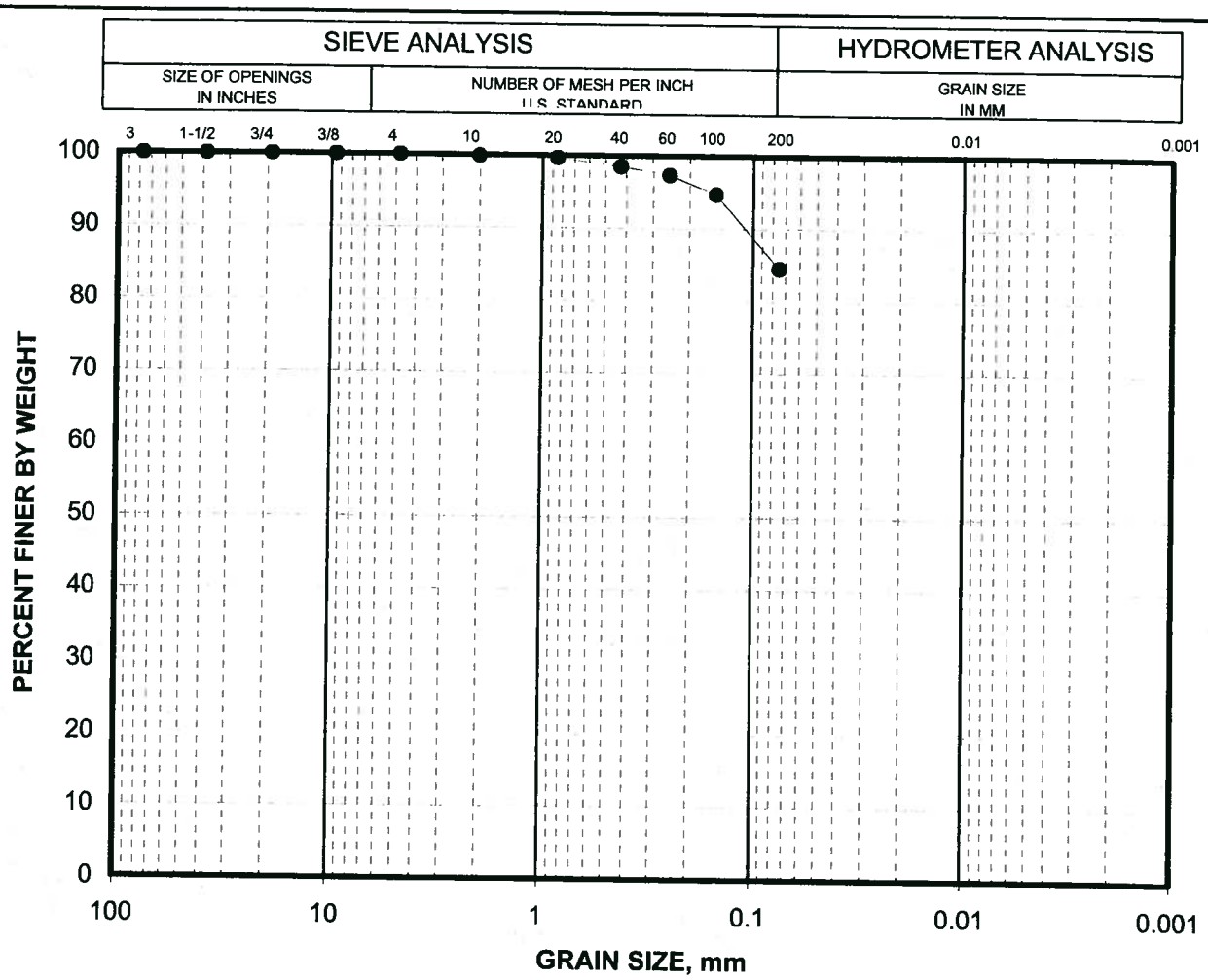
## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | **94838.1** | Tested By/Date: | **AR 10/9/97** |
| Boring/Test Pit | **TP-11** | Calc. By/Date | **AR 10/10/97** |
| Sample | **S-1** | Check. By/Date | _____ |
| Depth, ft. | **1.0 - 1.5** | | |

**CLASSIFICATION:**

Brown SILT; trace fine sand; scattered organics; moist

**USCS Classification:** ML




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** | PROJECT: **Condit Hydroelectric Project** | **MA**

MA11_1
10:29 AM 3/7/2007

**FIGURE 15**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-11 | Calc. By/Date | AR 10/10/97 |
| Sample | S-5 | Check. By/Date | |
| Depth, ft. | 0.5 | | |

**CLASSIFICATION:**

Black-brown fine to medium SAND; trace silt; moist

**USCS Classification:** SP

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #3 | Weight Container + Moist Soil | 293.3 |
| Weight Container | 83.3 | Weight Container + Dry Soil | 280.0 |
| | | Water Content, % | 6.8 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #3 |
| Weight Container | 83.3 |
| Weight Container + Dry Soil | 280 |
| Weight Dry Soil (Before Wash) | 196.7 |

AFTER WASH:

| | |
|---|---|
| Container Number | #3 |
| Weight Container | 83.3 |
| Weight Container + Dry Soil | 277.3 |
| Weight Dry Soil (After Wash) | 194.0 |

Soil Washed out No. 200 Sieve, grams **2.7** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | | | | | | |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/8-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 4 | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 10 | 222.0 | 222.1 | 0.1 | 0.05 | 0.05 | 99.95 |
| No. 20 | 222.1 | 223.8 | 1.7 | 0.86 | 0.91 | 99.09 |
| No. 40 | 223.8 | 256.9 | 33.1 | 16.81 | 17.72 | 82.28 |
| No. 60 | 256.9 | 353.4 | 96.5 | 49.01 | 66.73 | 33.27 |
| No. 100 | 353.4 | 406.5 | 53.1 | 26.97 | 93.70 | 6.30 |
| No. 200 | 406.5 | 415.7 | 9.2 | 4.67 | 98.37 | 1.63 |
| Pan | 415.7 | 416.2 | 2.7 + 0.5 | 1.63 | 100.00 | 0.00 |
| | | TOTALS: | 196.9 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA11A_5
10:29 AM 3/7/2007

**FIGURE 17**

# MA

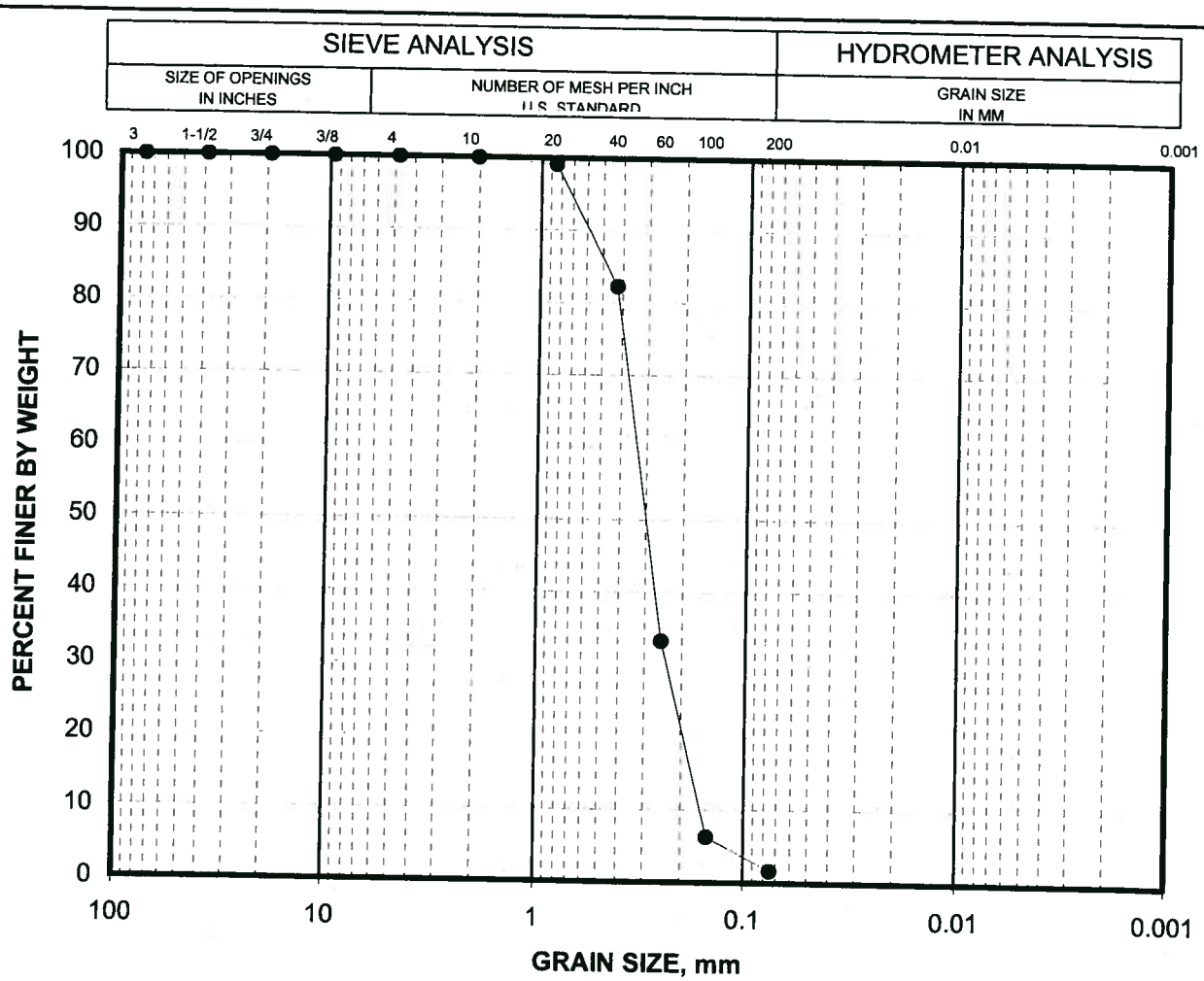
## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-11 | Calc. By/Date | AR 10/10/97 |
| Sample | S-5 | Check. By/Date | _____ |
| Depth, ft. | 0.5 | | |

**CLASSIFICATION:**

Black-brown fine to medium SAND; trace silt; moist

**USCS Classification:** SP




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA11A_5
10:29 AM 3/7/2007

**FIGURE 17**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-12 | Calc. By/Date | AR 10/10/97 |
| Sample | S-2 | Check. By/Date | |
| Depth, ft. | 1.5 - 1.8 | | |

**CLASSIFICATION:**

Black-brown fine to coarse SAND; moist

**USCS Classification:** SP

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #6 | Weight Container + Moist Soil | 397.0 |
| Weight Container | 164.4 | Weight Container + Dry Soil | 381.4 |
| | | Water Content, % | 7.2 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #6 |
| Weight Container | 164.4 |
| Weight Container + Dry Soil | 381.4 |
| Weight Dry Soil (Before Wash) | 217.0 |

AFTER WASH:

| | |
|---|---|
| Container Number | #6 |
| Weight Container | 164.4 |
| Weight Container + Dry Soil | 381.3 |
| Weight Dry Soil (After Wash) | 216.9 |

shed out No. 200 Sieve, grams **0.1** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | | | | | | |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/8-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 4 | 222.0 | 223.7 | 1.7 | 0.78 | 0.78 | 99.22 |
| No. 10 | 223.7 | 234.5 | 10.8 | 4.98 | 5.76 | 94.24 |
| No. 20 | 234.5 | 311.5 | 77.0 | 35.48 | 41.24 | 58.76 |
| No. 40 | 311.5 | 401.5 | 90.0 | 41.47 | 82.72 | 17.28 |
| No. 60 | 401.5 | 428.8 | 27.3 | 12.58 | 95.30 | 4.70 |
| No. 100 | 428.8 | 437.3 | 8.5 | 3.92 | 99.22 | 0.78 |
| No. 200 | 437.3 | 438.7 | 1.4 | 0.65 | 99.86 | 0.14 |
| Pan | 438.7 | 438.9 | 0.1 + 0.2 | 0.14 | 100.00 | 0.00 |
| | | TOTALS: | 217.0 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA12_2
10:30 AM 3/7/2007

**FIGURE 18**

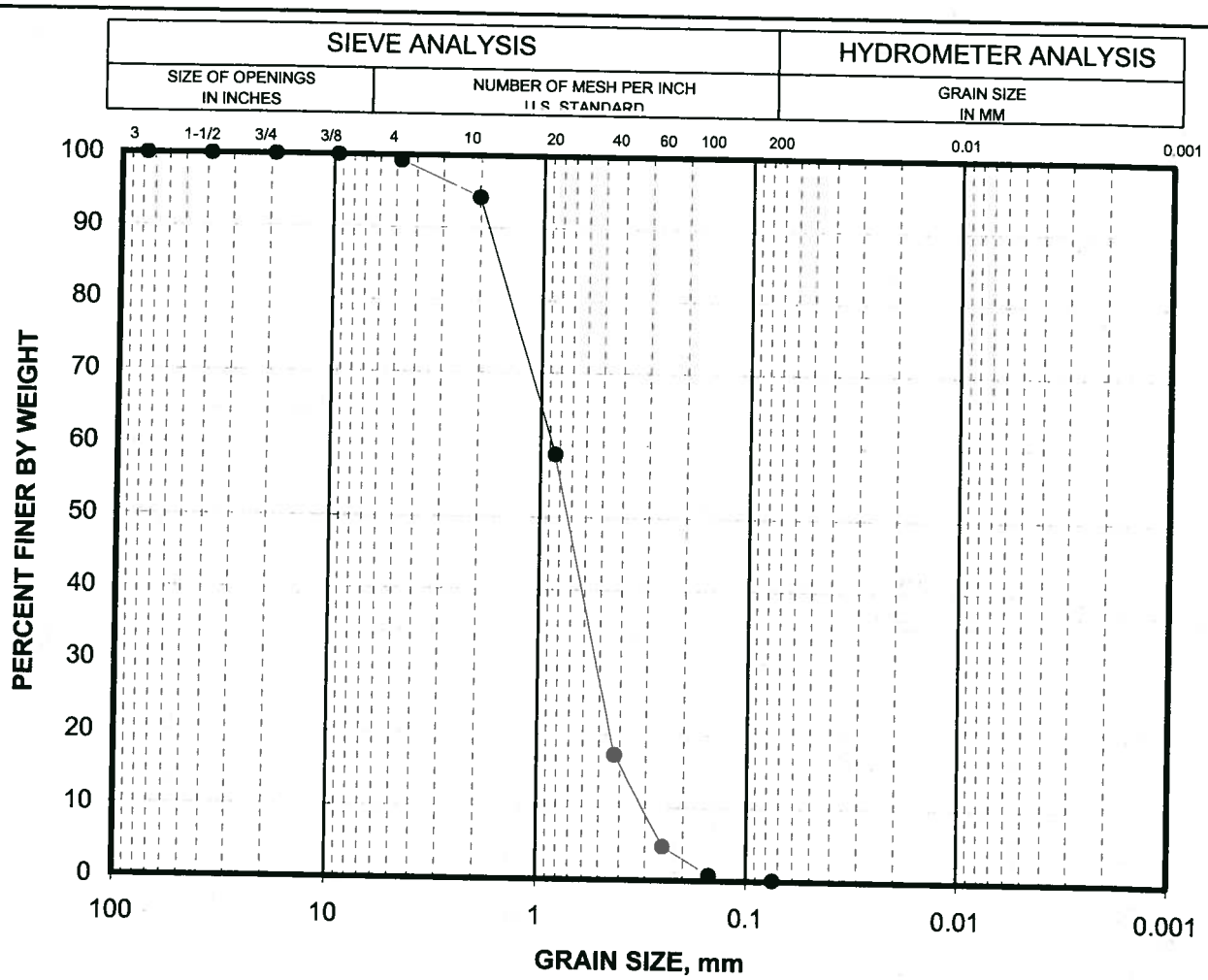
# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-12 | Calc. By/Date | AR 10/10/97 |
| Sample | S-2 | Check. By/Date | _____ |
| Depth, ft. | 1.5 - 1.8 | | |

**CLASSIFICATION:**
Black-brown fine to coarse SAND; moist

**USCS Classification:** SP




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** | PROJECT: **Condit Hydroelectric Project** | **MA**

MA12_2
10:30 AM 3/7/2007

**FIGURE 18**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-12 | Calc. By/Date | AR 10/10/97 |
| Sample | S-4 | Check. By/Date | |
| Depth, ft. | 0.5 - 1.0 | | |

**CLASSIFICATION:**

Black-brown fine to medium SAND; trace silt; moist

**USCS Classification:** SP

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #8 | Weight Container + Moist Soil | 606.1 |
| Weight Container | 150.7 | Weight Container + Dry Soil | 559.3 |
| | | Water Content, % | 11.5 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #8 |
| Weight Container | 150.7 |
| Weight Container + Dry Soil | 559.3 |
| Weight Dry Soil (Before Wash) | 408.6 |

AFTER WASH:

| | |
|---|---|
| Container Number | #8 |
| Weight Container | 150.7 |
| Weight Container + Dry Soil | 556.1 |
| Weight Dry Soil (After Wash) | 405.4 |

Soil Washed out No. 200 Sieve, grams **3.2** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/8-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 4 | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 10 | 222.0 | 224.0 | 2.0 | 0.49 | 0.49 | 99.51 |
| No. 20 | 224.0 | 272.5 | 48.5 | 11.86 | 12.35 | 87.65 |
| No. 40 | 272.5 | 386.2 | 113.7 | 27.81 | 40.17 | 59.83 |
| No. 60 | 386.2 | 499.9 | 113.7 | 27.81 | 67.98 | 32.02 |
| No. 100 | 499.9 | 603.5 | 103.6 | 25.34 | 93.32 | 6.68 |
| No. 200 | 603.5 | 626.1 | 22.6 | 5.53 | 98.85 | 1.15 |
| Pan | 626.1 | 627.6 | 3.2 + 1.5 | 1.15 | 100.00 | 0.00 |
| | | TOTALS: | 408.8 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA12_4
10:30 AM 3/7/2007

**FIGURE 19**

# MA

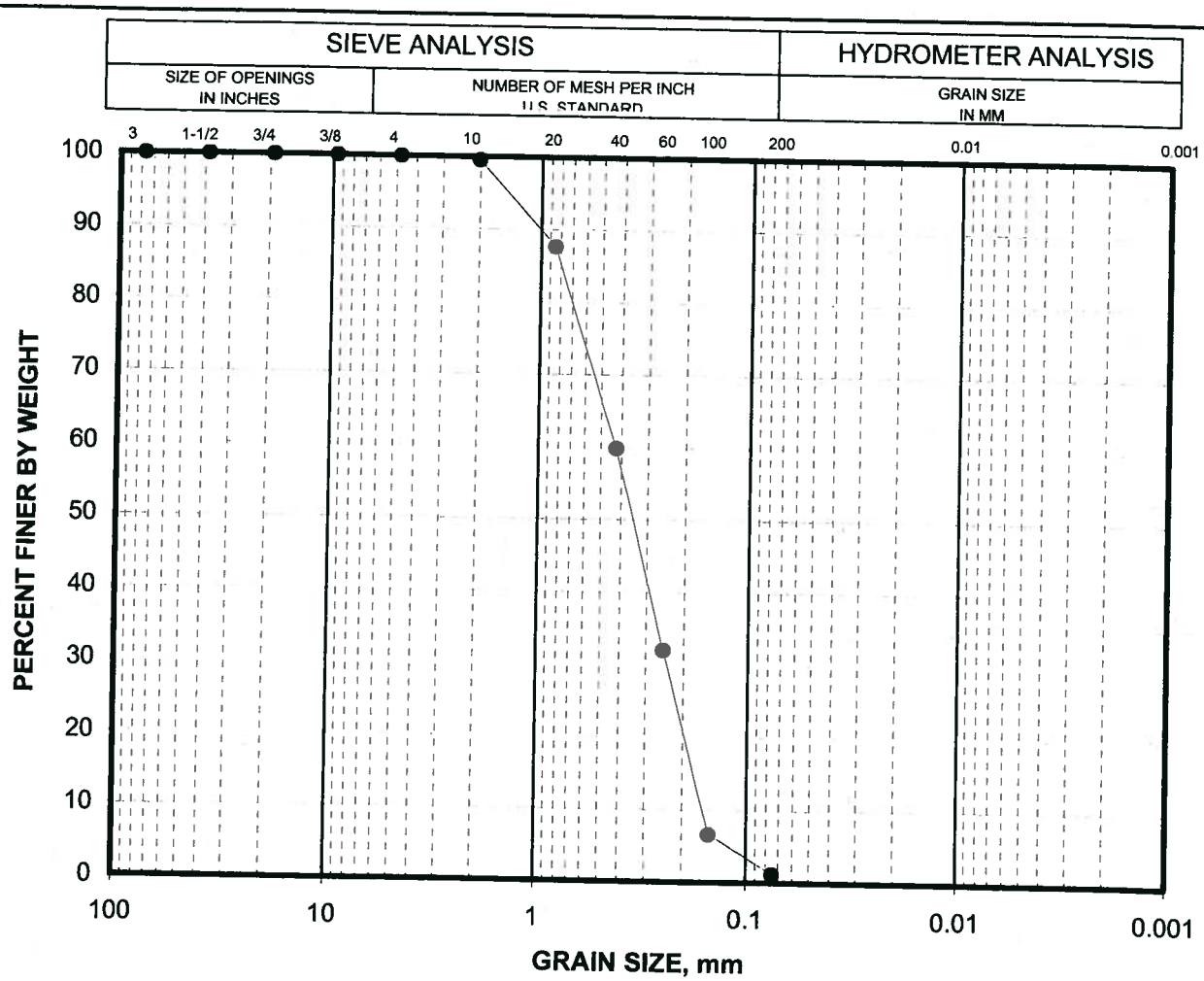
## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-12 | Calc. By/Date | AR 10/10/97 |
| Sample | S-4 | Check. By/Date | _____ |
| Depth, ft. | 0.5 - 1.0 | | |

**CLASSIFICATION:**

Black-brown fine to medium SAND;
trace silt; moist

**USCS Classification:** SP




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA12_4
10:30 AM 3/7/2007

**FIGURE 19**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-13 | Calc. By/Date | AR 10/10/97 |
| Sample | S-2 | Check. By/Date | |
| Depth, ft. | 2.0 - 2.5 | | |

**CLASSIFICATION:**

Black-brown fine to coarse SAND; moist

**USCS Classification:** SP

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #20 | Weight Container + Moist Soil | 352.6 |
| Weight Container | 122.3 | Weight Container + Dry Soil | 338.5 |
| | | Water Content, % | 6.5 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #20 |
| Weight Container | 122.3 |
| Weight Container + Dry Soil | 338.5 |
| Weight Dry Soil (Before Wash) | 216.2 |

AFTER WASH:

| | |
|---|---|
| Container Number | #20 |
| Weight Container | 122.3 |
| Weight Container + Dry Soil | 338.5 |
| Weight Dry Soil (After Wash) | 216.2 |

Soil Washed out No. 200 Sieve, grams **0.0** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.1 | 222.1 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.1 | 222.1 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.1 | 222.1 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/8-inch | 222.1 | 222.1 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 4 | 222.1 | 222.2 | 0.1 | 0.05 | 0.05 | 99.95 |
| No. 10 | 222.2 | 232.7 | 10.5 | 4.85 | 4.90 | 95.10 |
| No. 20 | 232.7 | 328.0 | 95.3 | 44.02 | 48.91 | 51.09 |
| No. 40 | 328.0 | 421.1 | 93.1 | 43.00 | 91.92 | 8.08 |
| No. 60 | 421.1 | 436.2 | 15.1 | 6.97 | 98.89 | 1.11 |
| No. 100 | 436.2 | 438.1 | 1.9 | 0.88 | 99.77 | 0.23 |
| No. 200 | 438.1 | 438.5 | 0.4 | 0.18 | 99.95 | 0.05 |
| Pan | 438.5 | 438.6 | 0.0 + 0.1 | 0.05 | 100.00 | 0.00 |
| | | TOTALS: | 216.5 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA13_2
10:30 AM 3/7/2007

**FIGURE 20**

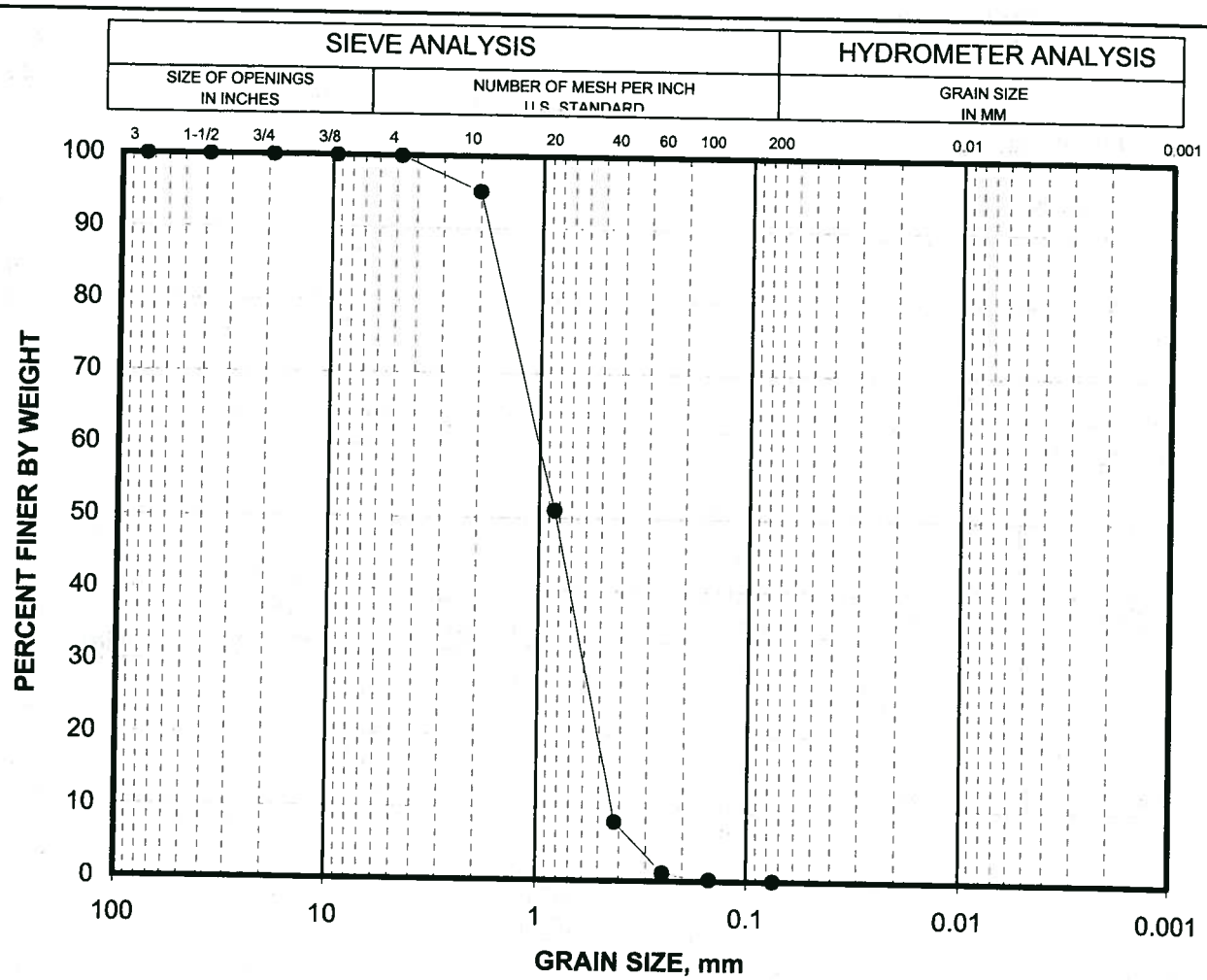
# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-13 | Calc. By/Date | AR 10/10/97 |
| Sample | S-2 | Check. By/Date | _____ |
| Depth, ft. | 2.0 - 2.5 | | |

**CLASSIFICATION:**
Black-brown fine to coarse SAND; moist

**USCS Classification:** SP




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** | PROJECT: **Condit Hydroelectric Project** | **MA**

MA13_2
10:30 AM 3/7/2007

**FIGURE 20**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-14 | Calc. By/Date | AR 10/10/97 |
| Sample | S-2 | Check. By/Date | |
| Depth, ft. | 1.5 - 1.7 | | |

**CLASSIFICATION:**

Black-brown fine to coarse SAND; moist

**USCS Classification:** SP

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #7 | Weight Container + Moist Soil | 404.7 |
| Weight Container | 149.6 | Weight Container + Dry Soil | 388.7 |
| | | Water Content, % | 6.7 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #7 |
| Weight Container | 149.6 |
| Weight Container + Dry Soil | 388.7 |
| Weight Dry Soil (Before Wash) | 239.1 |

AFTER WASH:

| | |
|---|---|
| Container Number | #7 |
| Weight Container | 149.6 |
| Weight Container + Dry Soil | 388.5 |
| Weight Dry Soil (After Wash) | 238.9 |

Soil Washed out No. 200 Sieve, grams **0.2** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/8-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| No. 4 | 222.0 | 225.4 | 3.4 | 1.42 | 1.42 | 98.58 |
| No. 10 | 225.4 | 244.4 | 19.0 | 7.93 | 9.35 | 90.65 |
| No. 20 | 244.4 | 325.6 | 81.2 | 33.88 | 43.22 | 56.78 |
| No. 40 | 325.6 | 439.5 | 113.9 | 47.52 | 90.74 | 9.26 |
| No. 60 | 439.5 | 459.1 | 19.6 | 8.18 | 98.92 | 1.08 |
| No. 100 | 459.1 | 460.9 | 1.8 | 0.75 | 99.67 | 0.33 |
| No. 200 | 460.9 | 461.3 | 0.4 | 0.17 | 99.83 | 0.17 |
| Pan | 461.3 | 461.5 | 0.2 + 0.2 | 0.17 | 100.00 | 0.00 |
| | | TOTALS: | 239.7 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA14_2
10:30 AM 3/7/2007

**FIGURE 21**

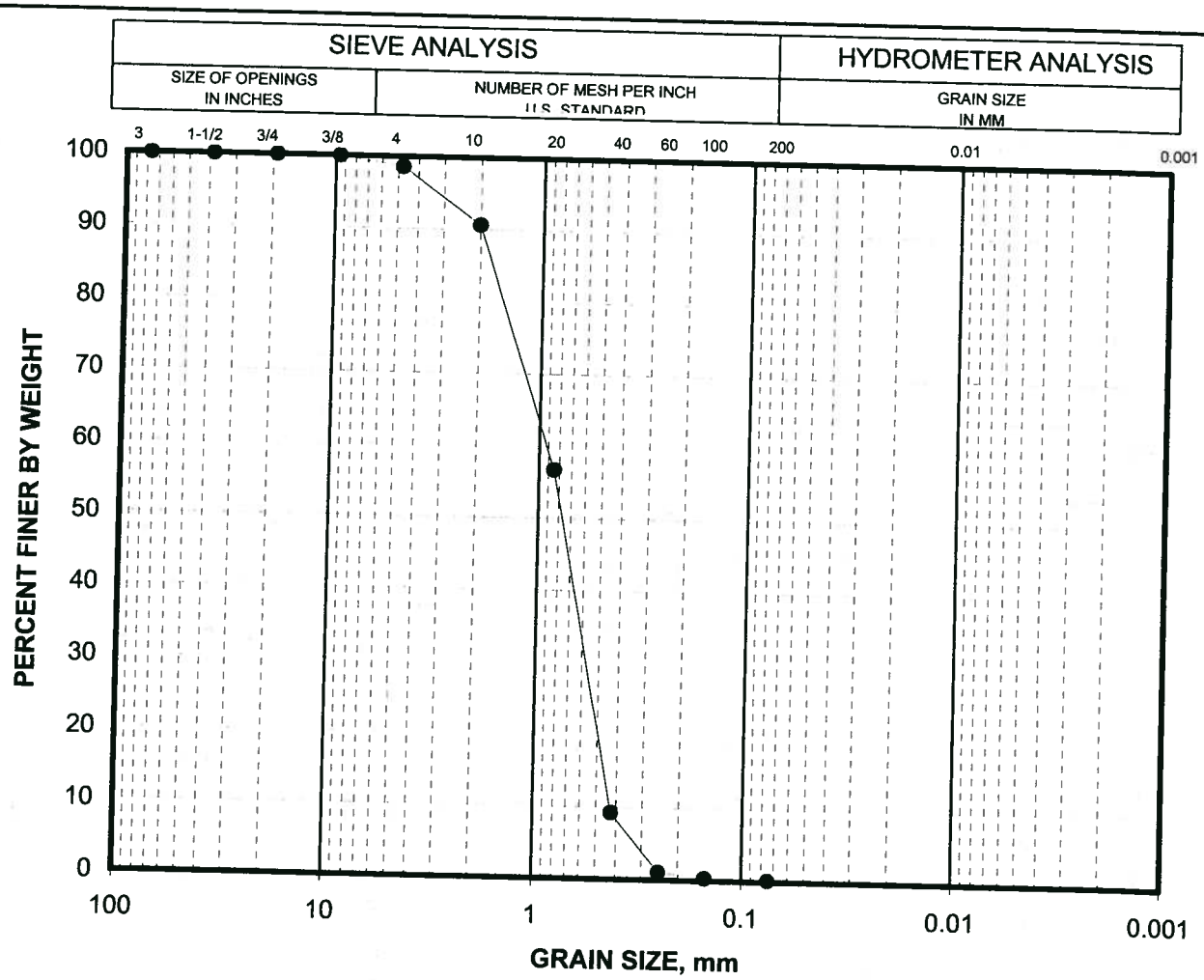
# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-14 | Calc. By/Date | AR 10/10/97 |
| Sample | S-2 | Check. By/Date | _____ |
| Depth, ft. | 1.5 - 1.7 | | |

**CLASSIFICATION:**
Black-brown fine to coarse SAND; moist

**USCS Classification:** SP




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA14_2
10:30 AM 3/7/2007

**FIGURE 21**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-14 | Calc. By/Date | AR 10/10/97 |
| Sample | S-3 | Check. By/Date | |
| Depth, ft. | 1.0 - 1.5 | | |

**CLASSIFICATION:**

Black-brown fine to coarse SAND with silt; scattered organics; moist

**USCS Classification:** SP-SM

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | #15 | Weight Container + Moist Soil | 621.0 |
| Weight Container | 119.8 | Weight Container + Dry Soil | 496.1 |
| | | Water Content, % | 33.2 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | #15 |
| Weight Container | 119.8 |
| Weight Container + Dry Soil | 496.1 |
| Weight Dry Soil (Before Wash) | 376.3 |

AFTER WASH:

| | |
|---|---|
| Container Number | #15 |
| Weight Container | 119.8 |
| Weight Container + Dry Soil | 466.5 |
| Weight Dry Soil (After Wash) | 346.7 |

Soil Washed out No. 200 Sieve, grams **29.6** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | | | | | | |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 1.5-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100.00 |
| 3/8-inch | 222.0 | 226.1 | 4.1 | 1.09 | 1.09 | 98.91 |
| No. 4 | 226.1 | 229.2 | 3.1 | 0.82 | 1.91 | 98.09 |
| No. 10 | 229.2 | 236.7 | 7.5 | 1.99 | 3.90 | 96.10 |
| No. 20 | 236.7 | 277.2 | 40.5 | 10.76 | 14.66 | 85.34 |
| No. 40 | 277.2 | 373.6 | 96.4 | 25.60 | 40.27 | 59.73 |
| No. 60 | 373.6 | 417.8 | 44.2 | 11.74 | 52.01 | 47.99 |
| No. 100 | 417.8 | 515.6 | 97.8 | 25.98 | 77.98 | 22.02 |
| No. 200 | 515.6 | 566.7 | 51.1 | 13.57 | 91.55 | 8.45 |
| Pan | 566.7 | 568.9 | 29.6 + 2.2 | 8.45 | 100.00 | 0.00 |
| | | TOTALS: | 376.5 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA14_3
10:31 AM 3/7/2007

**FIGURE 22**

# MA

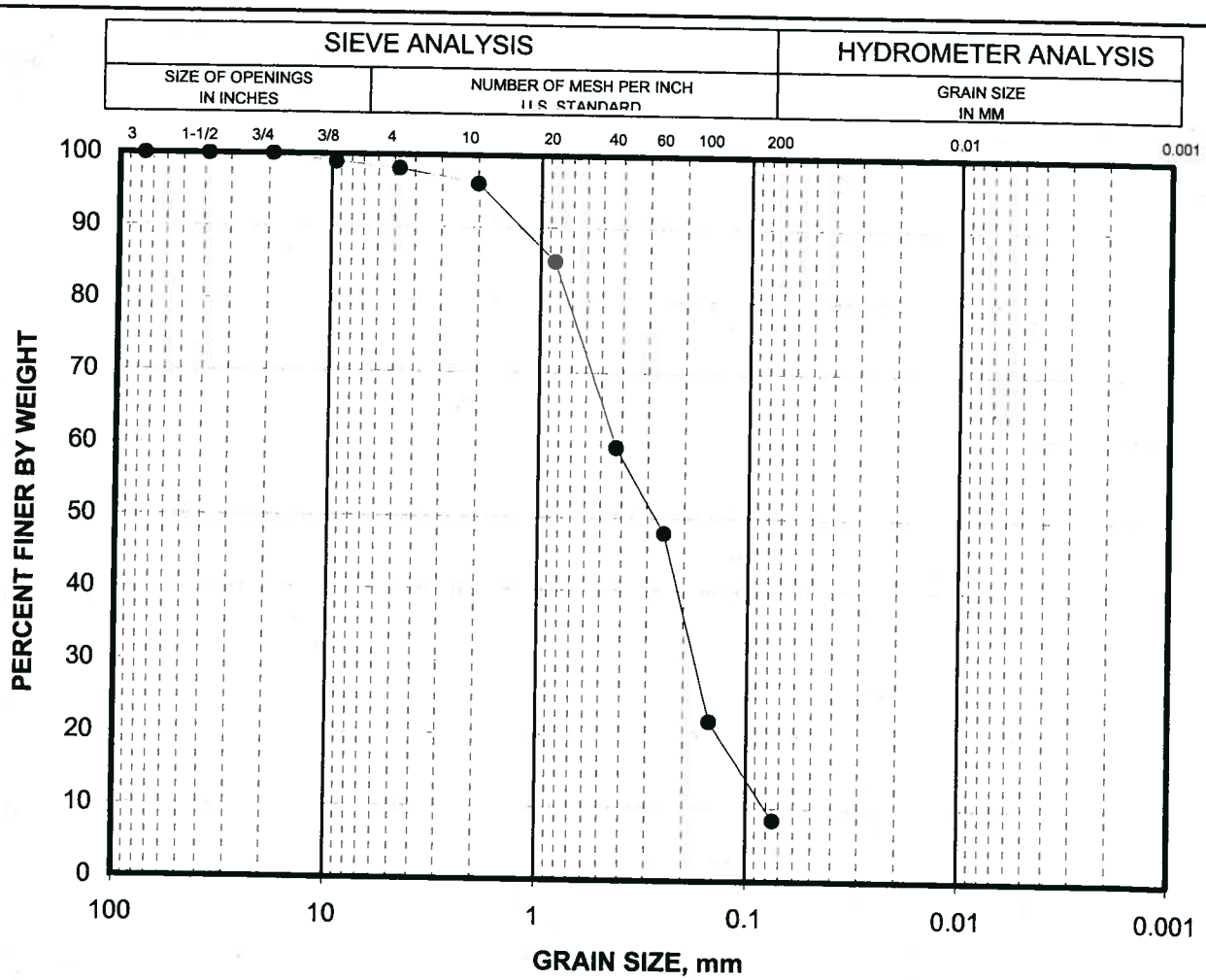
## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/9/97 |
| Boring/Test Pit | TP-14 | Calc. By/Date | AR 10/10/97 |
| Sample | S-3 | Check. By/Date | _____ |
| Depth, ft. | 1.0 - 1.5 | | |

**CLASSIFICATION:**

Black-brown fine to coarse SAND with silt; scattered organics; moist

**USCS Classification:** SP-SM




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA14_3
10:31 AM 3/7/2007

**FIGURE 22**

# MA

## Mechanical Analysis (Sieve Test)

Job No. 94838.1
Boring/Test Pit
Sample
Depth, ft.

Tested By/Date: AR 10/10/97
Calc. By/Date AR 10/10/97
Check. By/Date

**CLASSIFICATION:**

**USCS Classification:**

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | MT-3 | Weight Container + Moist Soil | 7607.0 |
| Weight Container | 537.7 | Weight Container + Dry Soil | 7425.0 |
| | | Water Content, % | 2.6 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | MT-3 |
| Weight Container | 537.7 |
| Weight Container + Dry Soil | 7425 |
| Wei il (Before Wash) | 6887.3 |

AFTER WASH:

| | |
|---|---|
| Container Number | MT-3 |
| Weight Container | 537.7 |
| Weight Container + Dry Soil | 7384.0 |
| Weight Dry Soil (After Wash) | 6846.3 |

d out No. 200 Sieve, grams **41.0** (Included in TOTAL and PERCENT for pan)

SIEVE ANALYSIS

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 100 |
| 4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 1021.2 | 799.2 | 9.67 | 9.67 | 90.33 |
| 1.5-inch | 222.0 | 2705.7 | 2483.7 | 30.07 | 39.74 | 60.26 |
| 3/4-inch | 222.0 | 1382.8 | 1160.8 | 14.05 | 53.79 | 46.21 |
| 3/8-inch | 222.0 | 1074.7 | 852.7 | 10.32 | 64.12 | 35.88 |
| No. 4 | 222.0 | 793.7 | 571.7 | 6.92 | 71.04 | 28.96 |
| No. 10 | 222.0 | 1309.6 | 1087.6 | 13.17 | 84.20 | 15.80 |
| No. 20 | 1309.6 | 1835.3 | 525.7 | 6.36 | 90.57 | 9.43 |
| No. 40 | 222.0 | 707.2 | 485.2 | 5.87 | 96.44 | 3.56 |
| No. 60 | 707.2 | 863.5 | 156.3 | 1.89 | 98.33 | 1.67 |
| No. 100 | 863.5 | 925.9 | 62.4 | 0.76 | 99.09 | 0.91 |
| No. 200 | 925.9 | 955.1 | 29.2 | 0.35 | 99.44 | 0.56 |
| Pan | 955.1 | 960.3 | 41.0 + 5.2 | 0.56 | 100.00 | 0.00 |
| | | TOTALS: | 8260.7 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA_COMB
10:31 AM 3/7/2007

**FIGURE 23**

# MA

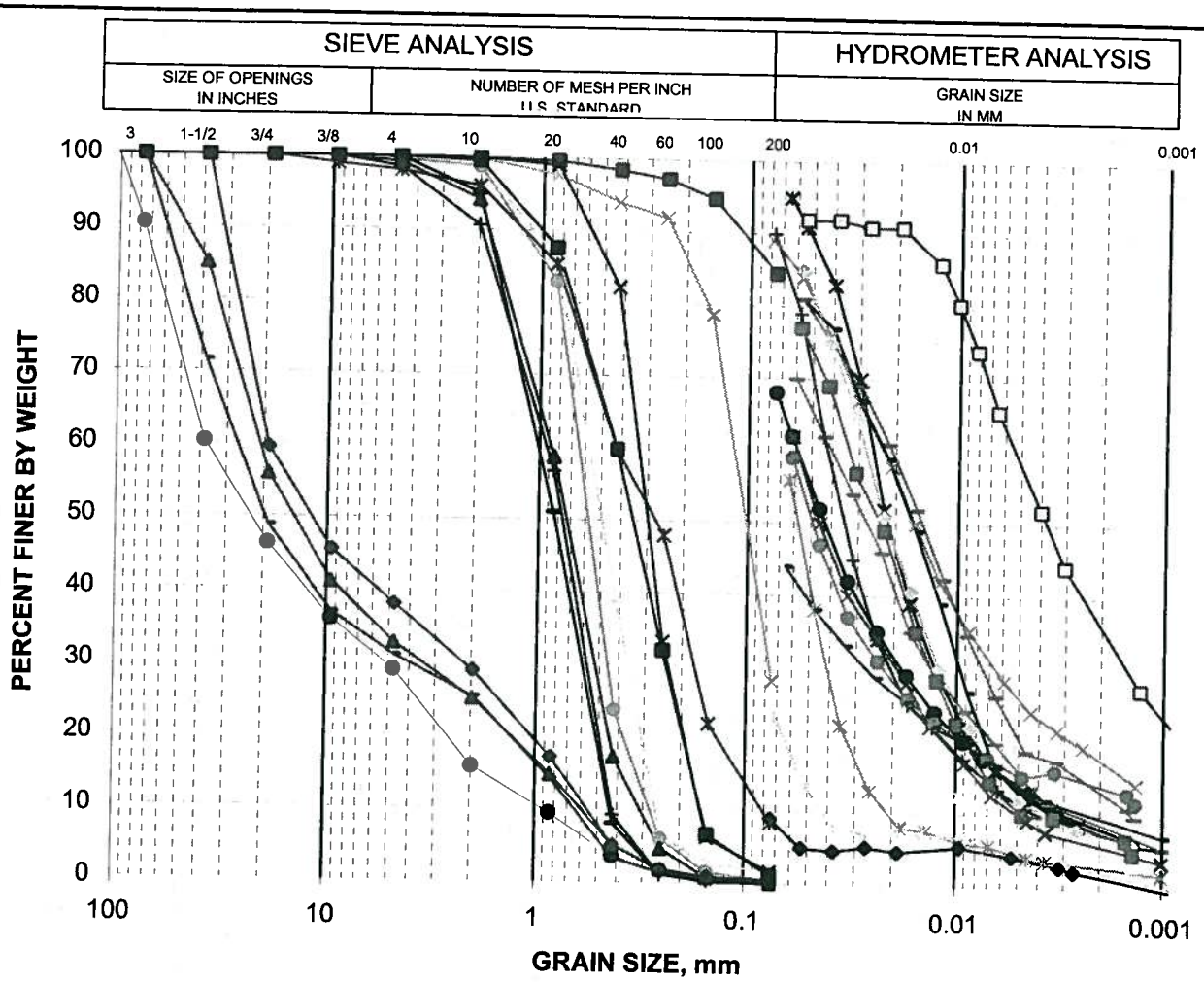
## Mechanical Analysis (Sieve Test)

Job No. **94838.1**

Tested By/Date:
Calc. By/Date
Check. By/Date _____

**CLASSIFICATION:**

**USCS Classification:**




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA_COMB
10:31 AM 3/7/2007

**FIGURE 23**

# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/10/97 |
| Boring/Test Pit | Ring Density | Calc. By/Date | AR 10/10/97 |
| Sample | A&B | Check. By/Date | |
| Depth, ft. | 0.3 -0.6 | | |

**CLASSIFICATION:**

Gray sandy GRAVEL

**USCS Classification:** GP

**Water Content:**

| | | | |
|---|---|---|---|
| Container Number | MT-3 | Weight Container + Moist Soil | 7607.0 |
| Weight Container | 537.7 | Weight Container + Dry Soil | 7425.0 |
| | | Water Content, % | 2.6 |

**Wet Sieve Analysis:**

BEFORE WASH:

| | |
|---|---|
| Container Number | MT-3 |
| Weight Container | 537.7 |
| Weight Container + Dry Soil | 7425 |
| Weight Dry Soil (Before Wash) | 6887.3 |

AFTER WASH:

| | |
|---|---|
| Container Number | MT-3 |
| Weight Container | 537.7 |
| Weight Container + Dry Soil | 7384.0 |
| Weight Dry Soil (After Wash) | 6846.3 |

Soil Washed out No. 200 Sieve, grams **41.0** (Included in TOTAL and PERCENT for pan)

**SIEVE ANALYSIS**

| SIEVE NO. | WEIGHT SIEVE, grams | WEIGHT SIEVE + SOIL, grams | WEIGHT SOIL RETAINED, grams | PERCENT RETAINED | CUMULATIVE PERCENT RETAINED | PERCENT FINER |
|---|---|---|---|---|---|---|
| 4-inch | 222.0 | 222.0 | 0.0 | 0.00 | 0.00 | 100 |
| 3-inch | 222.0 | 1021.2 | 799.2 | 9.67 | 9.67 | 90.33 |
| 1.5-inch | 222.0 | 2705.7 | 2483.7 | 30.07 | 39.74 | 60.26 |
| 3/4-inch | 222.0 | 1382.8 | 1160.8 | 14.05 | 53.79 | 46.21 |
| 3/8-inch | 222.0 | 1074.7 | 852.7 | 10.32 | 64.12 | 35.88 |
| No. 4 | 222.0 | 793.7 | 571.7 | 6.92 | 71.04 | 28.96 |
| No. 10 | 222.0 | 1309.6 | 1087.6 | 13.17 | 84.20 | 15.80 |
| No. 20 | 1309.6 | 1835.3 | 525.7 | 6.36 | 90.57 | 9.43 |
| No. 40 | 222.0 | 707.2 | 485.2 | 5.87 | 96.44 | 3.56 |
| No. 60 | 707.2 | 863.5 | 156.3 | 1.89 | 98.33 | 1.67 |
| No. 100 | 863.5 | 925.9 | 62.4 | 0.76 | 99.09 | 0.91 |
| No. 200 | 925.9 | 955.1 | 29.2 | 0.35 | 99.44 | 0.56 |
| Pan | 955.1 | 960.3 | 41.0 + 5.2 | 0.56 | 100.00 | 0.00 |
| | | TOTALS: | 8260.7 | 100.0 | | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA_RING
10:31 AM 3/7/2007

**FIGURE 23**

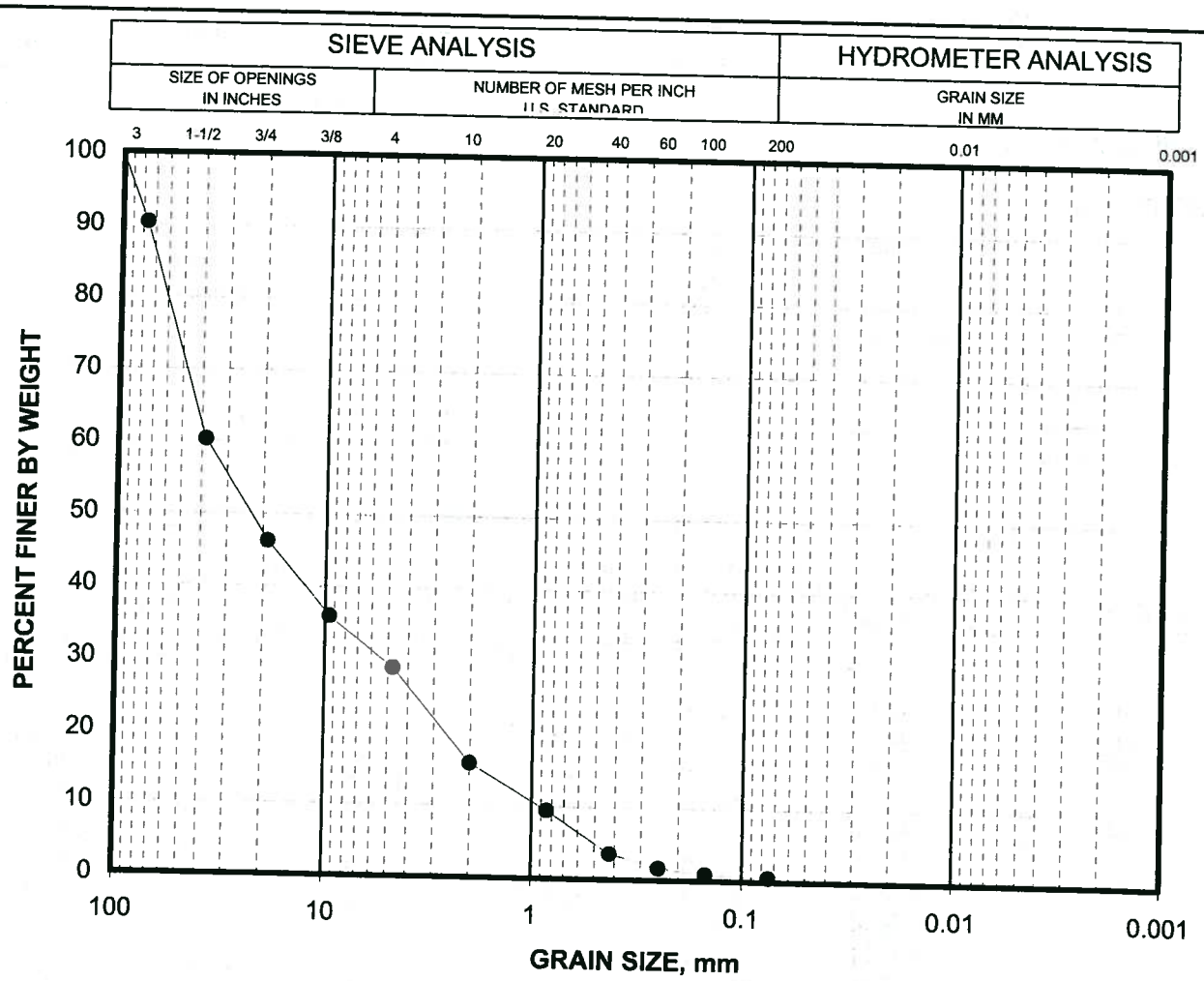
# MA

## Mechanical Analysis (Sieve Test)

| | | | |
|---|---|---|---|
| Job No. | 94838.1 | Tested By/Date: | AR 10/10/97 |
| Boring/Test Pit | Ring Density | Calc. By/Date | AR 10/10/97 |
| Sample | A&B | Check. By/Date | _____ |
| Depth, ft. | 0.3 -0.6 | | |

**CLASSIFICATION:**
Gray sandy GRAVEL

**USCS Classification:** GP




| COBBLES | COARSE | FINE | COARSE | MEDIUM | FINE | SILT SIZED PARTICLES | CLAY |
|---|---|---|---|---|---|---|---|
| | GRAVEL | | SAND | | | FINE-GRAINED SOIL | |

**SQUIER ASSOCIATES** PROJECT: **Condit Hydroelectric Project** **MA**

MA_RING
10:31 AM 3/7/2007

**FIGURE 23**

# UND

## Undisturbed Calculations

Job No. **94838.1**

Tested By/Date: **AR 10/9/97**
Calc. By/Date **AR 10/10/97**
Check. By/Date

## Specimen Data:

| | | | | |
|---|---|---|---|---|
| **Boring No.** | TP-12 | TP-11 | TP-13 | TP-14 |
| **Sample No.** | S-5 | | S-3 | S-4 |
| **Depth (ft)** | 1.60 | 1.70 | 1.70 | 1.80 |
| **Wt.Tube + Wet (g)** | 2229.5 | 1058 | 2136 | 1828.3 |
| **Wt.Tube (g)** | 674.9 | 424.7 | 668.4 | 576.7 |
| **Length of Tube (in.)** | 9.68 | 6.14 | 9.58 | 8.38 |
| **Diameter of Tube (in.)** | 2.85 | 2.85 | 2.85 | 2.85 |

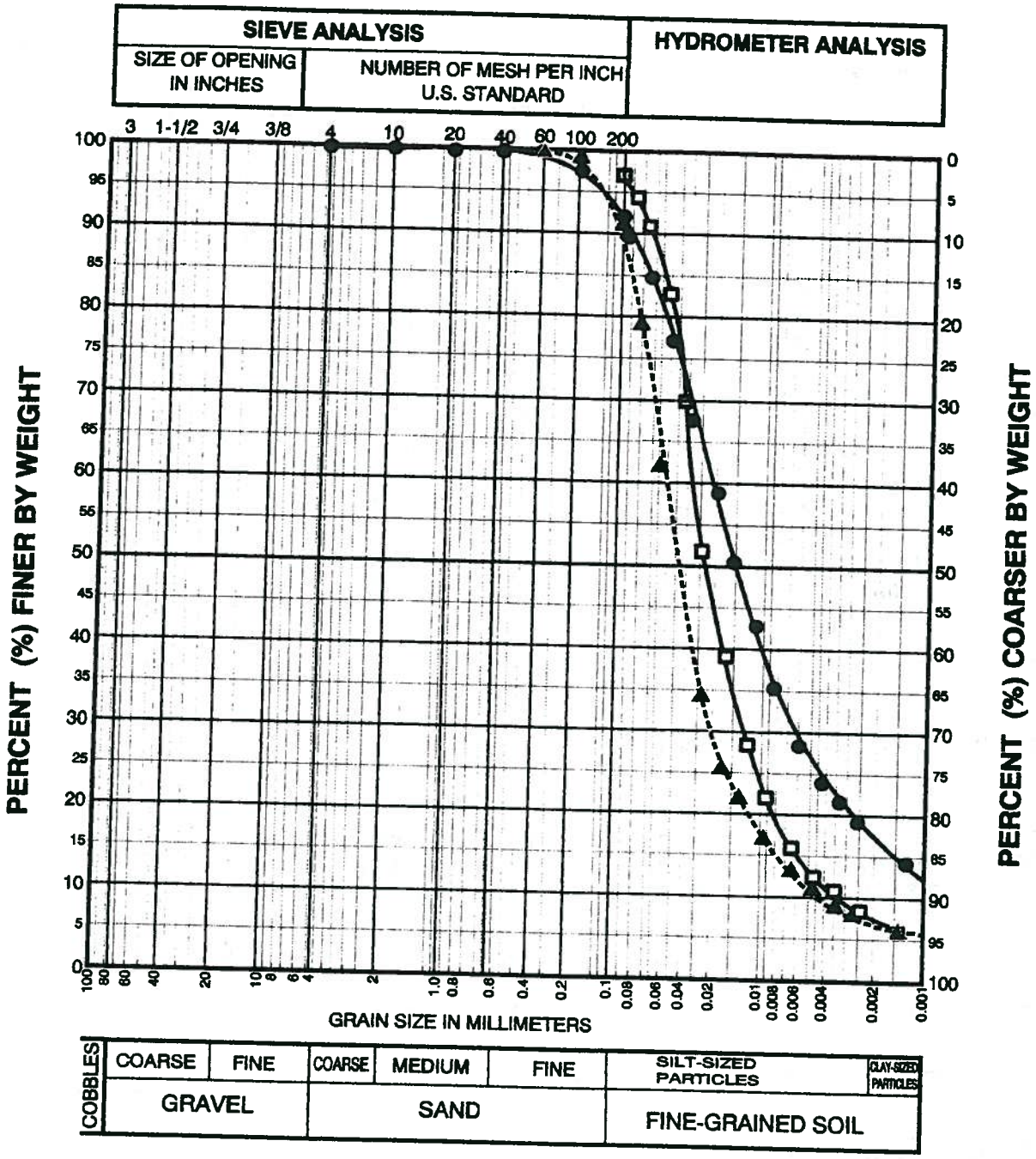
## Moisture Content Determination:

| | | | | |
|---|---|---|---|---|
| **Tare #** | #8 | #18 | #4 | #1 |
| **Wt.Tare + Wet (grams)** | 1703 | 664.1 | 1633.8 | 1150.5 |
| **Wt.Tare + Dry (grams)** | 1553.7 | 520.7 | 1515.7 | 885.1 |
| **Wt.Tare (grams)** | 150.7 | 93.1 | 167.4 | 83.2 |
| **Water Content (%)** | 10.64 | 33.54 | 8.76 | 33.10 |

## Unit Weight (Lbs/cu.ft):

| | | | | |
|---|---|---|---|---|
| **Unit Wet WT. (lbs/cu.ft)** | **95.91** | **61.59** | **91.48** | **89.19** |
| **Unit Dry WT. (lbs/cu.ft)** | **86.68** | **46.13** | **84.12** | **67.01** |

**SQUIER ASSOCIATES** | PROJECT: **Condit Hydroelectric Project** | **UND**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-1 | S-2 | 8 | 27.7 | Brown SILT with some clay and trace fine sand, scattered organics | |
| --▲-- | B-1 | S-5 | 13 | 40.2 | Brown SILT with trace fine sand and clay, occasional organics | |
| —□— | B-1 | S-9 | 26 | 30.8 | Brown SILT with trace clay and fine sand | |

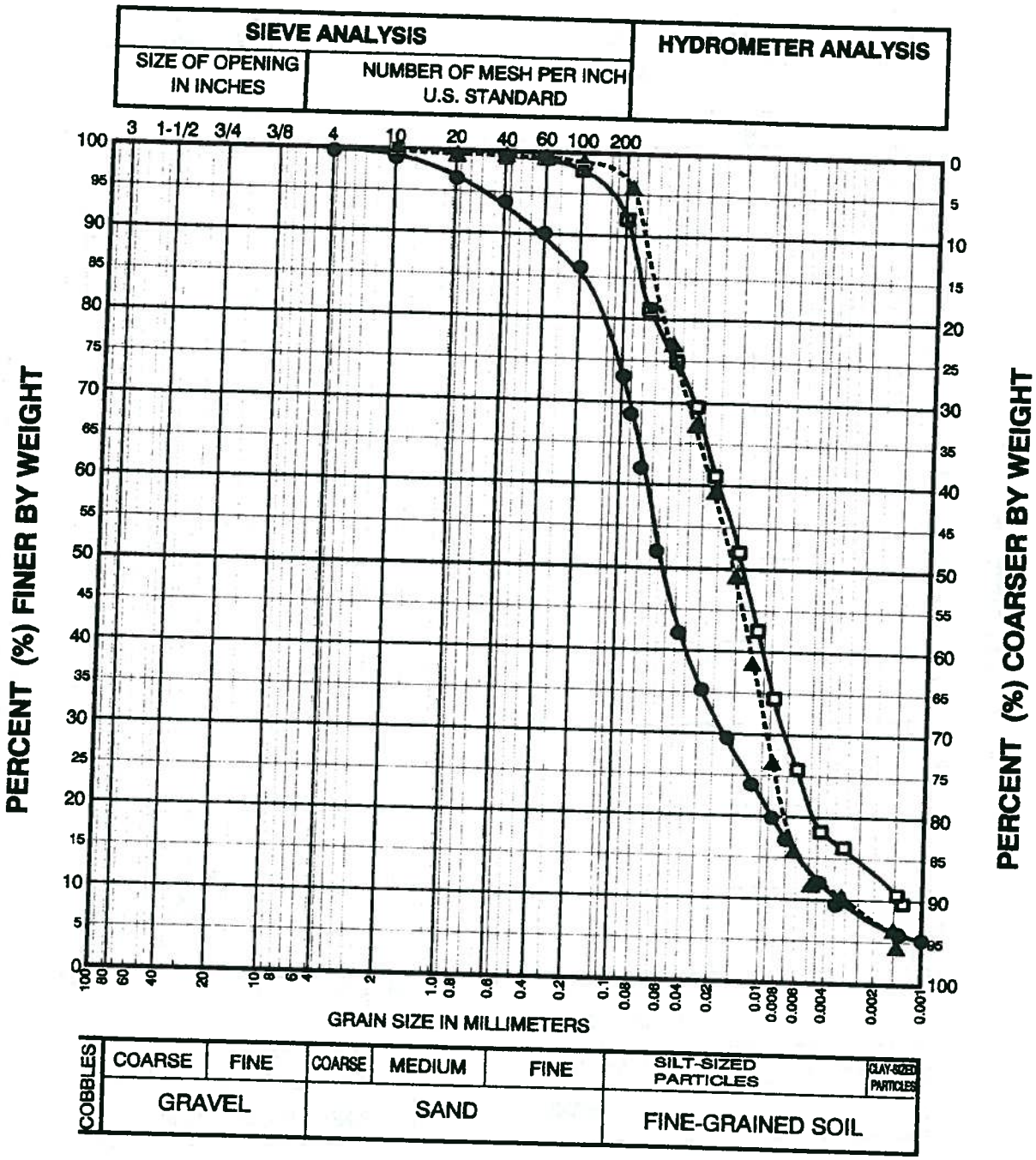
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994 94838

GRAINSZ

Checked by

**FIGURE F1**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-1A1 | S-1 | 5 | 68.3 | Brown fine sandy SILT with trace clay, scattered organics | |
| --▲-- | B-1A5 | S-1 | 15 | -- | Dark gray-brown SILT with trace fine sand and clay, scattered organics | |
| —□— | B-1A5 | S-2 | 22 | -- | Brown SILT with some clay, trace fine sand and scattered organics | |

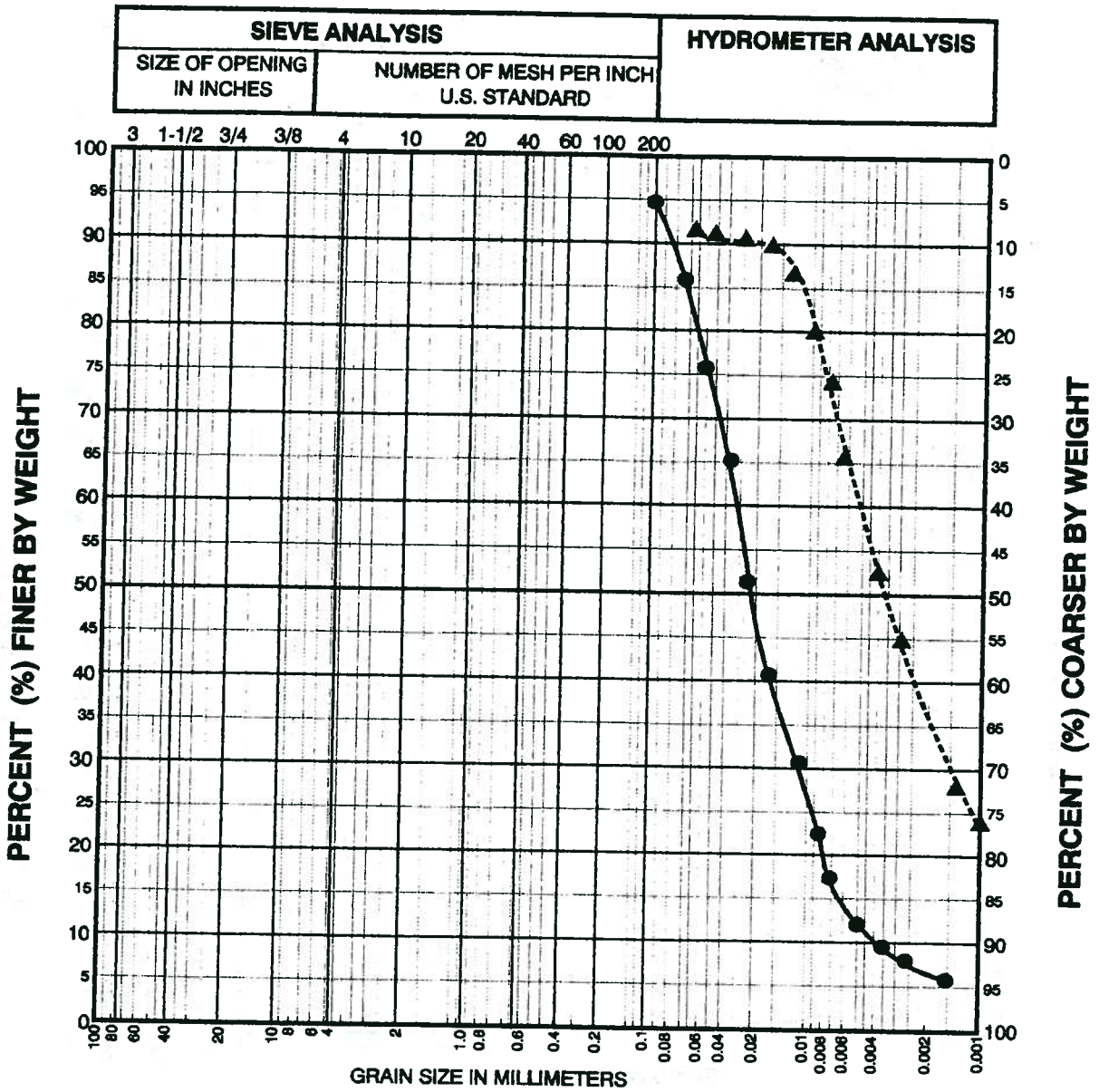
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994
94838

GRAINSZ

Checked by

**FIGURE F2**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-2 | S-2 | 10 | 85.0 | Gray-brown SILT with trace clay and fine sand, numerous organics | |
| --▲-- | B-2 | S-5 | 22 | 79.6 | Brown clayey SILT | |

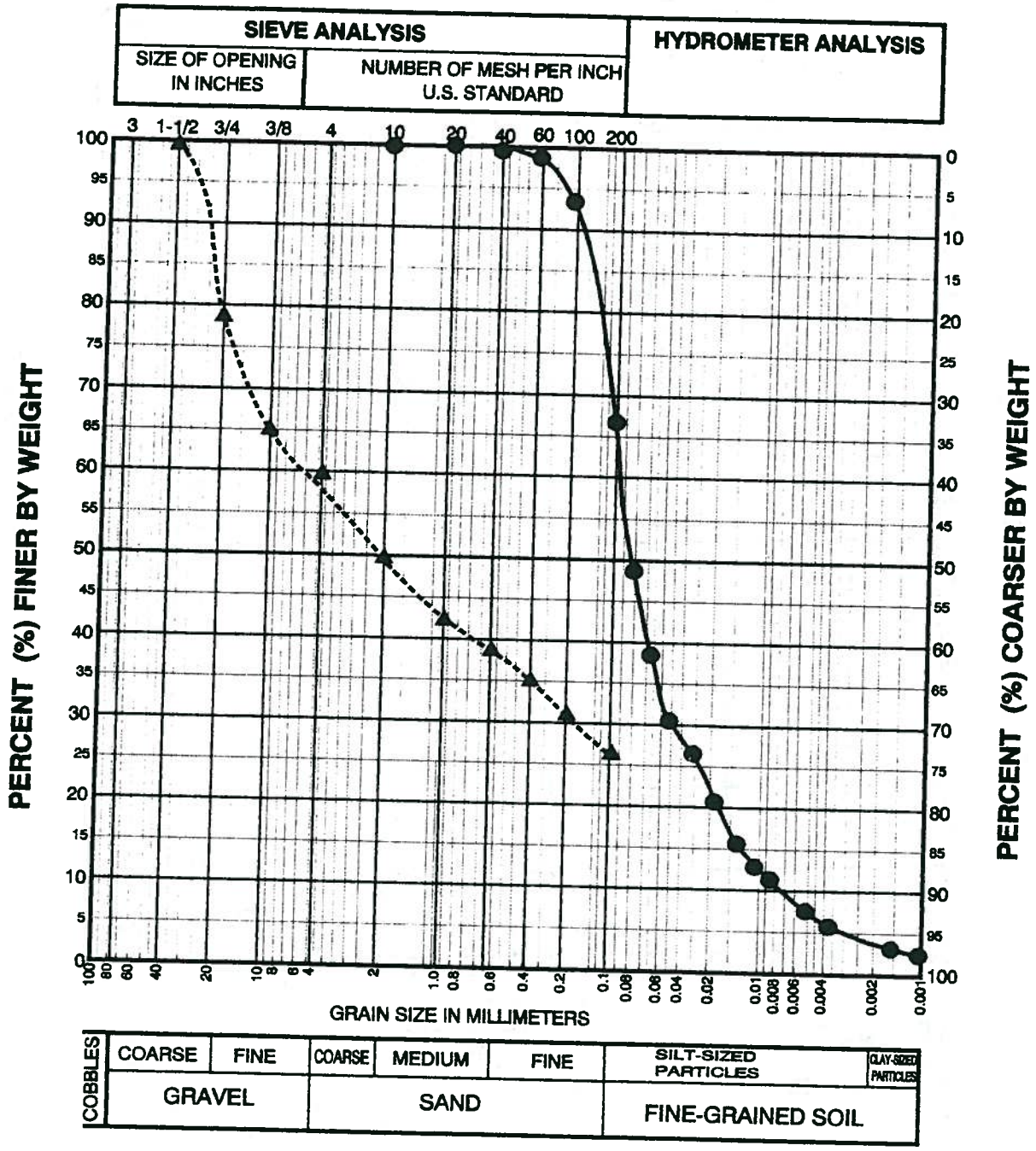
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994
94838

GRAINSZ

Checked by

**FIGURE F3**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-3 | S-2 | 4 | 69.4 | Brown fine sandy SILT with trace clay, scattered organics | |
| --▲-- | B-3 | S-4 | 15 | 32 | Brown fine to coarse sandy GRAVEL with some silt and trace clay | |

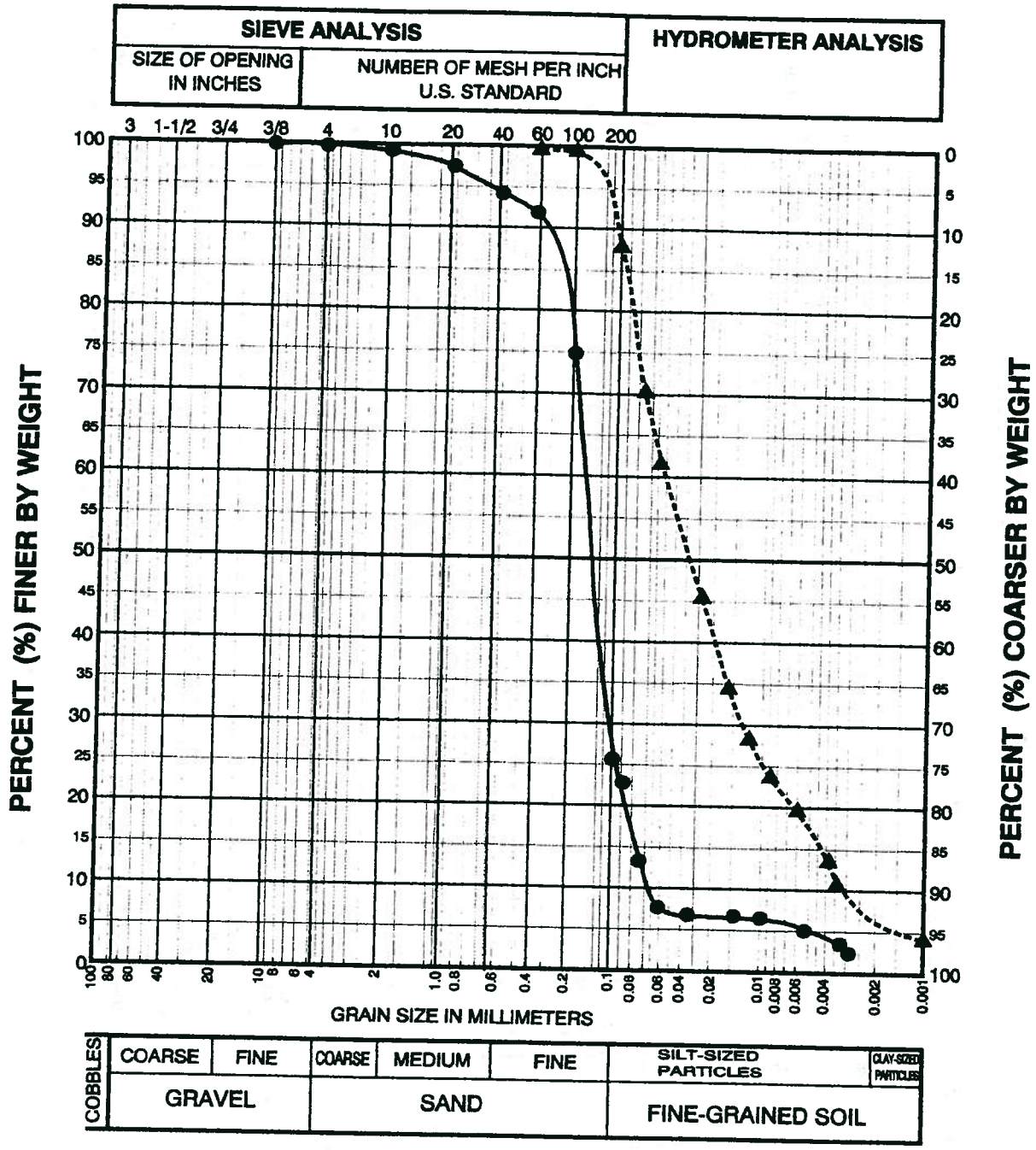
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994 94838

GRAIN8Z

Checked by

**FIGURE F4**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-4 | S-6 | 27.5 | – | Dark gray fine SAND with some silt, trace clay, numerous organics | |
| --▲-- | B-4 | S-8 | 35 | – | Dark gray SILT with some fine sand and trace clay, scattered organics | |

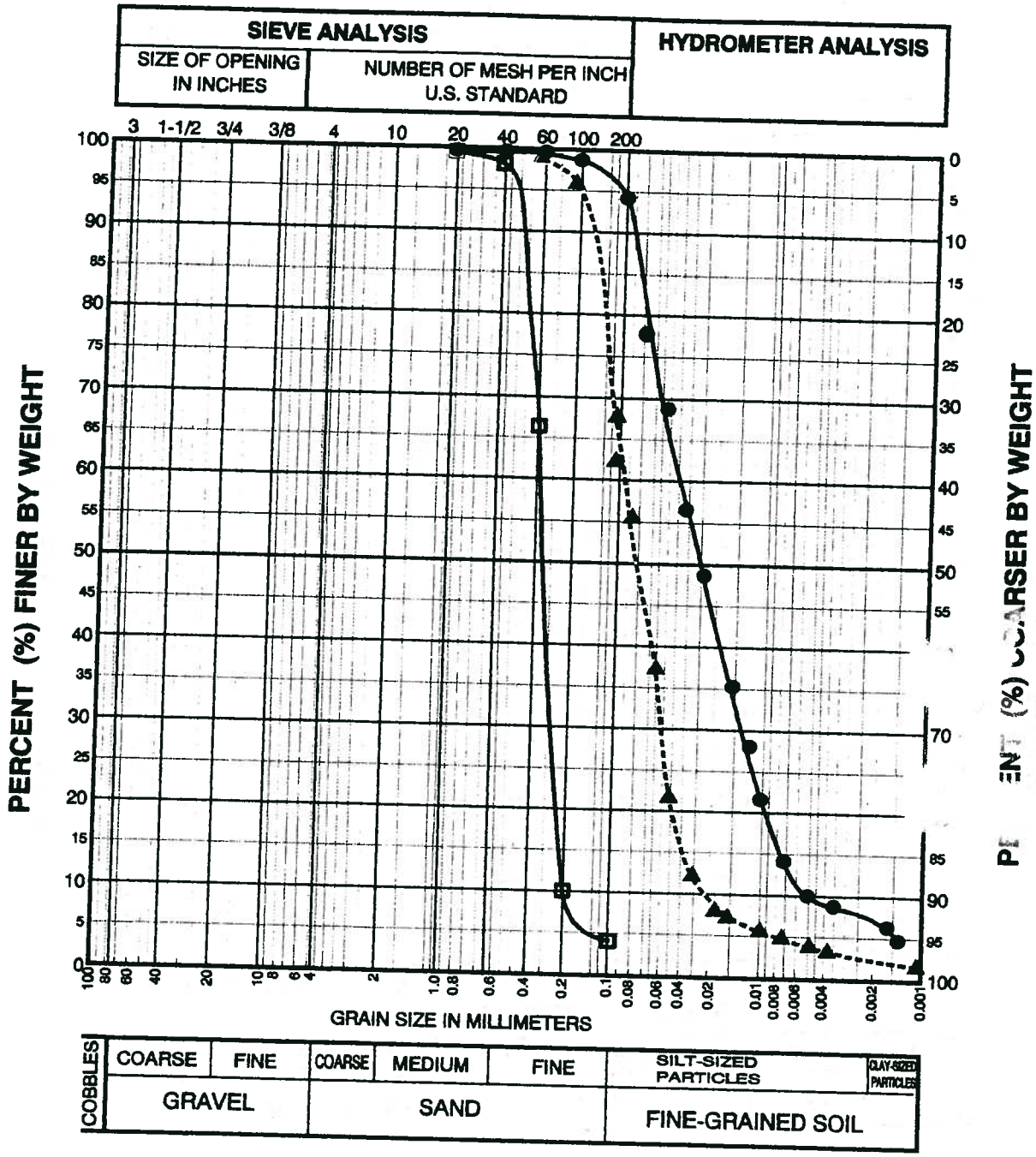
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994 94838

GRAINSZ

Checked by

**FIGURE F5**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| ●— | B-4 | S-9 | 42 | -- | Brown SILT with trace fine sand and clay | |
| ▲--- | B-4 | S-11 | 47 | -- | Dark gray fine sandy SILT with trace clay | |
| □— | B-4 | S-12 | 15 | -- | Gray fine SAND with trace silt | SP |

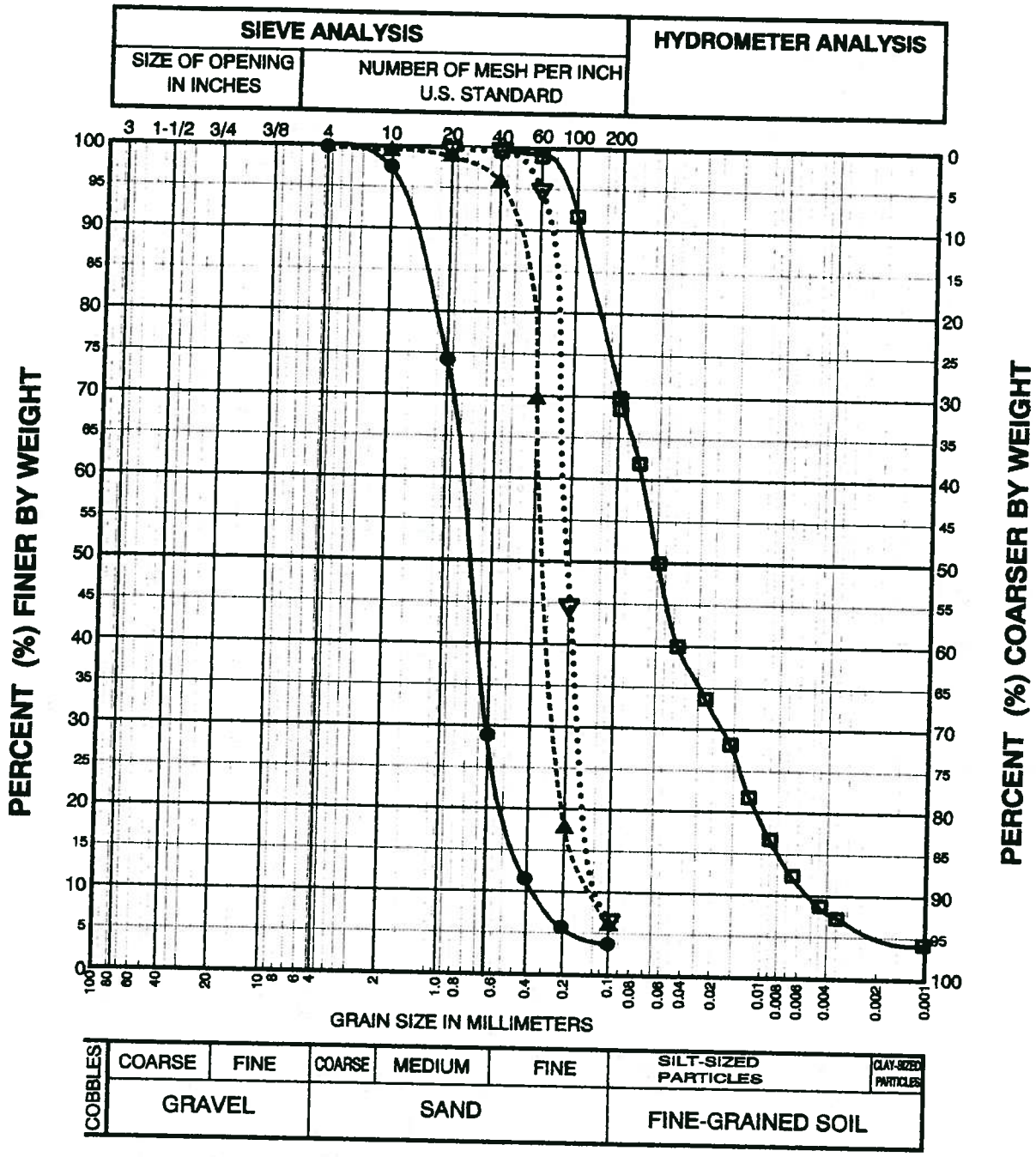
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994 94838

GRAINSZ

Checked by

**FIGURE F6**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-5 | S-2 | 8 | – | Brown-gray fine to medium SAND with trace silt | SP |
| --▲-- | B-5 | S-4 | 22 | – | Gray fine SAND with trace silt, scattered organics | |
| —□— | B-5 | S-6 | 36 | – | Dark gray fine sandy SILT with trace clay, scattered organics | |
| ···▽··· | B-5 | S-8 | 42.5 | – | Gray fine SAND with trace silt | |

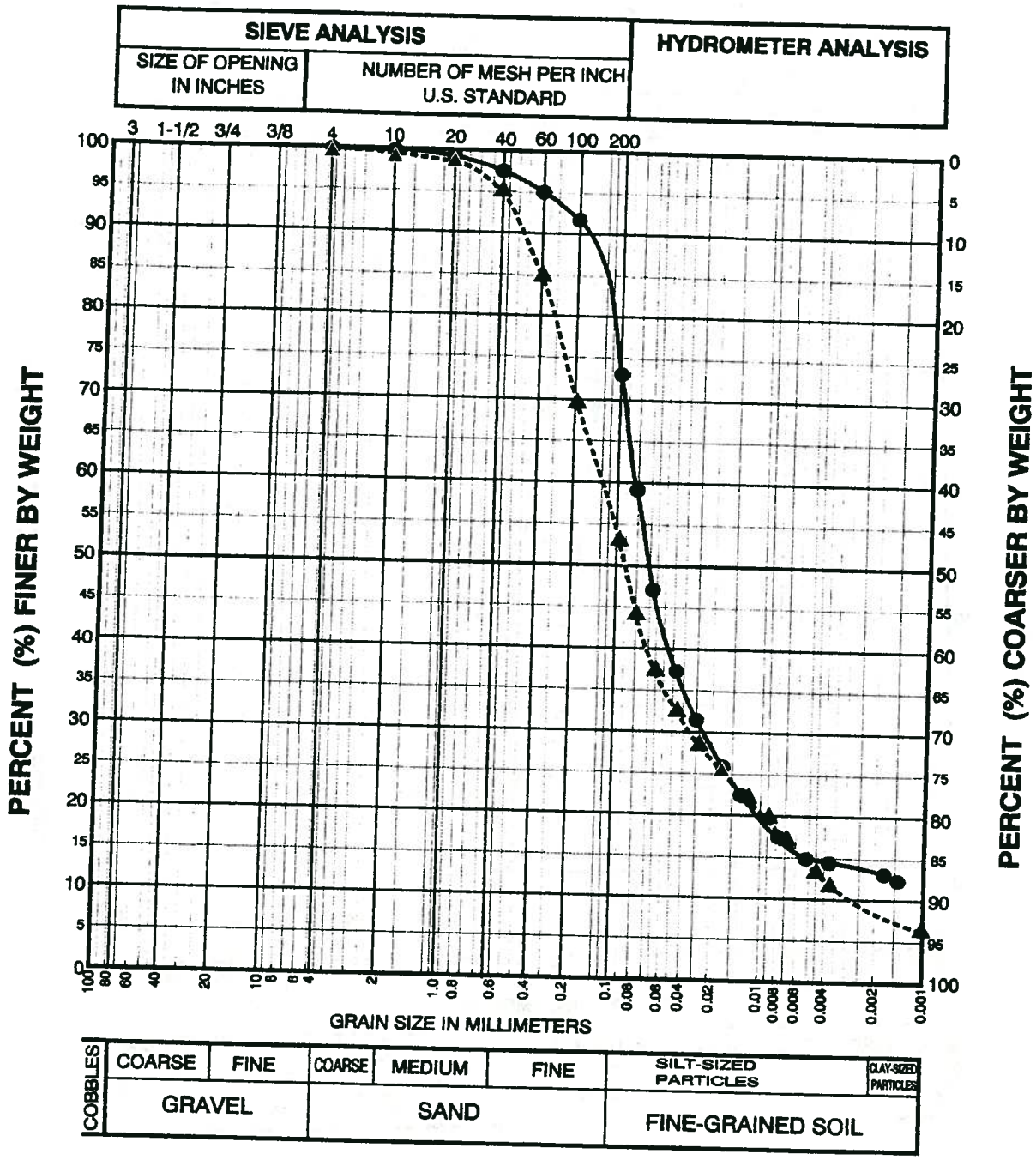
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994 94838

GRAINSZ

Checked by

**FIGURE F7**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-6 | S-2 | 9 | – | Gray SILT with some fine sand to sandy SILT with some clay | |
| --▲--- | B-6 | S-3 | 15 | – | Orange-brown silty fine SAND with trace clay | |

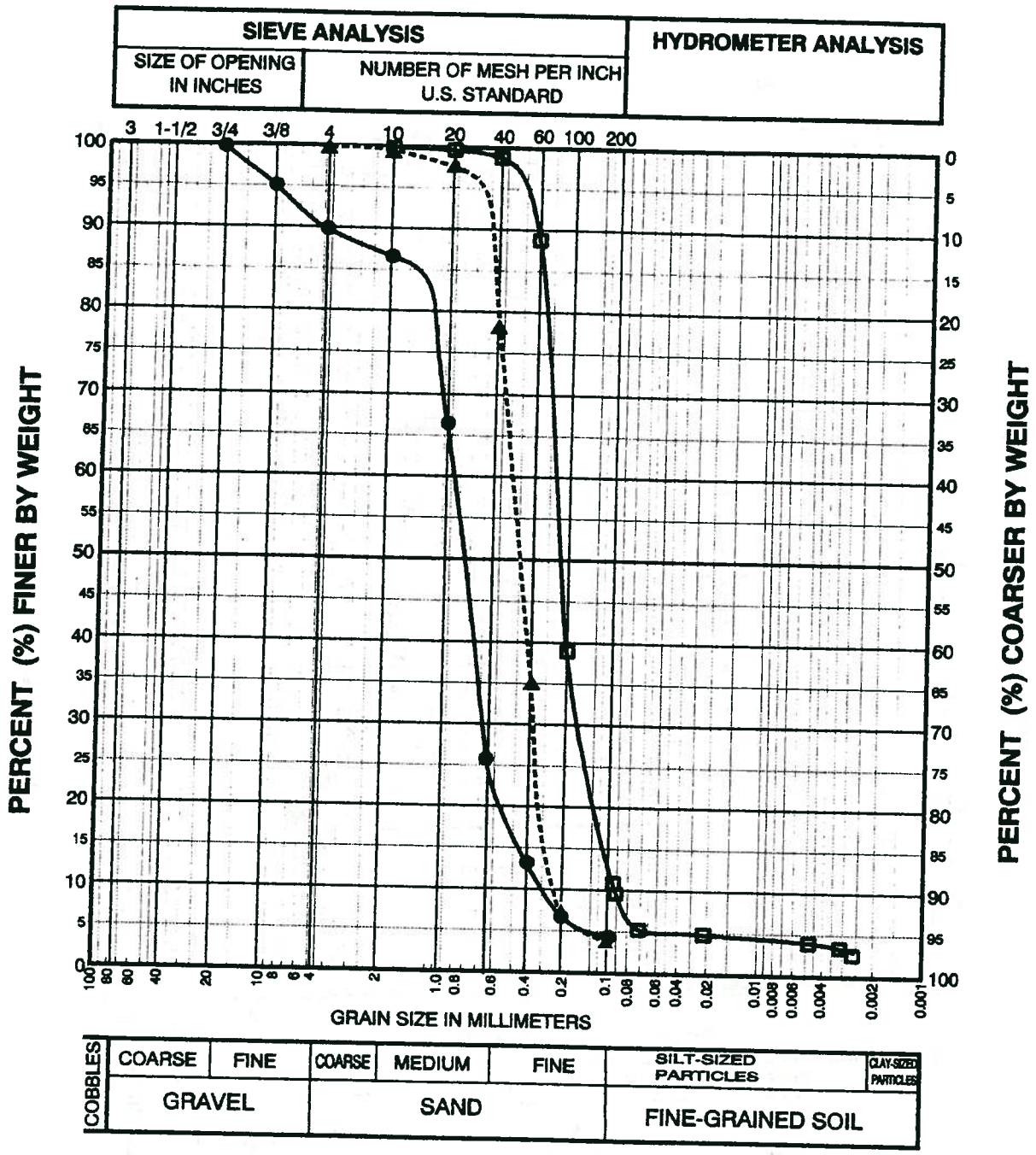
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994
94838

GRAINSZ

Checked by

**FIGURE F8**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-7 | S-2 | 6 | -- | Gray fine to medium SAND with trace fine gravel and silt | SP |
| --▲--- | B-7 | S-3 | 10 | -- | Gray fine to medium SAND with trace silt | SP |
| —□— | B-7 | S-4 | 15 | -- | Dark gray fine SAND with trace silt | |

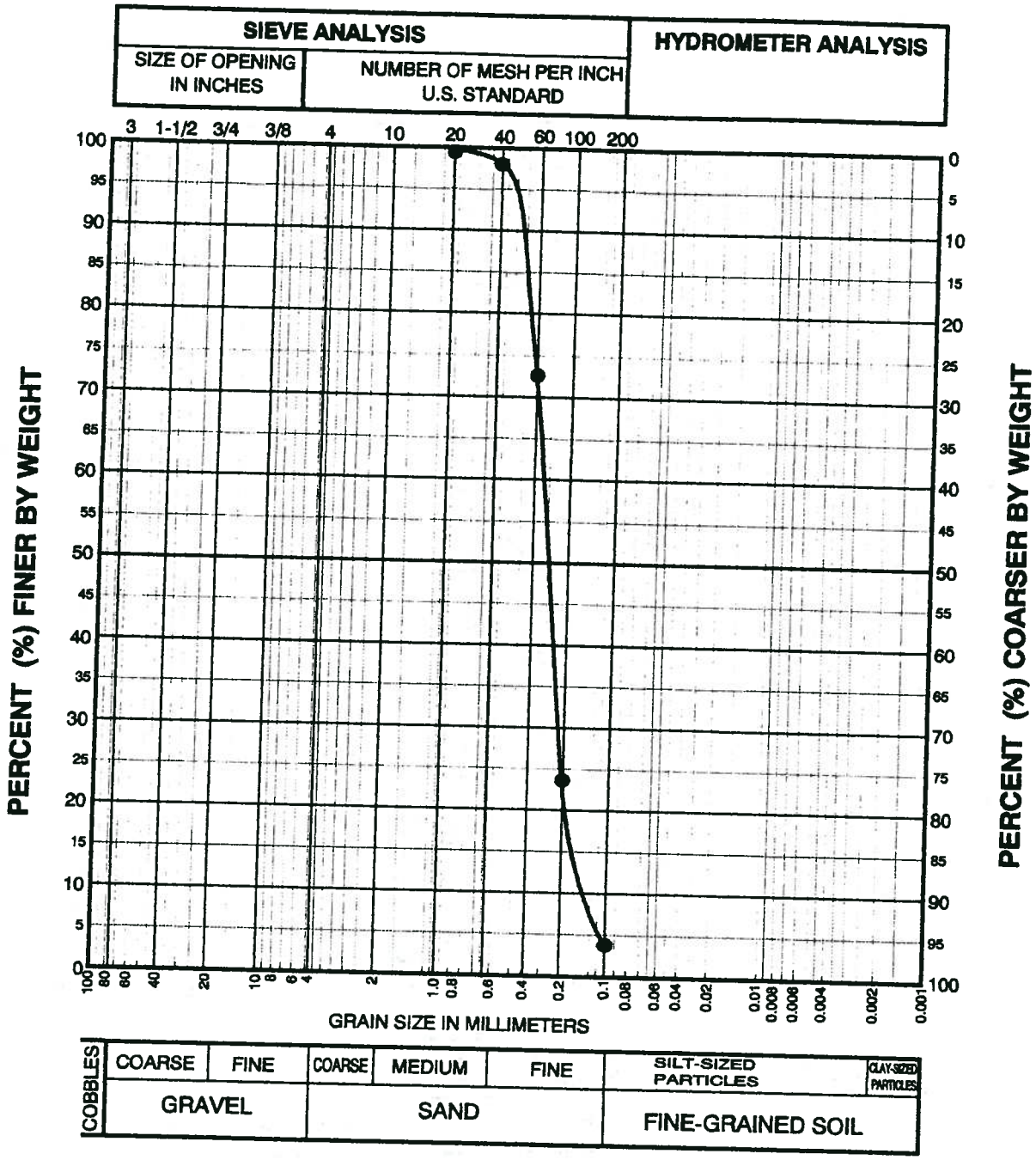
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994 94838

GRAINSZ

Checked by

**FIGURE F9**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-7 | S-5 | 20 | – | Gray fine SAND with trace silt | SP |

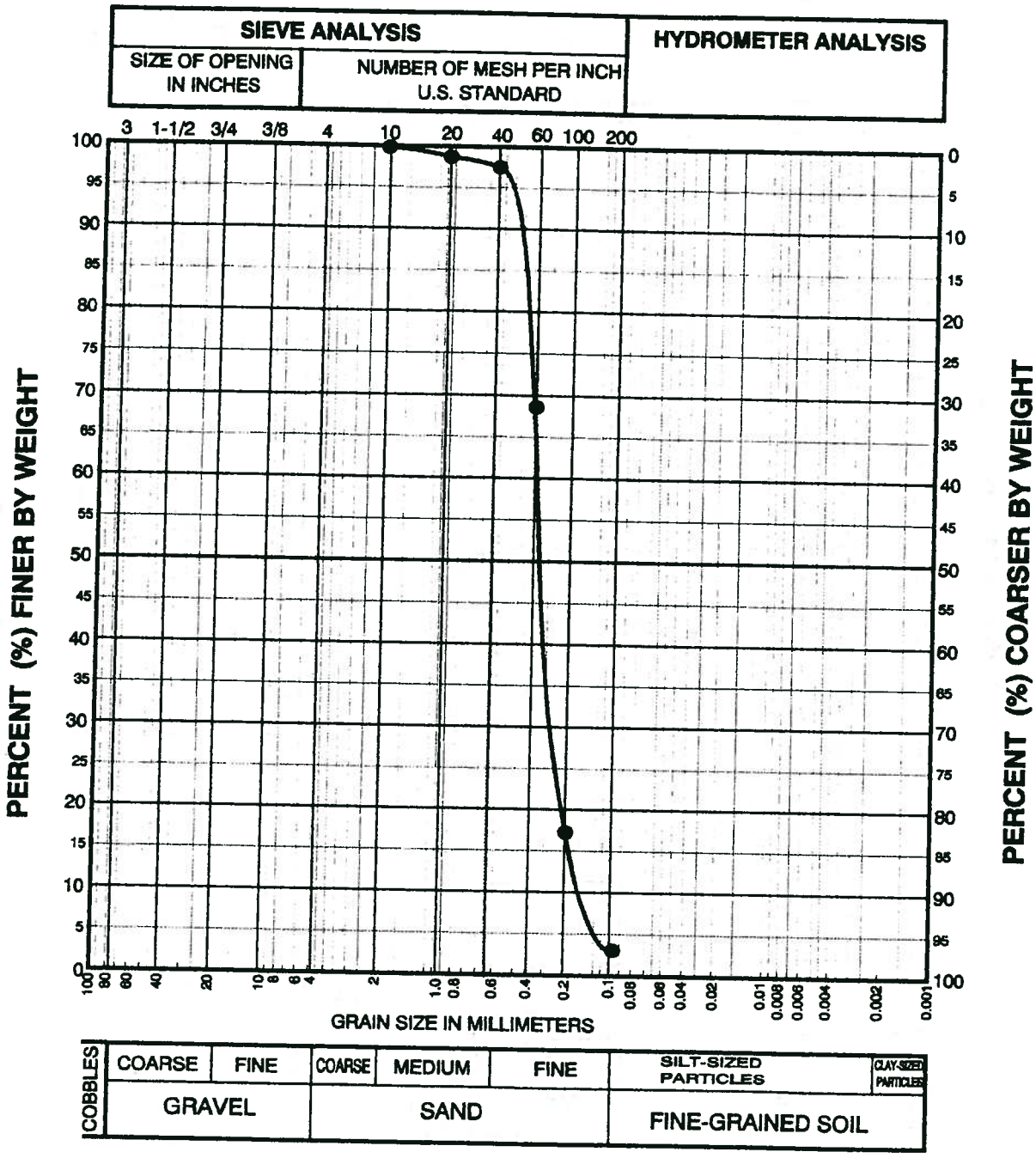
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994 94838

GRAINSZ

Checked by

**FIGURE F10**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-7 | S-6 | 25 | -- | Gray fine SAND with trace silt, occasional organics | SP |

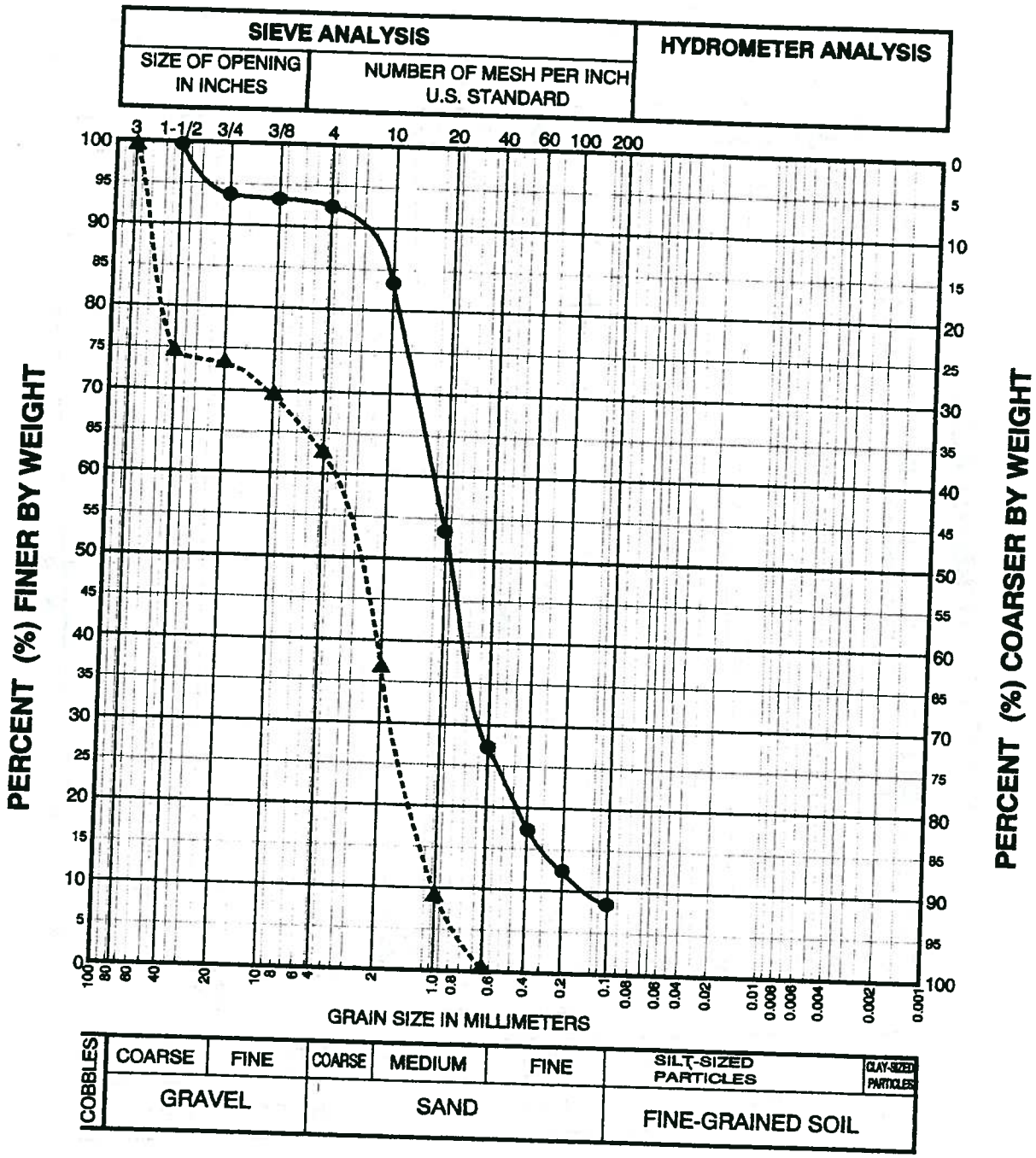
**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994
94838

GRAINSZ

Checked by

**FIGURE F11**




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-7A | S-2 | 3 | 21.8 | Brown fine to coarse SAND with trace silt and fine gravel | |
| --▲-- | B-7A | S-7 | 12.5 | 15.7 | Brown gravelly medium to coarse SAND (clean) | SP |

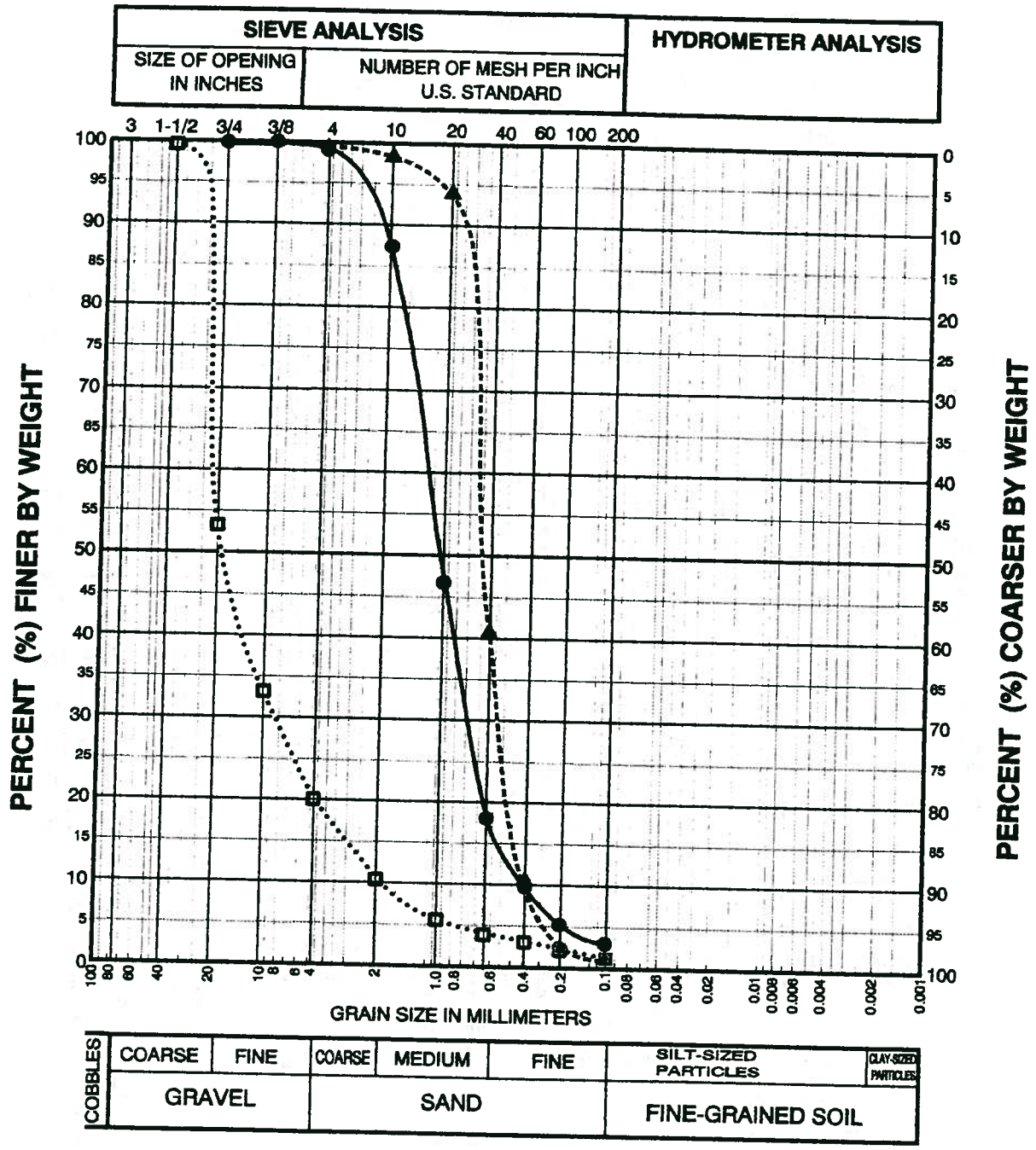
# GRAIN SIZE CLASSIFICATION

SQUIER ASSOCIATES
APRIL 1994
94838

GRAINSZ

Checked by

FIGURE F12




| TEST SYMBOL | BORING/ TEST PIT | SAMPLE | DEPTH, FT. | W(%) | CLASSIFICATION OF MATERIAL | USC |
|---|---|---|---|---|---|---|
| —●— | B-8 | S-2 | 6 | – | Gray fine to coarse SAND with trace silt, occasional organics | SP |
| --▲-- | B-8 | S-3 | 11 | – | Gray fine to medium SAND | SP |
| —□— | B-8 | S-5 | 22 | – | Dark gray fine to coarse GRAVEL with some coarse to fine sand, trace silt | GP |

**GRAIN SIZE CLASSIFICATION**

SQUIER ASSOCIATES
APRIL 1994
94838

GRAIN8Z

Checked by

**FIGURE F13**

# Appendix B
# Correspondance and Approval Letters

**From:** Olson, Todd
**Sent:** Monday, October 16, 2006 5:06 PM
**To:** Harris, Kathryn L NWP
**Cc:** Hemstreet, Tim; Poindexter, Arianne
**Subject:** RE: Condit Dam SAP

Kathryn,
Thank you for approval. As you know we plan to conduct the fieldwork in a timely manner, hopefully in the next month. Once we have a work schedule, I can provide you dates of the sampling should you wish to observe.

Sincerely,
Todd

Todd Olson
Implementation Program Mgr.
PacifiCorp

---

**From:** Harris, Kathryn L NWP [mailto:Kathryn.L.Harris@nwp01.usace.army.mil]
**Sent:** Monday, October 16, 2006 4:36 PM
**To:** Olson, Todd
**Cc:** Harris, Kathryn L NWP
**Subject:** Condit Dam SAP

Todd,

The Corps received concurrence from the sediment team that the SAP, with the most recent updates on sampling locations, is approved. PacifiCorp is now able to complete the sediment sampling needed to continue review of that aspect of the project.

Kathryn

Kathryn Harris
Regulatory Project Manager
503-808-4387
Fax 503-808-4375

***please visit our webpage at http://www.nwp.usace.army.mil/op/g/home.asp***

----------

This email is confidential and may be legally privileged.

It is intended solely for the addressee. Access to this email by anyone else, unless

If you are not the intended recipient, any disclosure, copying, distribution or any

==========

Washington Department of FISH and WILDLIFE

# HYDRAULIC PROJECT APPROVAL

RCW 77.55.021 - Appeal pursuant to Chapter 34.05 RCW

Southwest
2108 Grand Boulevard
Vancouver, WA 98661
(360) 696-6211

Issue Date: November 13, 2006
Project Expiration Date: December 01, 2006

Control Number: 107362-1
FPA/Public Notice #: N/A

| PERMITTEE | AUTHORIZED AGENT OR CONTRACTOR |
|---|---|
| Pacificorp | PacifiCorp |
| ATTENTION: Tim Hemstreet | ATTENTION: Briana Weatherly |
| 825 NE Multnomah Suite 1500 | 825 NE Multnomah Suite 1500 |
| Portland, OR 97232 | Portland, OR 97232 |
| 503-813-6170 | 503-813-7039 |
| Fax: 503-813-6659 | Fax: 503-813-6659 |

Project Name: Northwestern Lake Sediment Sampling

Project Description: Approximately three sediment samples will be taken at each of four locations in the lake.

## PROVISIONS

1. Work shall be accomplished per plans and specifications approved by the Washington Department of Fish and Wildlife as detailed on the JARPA, except as modified by this Hydraulic Project Approval. A copy of these plans shall be available on site during construction.

2. Drilling equipment shall be well-maintained and in good repair to prevent the loss of lubricants, grease, and any other deleterious materials from entering the lake.

3. Drill spoils and cutting brought up to the barge shall not be released to the lake.

4. Drill cuttings shall be deposited in a location where they will not re-enter the lake either directly or due to erosion.

5. The drill string shall operate within a temporary pipe casing.

6. All containers storing fuel or other deleterious substances on the barge shall be secured during drilling operations to prevent incidental spills.

7. Extreme care shall be exercised to minimize the loss of fine sediment into the lake during drilling and soil sampling efforts.

8. A non-petroleum organic drilling lubricant shall be used during this project to protect water quality and fish resources.

9. Wastewater from the drilling process shall not be allowed to directly enter or leach into the lake.

10. If at any time, as a result of project activities, fish are observed in distress, a fish kill occurs, or water quality problems develop (including equipment leaks or spills), immediate notification shall be made to the Washington Department of Ecology at 1-800-258-5990, and to the Area Habitat Biologist listed below.

11. Every effort shall be taken during all phases of this project to ensure that sediment-laden water is not allowed to enter the lake.

12. Extreme care shall be taken to ensure that no petroleum products, hydraulic fluid, fresh cement, sediments, sediment-laden water, chemicals, or any other toxic or deleterious materials are allowed to enter or leach into the lake.

## PROJECT LOCATIONS

### Location #1 Site One

| WORK START: November 13, 2006 | | | | | WORK END: December 01, 2006 | |
|---|---|---|---|---|---|---|
| WRIA: 29.0160 | Waterbody: White Salmon River | | | | Tributary to: Columbia River | |
| 1/4 SEC: SE 1/4 | Section: 03 | Township: 03 N | Range: 10 E | Latitude: N 45.76831 | Longitude: W 121.53805 | County: Klickitat |
| Location #1 Driving Directions | | | | | | |

### Location #2 Site Two

| WORK START: November 13, 2006 | | | | | WORK END: December 01, 2006 | |
|---|---|---|---|---|---|---|
| WRIA: 29.0160 | Waterbody: White Salmon River | | | | Tributary to: Columbia River | |
| 1/4 SEC: SE 1/4 | Section: 03 | Township: 03 N | Range: 10 E | Latitude: N 45.77110 | Longitude: W 121.53784 | County: Klickitat |
| Location #2 Driving Directions | | | | | | |

### Location #3 Site Three

| WORK START: November 13, 2006 | | | | | WORK END: December 01, 2006 | |
|---|---|---|---|---|---|---|
| WRIA: 29.0160 | Waterbody: White Salmon River | | | | Tributary to: Columbia River | |
| 1/4 SEC: SE 1/4 | Section: 03 | Township: 03 N | Range: 10 E | Latitude: N 45.77267 | Longitude: W 121.53405 | County: Klickitat |
| Location #3 Driving Directions | | | | | | |

Washington Department of FISH and WILDLIFE

# HYDRAULIC PROJECT APPROVAL

RCW 77.55.021 - Appeal pursuant to Chapter 34.05 RCW

Southwest
2108 Grand Boulevard
Vancouver, WA 98661
(360) 696-6211

Issue Date: November 13, 2006
Project Expiration Date: December 01, 2006

Control Number: 107362-1
FPA/Public Notice #: N/A

Location #4 Site Four

| WORK START: November 13, 2006 | | | | | WORK END: December 01, 2006 | |
|---|---|---|---|---|---|---|
| WRIA: 29.0160 | Waterbody: White Salmon River | | | | Tributary to: Columbia River | |
| 1/4 SEC: SE 1/4 | Section: 03 | Township: 03 N | Range: 10 E | Latitude: N 45.77441 | Longitude: W 121.53030 | County: Klickitat |
| Location #4 Driving Directions | | | | | | |

## NOTES

Compliance with this Hydraulic Project Approval does not ensure compliance with the federal Endangered Species Act or any other local, state or federal laws.

## APPLY TO ALL HYDRAULIC PROJECT APPROVALS

This Hydraulic Project Approval pertains only to those requirements of the Washington State Hydraulic Code, specifically Chapter 77.55 RCW (formerly RCW 77.20). Additional authorization from other public agencies may be necessary for this project. The person(s) to whom this Hydraulic Project Approval is issued is responsible for applying for and obtaining any additional authorization from other public agencies (local, state and/or federal) that may be necessary for this project.

This Hydraulic Project Approval shall be available on the job site at all times and all its provisions followed by the person(s) to whom this Hydraulic Project Approval is issued and operator(s) performing the work.

This Hydraulic Project Approval does not authorize trespass.

The person(s) to whom this Hydraulic Project Approval is issued and operator(s) performing the work may be held liable for any loss or damage to fish life or fish habitat that results from failure to comply with the provisions of this Hydraulic Project Approval.

Failure to comply with the provisions of this Hydraulic Project Approval could result in a civil penalty of up to one hundred dollars per day and/or a gross misdemeanor charge, possibly punishable by fine and/or imprisonment.

All Hydraulic Project Approvals issued pursuant to RCW 77.55.021 (EXCEPT agricultural irrigation, stock watering or bank stabilization projects) or 77.55.141 are subject to additional restrictions, conditions or revocation if the Department of Fish and Wildlife determines that new biological or physical information indicates the need for such action. The person(s) to whom this Hydraulic Project Approval is issued has the right pursuant to Chapter 34.04 RCW to appeal such decisions. All agricultural irrigation, stock watering or bank stabilization Hydraulic Project Approvals issued pursuant to RCW 77.55.021 may be modified by the Department of Fish and Wildlife due to changed conditions after consultation with the person(s) to whom this Hydraulic Project Approval is issued: PROVIDED HOWEVER, that such modifications shall be subject to appeal to the Hydraulic Appeals Board established in RCW 77.55.301.

## APPEALS INFORMATION

If you wish to appeal the issuance or denial of, or conditions provided in a Hydraulic Project Approval, there are informal and formal appeal processes available.

A. INFORMAL APPEALS (WAC 220-110-340) OF DEPARTMENT ACTIONS TAKEN PURSUANT TO RCW 77.55.021, 77.55.141, 77.55.181, and 77.55.291: A person who is aggrieved or adversely affected by the following Department actions may request an informal review of:

(A) The denial or issuance of a Hydraulic Project Approval, or the conditions or provisions made part of a Hydraulic Project Approval; or

(B) An order imposing civil penalties. A request for an INFORMAL REVIEW shall be in WRITING to the Department of Fish and Wildlife HPA Appeals Coordinator, 600 Capitol Way North, Olympia, Washington 98501-1091 and shall be RECEIVED by the Department within 30 days of the denial or issuance of a Hydraulic Project Approval or receipt of an order imposing civil penalties. If agreed to by the aggrieved party, and the aggrieved party is the Hydraulic Project Approval applicant, resolution of the concerns will be facilitated through discussions with the Area Habitat Biologist and his/her supervisor. If resolution is not reached, or the aggrieved party is not the Hydraulic Project Approval applicant, the Habitat Technical Services Division Manager or his/her designee shall conduct a review and recommend a decision to the Director or his/her designee. If you are not satisfied with the results of this informal appeal, a formal appeal may be filed.

B. FORMAL APPEALS (WAC 220-110-350) OF DEPARTMENT ACTIONS TAKEN PURSUANT TO RCW 77.55.021 (EXCEPT agricultural irrigation, stock watering or bank stabilization projects) or 77.55.291:
A person who is aggrieved or adversely affected by the following Department actions may request a formal review of:

(A) The denial or issuance of a Hydraulic Project Approval, or the conditions or provisions made part of a Hydraulic Project Approval;

(B) An order imposing civil penalties; or

(C) Any other 'agency action' for which an adjudicative proceeding is required under the Administrative Procedure Act, Chapter 34.05 RCW.

A request for a FORMAL APPEAL shall be in WRITING to the Department of Fish and Wildlife HPA Appeals Coordinator, shall be plainly labeled as 'REQUEST FOR FORMAL APPEAL' and shall be RECEIVED DURING OFFICE HOURS by the Department at 600 Capitol Way North, Olympia, Washington 98501-1091, within 30-days of the Department action that is being challenged. The time period for requesting a formal appeal is suspended during consideration of a timely informal appeal. If there has been an informal appeal, the deadline for requesting a formal appeal shall be within 30-days of the date of the Department's written decision in response to the informal appeal.

C. FORMAL APPEALS OF DEPARTMENT ACTIONS TAKEN PURSUANT TO RCW 77.55.021 (agricultural irrigation, stock watering or bank stabilization only), 77.55.141, 77.55.181, or 77.55.241: A person who is aggrieved or adversely affected by the denial or issuance of a Hydraulic Project Approval, or the conditions or provisions made part of a Hydraulic Project Approval may request a formal appeal. The request for FORMAL APPEAL shall be in WRITING to the Hydraulic Appeals Board per WAC 259-04 at Environmental Hearings Office, 4224 Sixth Avenue SE, Building Two - Rowe Six, Lacey, Washington 98504; telephone 360/459-6327.

D. FORMAL APPEALS OF DEPARTMENT ACTIONS TAKEN PURSUANT TO CHAPTER 43.21L RCW: A person who is aggrieved or adversely affected by the denial or issuance of a Hydraulic Project Approval, or the conditions or provisions made part of a Hydraulic Project Approval may request a formal appeal. The FORMAL APPEAL shall be in accordance with the provisions of Chapter 43.21L RCW and Chapter 199-08 WAC. The request for FORMAL APPEAL shall be in WRITING to the Environmental and Land Use Hearings Board at Environmental Hearings Office, Environmental and Land Use Hearings Board, 4224 Sixth Avenue SE, Building Two - Rowe Six, P.O. Box 40903, Lacey, Washington 98504; telephone 360/459-6327.

E. FAILURE TO APPEAL WITHIN THE REQUIRED TIME PERIODS results in forfeiture of all appeal rights. If there is no timely request for an appeal, the department action shall be final and unappealable.

Washington Department of FISH and WILDLIFE

# HYDRAULIC PROJECT APPROVAL

RCW 77.55.021 - Appeal pursuant to Chapter 34.05 RCW

Southwest
2108 Grand Boulevard
Vancouver, WA 98661
(360) 696-6211

Issue Date: November 13, 2006
Project Expiration Date: December 01, 2006

Control Number: 107362-1
FPA/Public Notice #: N/A

ENFORCEMENT: Sergeant Webb (38) P3

| | | | |
|---|---|---|---|
| Habitat Biologist<br>Tim Rymer | 360-457-2719 | Tim R. Rymer | for Director<br>WDFW |

CC:

# KLICKITAT COUNTY PLANNING DEPARTMENT

228 W. Main Street, MS: CH-17
Goldendale, WA 98620

**509-773-5703**
**1 800 765-7239**
**FAX 509-773-6206**


## EXEMPTION FROM SHORELINE MANAGEMENT ACT SUBSTANTIAL DEVELOPMENT PERMIT REQUIREMENT

PROPONENT:

PacifiCorp Energy
825 NE Multnomah, Suite 1500
Portland, OR 97232

PROPOSAL:

PacifiCorp is proposing sampling to characterize the physical and environmental state of sediments located in Northwestern Lake. The Northwestern Lake sediments are proposed to be released in an "open-water" fashion during the decommissioning of Condit Dam.

Four sample locations have been selected for the collection of sediment samples for environmental lab analysis. Each sample location will be sampled in 3 zones. Each of the 3 zones may require several samples to provide an adequate sample amount for the proposed analytical testing regime. The samples will be collected using a truck-mounted, direct-push sampling rig mounted on a small barge. Conductor casing will be set from the barge to the mudline.

The project is located at Northwestern Lake above Condit Dam on the White Salmon River in Section 3, T3N, R10E, W.M., Klickitat County, WA.

This proposal is exempt from the requirement of a substantial development permit because:

- The project has received hydraulic project approval from the department of fish and wildlife pursuant to 75.20 RCW.
- The Planning Department has determined that the project is consistent with the policies and provisions of the shoreline master program.

The proposed development is consistent or inconsistent with:

| CONSISTENT | INCONSISTENT | |
|---|---|---|
| ☒ | ☐ | The WA State Shoreline Management Act |
| ☒ | ☐ | The Klickitat County Shorelines Master Plan |

Curt Dreyer, Planning Director

Date: November 29, 2006

IN REPLY REFER TO:

# United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Northwest Regional Office
911 N.E. 11th Avenue
Portland, Oregon 97232-4169

TAKE PRIDE IN AMERICA

JAN 11 2007

Mr. Tim Hemstreet
PacifiCorp
FAX 503 813-6170

Dear Mr. Hemstreet;

This letter is in regards to your December 28, 2006 call requesting access to the Underwood In Lieu Fishing Access Site. This access will involve accessing and sampling sediments at the mouth of the White Salmon River as part of the Condit Dam removal project. The sampling will entail short use of the parking lot and the shoreline area in the vicinity of the boat launching of the Underwood site in January, 2007.

The Bureau of Indian Affairs does sanction site access to researchers when it finds that their presence is necessary and beneficial to the management of Columbia River fishery resources. As you are aware, these sites are managed for the exclusive use of treaty fishers under CFR 25 § 247 and §248, so that these fishers may access their usual and accustomed fishing areas.

I would remind you that this access is subject to the following conditions:

- That while tribal identification will not be required for project employees, any vehicles parked will be identified as to their connection to this project. All Kleinfelder Contractor staff will possess some form of government issued identification.
- That the crew will yield to the treaty fishers at all times.
- You agree to hold harmless the Bureau in the event of any loss, accident, injury or death.
- That this authorization is not transferable. Separate application for access will be necessary for other project or sampling. This privilege may be revoked at will.

I hope your contractor has a safe and productive sampling season. If you have any questions, or need more information please contact Keith Hatch, Fishery Biologist at (503) 872-2876.

Sincerely,

Northwest Regional Director

# Appendix C
# Boring Logs

| Elevation (feet) | Depth (feet) | Material Description | Graphic Log | USCS | Sample Number & Type | Field and Laboratory Data (Moisture: Dry / Moist / Wet / Saturated; PID; SPT (N-Value) 0–50–100) | Well Construction Detail and Drilling Remarks |
|---|---|---|---|---|---|---|---|
| | 0 | OPEN WATER | | | | | |
| 300 | | | | | | | |
| | 5 | | | | | | |
| 295 | | | | | | | |
| | 10 | | | | | | |
| 290 | | | | | | | |
| | 15 | | | | | | |
| 285 | | | | | | | |
| | 20 | | | | | | |
| 280 | | | | | | | |
| | 25 | | | | | | |
| 275 | | | | | | | |
| | 30 | | | | | | |
| 270 | | | | | | | |
| | 35 | | | | | | |
| 265 | | | | | | | |
| | 40 | | | | | | |
| 260 | | | | | | | |
| | 45 | | | | | | |
| 255 | | | | | | | |

Report: ENV BORING LOG Template: SQUIER_KLEINFELDER_TEMPLATES.GDT Proj ID: 53886.GPJ Key ID: B-1 Printed: 3/21/07

| | | | |
|---|---|---|---|
| Date Drilling Started: 12/18/06 | State Well ID: NA | Location: Northwestern Lake | |
| Drilling Method: Direct Push Probe | Hammer Drop System: N.A. | Driller: Boart Longyear | |
| Drill Rig Type: Track | Hammer Drop Length (in.): N.A. | Wt. Drive Hammer (lbs.): N.A. | Borehole Diameter (in.): 4 |
| Logged By: S. Shoemaker | Total Depth (ft): 108.0 | Station (ft): NA | Offset (ft): NA |
| Surface Elevation (ft): 302.6 | Elevation Datum: NAVD 88 | Coordinates: N 45.8 | E 121.5 |

NOTE: Lines representing the interface between soil/rock units of differing description are approximate only and may indicate gradual transition

Reviewed

**Condit Dam Sediment Evaluation**
**Northwestern Lake**

# BORING LOG B-1

Project No. 53886

KLEINFELDER
Employee-owned

(Sheet 1 of 3)

FIGURE

| Elevation (feet) | Depth (feet) | Material Description | Graphic Log | USCS | Sample Number & Type | Field and Laboratory Data (Moisture: Dry / Moist / Wet / Saturated; PID; SPT (N-Value) 0–50–100) | Well Construction Detail and Drilling Remarks |
|---|---|---|---|---|---|---|---|
| 250 | 50 | **OPEN WATER** | | | | | |
| 245 | 55 | | | | | | |
| 240 | 60 | | | | | | |
| 235 | 65 | | | | | | |
| 230 | 70 | Light brown SILT (ML), numerous organics, low plasticity, rapid dilatancy, low dry strength, organic odor. | | | B1-72 | | |
| 225 | 75 | | | | | | |
| 220 | 80 | Dark gray to black Organic SILT (OL); trace sand, strong organic odor. | | | | | |
| 215 | 85 | | | | B1-85 | | |
| 210 | 90 | | | | | | |
| 205 | 95 | Gray Clayey SILT (ML) with fine sand, numerous organics, wood debris, low plasticity, medium dilatancy, low dry strength, organic odor. | | | | | |

Report: ENV BORING LOG Template: SQUIER_KLEINFELDER_TEMPLATES.GDT Proj ID: 53886.GPJ Key ID: B-1 Printed: 3/21/07

| | | | |
|---|---|---|---|
| Date Drilling Started: 12/18/06 | State Well ID: NA | Location: Northwestern Lake | |
| Drilling Method: Direct Push Probe | Hammer Drop System: N.A. | Driller: Boart Longyear | |
| Drill Rig Type: Track | Hammer Drop Length (in.): N.A. | Wt. Drive Hammer (lbs.): N.A. | Borehole Diameter (in.): 4 |
| Logged By: S. Shoemaker | Total Depth (ft): 108.0 | Station (ft): NA | Offset (ft): NA |
| Surface Elevation (ft): 302.6 | Elevation Datum: NAVD 88 | Coordinates: N 45.8 | E 121.5 |

NOTE: Lines representing the interface between soil/rock units of differing description are approximate only and may indicate gradual transition

Reviewed

**Condit Dam Sediment Evaluation**
**Northwestern Lake**

# BORING LOG B-1

**Project No. 53886**

KLEINFELDER
Employee-owned

**(Sheet 2 of 3)**

**FIGURE**

| Elevation (feet) | Depth (feet) | Material Description | Graphic Log | USCS | Sample Number & Type | Field and Laboratory Data (Dry / Moist / Wet / Saturated; Moisture; PID; SPT (N-Value) 0–50–100) | Well Construction Detail and Drilling Remarks |
|---|---|---|---|---|---|---|---|
| | 100 | | | | | | |
| 200 | | Gray Clayey SILT (ML) with fine sand, numerous organics, wood debris, low plasticity, medium dilatancy, low dry strength, organic odor. | | | | | |
| | 105 | | | | B1-106 | | |
| 195 | | REFUSAL at 108.0 feet below water surface<br>Completed 12-18-06 | | | | | |

Report: ENV BORING LOG Template: SQUIER_KLEINFELDER_TEMPLATES.GDT Proj ID: 53886.GPJ Key ID: B-1 Printed: 3/21/07

| | | | |
|---|---|---|---|
| Date Drilling Started 12/18/06 | State Well ID NA | Location Northwestern Lake | |
| Drilling Method Direct Push Probe | Hammer Drop System N.A. | Driller Boart Longyear | |
| Drill Rig Type Track | Hammer Drop Length (in.) N.A. | Wt. Drive Hammer (lbs.) N.A. | Borehole Diameter (in.) 4 |
| Logged By S. Shoemaker | Total Depth (ft) 108.0 | Station (ft): NA | Offset (ft): NA |
| Surface Elevation (ft) 302.6 | Elevation Datum NAVD 88 | Coordinates: N 45.8 | E 121.5 |

NOTE: Lines representing the interface between soil/rock units of differing description are approximate only and may indicate gradual transition

Reviewed DEK

Condit Dam Sediment Evaluation
Northwestern Lake

# BORING LOG B-1

Project No. 53886

KLEINFELDER
Employee-owned

(Sheet 3 of 3)

FIGURE

| Elevation (feet) | Depth (feet) | Material Description | Graphic Log | USCS | Sample Number & Type | Field and Laboratory Data (Moisture: Dry / Moist / Wet / Saturated; PID; SPT (N-Value) 0–50–100) | Well Construction Detail and Drilling Remarks |
|---|---|---|---|---|---|---|---|
| | 0 | Open water | | | | | |
| 300 | | | | | | | |
| | 5 | **OPEN WATER** | | | | | |
| 295 | | | | | | | |
| | 10 | | | | | | |
| 290 | | | | | | | |
| | 15 | | | | | | |
| 285 | | | | | B-2-19 | | |
| | 20 | Light brown SILT(ML), scattered organics, low plasticity, medium dilatancy, low dry strength, organic odor | | | | | |
| 280 | | | | | | | |
| | 25 | Dark gray to black Organic SILT(OL); trace sand, wood chips strong organic odor. | | | | | |
| 275 | | Gray Clayey SILT (ML), scattered organics, medium to high plasticity, organic odor. | | | | | |
| | 30 | Brown Clayey SILT (ML) trace fine sand, low plasticity, medium dilatancy, low dry strength occasional organics, slight organic odor. | | | B-2-30 | | |
| 270 | | | | | | | |
| | 35 | | | | | | |
| 265 | | | | | | | |
| | 40 | | | | B-2-40 | | |

REFUSAL at 40.0 feet below water surface
Completed 12-15-06

Report: ENV BORING LOG Template: SQUIER_KLEINFELDER_TEMPLATES.GDT Proj ID: 53886.GPJ Key ID: B-2 Printed: 3/21/07

| | | | |
|---|---|---|---|
| Date Drilling Started: 12/15/06 | State Well ID: NA | Location: Northwestern Lake | |
| Drilling Method: Direct Push Probe | Hammer Drop System: N.A. | Driller: Boart Longyear | |
| Drill Rig Type: Track | Hammer Drop Length (in.): N.A. | Wt. Drive Hammer (lbs.): N.A. | Borehole Diameter (in.): 4 |
| Logged By: S. Shoemaker | Total Depth (ft): 40.0 | Station (ft): NA | Offset (ft): NA |
| Surface Elevation (ft): 302.7 | Elevation Datum: NAVD 88 | Coordinates: N 45.8 | E 121.5 |

NOTE: Lines representing the interface between soil/rock units of differing description are approximate only and may indicate gradual transition

Reviewed

Condit Dam Sediment Evaluation
Northwestern Lake

**BORING LOG B-2**

Project No. 53886

KLEINFELDER
Employee-owned

(Sheet 1 of 1)

FIGURE

| Elevation (feet) | Depth (feet) | Material Description | Graphic Log | USCS | Sample Number & Type | Field and Laboratory Data (Moisture: Dry, Moist, Wet, Saturated; PID; SPT (N-Value) 0–50–100) | Well Construction Detail and Drilling Remarks |
|---|---|---|---|---|---|---|---|
| 300 | 0 | OPEN WATER | | | | | |
| 295 | 5 | | | | | | |
| 290 | 10 | | | | | | |
| 285 | 15 | Dark gray SILT(ML); trace fine sand, numerous organics, low plasticity, rapid dilatancy, low dry strength, organic odor | | | B-3-16 | | |
| 280 | 20 | | | | | | |
| 275 | 25 | | | | B-3-27 | | |
| 270 | 30 | Grades to light brown Clayey SILT (ML), trace fine sand, no odor | | | B-3-35 | | |
| | 35 | REFUSAL at 35.0 feet below water surface<br>Completed 12-15-06 | | | | | |

| | | | |
|---|---|---|---|
| Date Drilling Started 12/14/06 | State Well ID NA | Location Northwestern Lake | |
| Drilling Method Direct Push Probe | Hammer Drop System N.A. | Driller Boart Longyear | |
| Drill Rig Type Track | Hammer Drop Length (in.) N.A. | Wt. Drive Hammer (lbs.) N.A. | Borehole Diameter (in.) 4 |
| Logged By S. Shoemaker | Total Depth (ft) 35.0 | Station (ft): NA | Offset (ft): NA |
| Surface Elevation (ft) 303.3 | Elevation Datum NAVD 88 | Coordinates: N 45.8 | E 121.5 |

NOTE: Lines representing the interface between soil/rock units of differing description are approximate only and may indicate gradual transition

Reviewed

Condit Dam Sediment Evaluation
Northwestern Lake

**BORING LOG B-3**

Project No. 53886

KLEINFELDER
Employee-owned

(Sheet 1 of 1)

FIGURE

Report: ENV BORING LOG Template: SQUIER_KLEINFELDER_TEMPLATES.GDT Proj ID: 53886.GPJ Key ID: B-3 Printed: 3/21/07

| Elevation (feet) | Depth (feet) | Material Description | Graphic Log | USCS | Sample Number & Type | Field and Laboratory Data (Moisture: Dry, Moist, Wet, Saturated; PID; SPT (N-Value) 0–50–100) | Well Construction Detail and Drilling Remarks |
|---|---|---|---|---|---|---|---|
| 300 | 0 | | | | | | |
| | 5 | OPEN WATER | | | | | |
| 295 | | | | | | | |
| | 10 | | | | | | |
| 290 | | | | | | | |
| | 15 | Gray brown Silty SAND (SM), fine sand, occasional organics, very low plasticity, rapid dilatancy, very low dry strength, slight organic odor | | | B-4-15 | | |
| 285 | | | | | | | |
| | 20 | Gray SAND (SP-SM) with silt, fine sand, occasional organics, no odor. | | | | | |
| 280 | | Gravelly SILT (ML) fine to medium gravel, occasional organics, no odor | | | | | |
| | 25 | Gray Silty SAND (SM), fine sand, occasional organics, non-plastic, no odor. | | | B-4-24 | | |
| 275 | | | | | | | |
| | 30 | | | | | | |
| 270 | | | | | | | |
| | 35 | REFUSAL at 35.0 feet below water surface<br>Completed 12-14-06 | | | B-4-35 | | |

Report: ENV BORING LOG Template: SQUIER_KLEINFELDER_TEMPLATES.GDT Proj ID: 53886.GPJ Key ID: B-4 Printed: 3/21/07

| | | | |
|---|---|---|---|
| Date Drilling Started: 12/13/06 | State Well ID: NA | Location: Northwestern Lake | |
| Drilling Method: Direct Push Probe | Hammer Drop System: N.A. | Driller: Boart Longyear | |
| Drill Rig Type: Track | Hammer Drop Length (in.): N.A. | Wt. Drive Hammer (lbs.): N.A. | Borehole Diameter (in.): 4 |
| Logged By: S. Shoemaker | Total Depth (ft): 35.0 | Station (ft): NA | Offset (ft): NA |
| Surface Elevation (ft): 302.5 | Elevation Datum: NAVD 88 | Coordinates: N 45.8 | E 121.5 |

NOTE: Lines representing the interface between soil/rock units of differing description are approximate only and may indicate gradual transition

Reviewed

Condit Dam Sediment Evaluation
Northwestern Lake

# BORING LOG B-4

Project No. 53886

KLEINFELDER
Employee-owned

(Sheet 1 of 1)

FIGURE

# Appendix D
# Chemical Laboratory Results

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

Columbia Analytical Services™
An Employee - Owned Company

February 2, 2007 Service Request No: K0611027

David King
Kleinfelder
15050 SW Koll Parkway
Suite L
Beaverton, OR 97006

**RE: CONDIT/53886/4**

Dear David:

Enclosed are the results of the sample(s) submitted to our laboratory on December 18, 2006. For your reference, these analyses have been assigned our service request number K0611027.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards. Exceptions are noted in the case narrative report where applicable. 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 3260. You may also contact me via Email at HJacky@kelso.caslab.com.

Respectfully submitted,

**Columbia Analytical Services, Inc.**

Harvey Jacky
Project Chemist

HJ/lmb



NELAP Accredited ACIL Seal of Excellence Award 100% Recycled

## 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. |

**Columbia Analytical Services, Inc.**
**Kelso, WA**
**State Certifications, Accreditations, and Licenses**

| Program | Number |
|---|---|
| Alaska DEC UST | UST-040 |
| Arizona DHS | AZ0339 |
| Arkansas - DEQ | 88-0637 |
| California DHS | 2286 |
| Colorado DPHE | - |
| Florida DOH | E87412 |
| Hawaii DOH | - |
| Idaho DHW | - |
| Indiana DOH | C-WA-01 |
| Louisiana DEQ | 3016 |
| Louisiana DHH | LA050010 |
| Maine DHS | WA0035 |
| Michigan DEQ | 9949 |
| Minnesota DOH | 053-999-368 |
| Montana DPHHS | CERT0047 |
| Nevada DEP | WA35 |
| New Jersey DEP | WA005 |
| New Mexico ED | - |
| North Carolina DWQ | 605 |
| Oklahoma DEQ | 9801 |
| Oregon - DHS | WA200001 |
| South Carolina DHEC | 61002 |
| Utah DOH | COLU |
| Washington DOE | C1203 |
| Wisconsin DNR | 998386840 |
| Wyoming (EPA Region 8) | - |

# Case Narrative

## COLUMBIA ANALYTICAL SERVICES, INC.

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request No.:** | K0611027 |
| **Project:** | Condit - 53886/4 | **Date Received:** | 12/18/06 |
| **Sample Matrix:** | Sediment | | |

## 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

Eleven sediment samples were received for analysis at Columbia Analytical Services on 12/18/06. 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

**Ammonia as Nitrogen by EPA Method 350.1M**

The Relative Percent Difference (RPD) criterion in sample B-3-16 is not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

### Total Metals

**Matrix Spike Recovery Exceptions:**

The matrix spike recovery of Antimony for sample DUPE-1 was below the CAS control criterion. Antimony recoveries are generally low for soil and sediment samples when digested using EPA Method 3050. Despite anticipated low recoveries, the method is still generally prescribed because of its versatility for general metals analyses. Antimony results (in conjunction with the matrix spike recovery) from this procedure should only be used as indicators to estimate concentrations. Since low recoveries result from a method defect and can be magnified by certain matrix components, no corrective action is appropriate other than using alternative procedures that specifically target Antimony. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicate the analysis was in control.

### Organochlorine Pesticides by EPA Method 8081A

**Continuing Calibration Verification (CCV) Exceptions:**

The primary evaluation criterion was exceeded for the following analytes in CCV 0126F004: 4,4'-DDT. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard meets the alternative evaluation criteria.

**Matrix Spike Recovery Exceptions:**

The matrix spike recoveries of gamma-BHC, 4,4'-DDD, and 4,4'-DDT for sample B-2-40 were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential high bias in this matrix. No further corrective action was appropriate.

**Approved by** _____ **Date** 2/8/07

The control criteria for the matrix spike recoveries of 4,4'-DDE for sample B-2-40 were not applicable. The chromatogram indicates non-target matrix background components are contributing to the reported matrix spike concentrations. Thus, the reported recoveries contain a high bias. Based on the magnitude of background contribution, the interference appears to be minimal. Also note the Method Reporting Limit (MRL) for the associated unspiked sample is elevated above the background level.

**Elevated Method Reporting Limits:**
The reporting limit is elevated for a couple analytes in some samples. 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 results are flagged to indicate the matrix interference.

**Sample Confirmation Notes:**
JP: The confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

The confirmation comparison criterion of 40% difference for a few analytes was exceeded in several samples. The higher of the two values was reported when both peaks were within the expected retention time window for this analysis and Gaussian in shape or the lower of the two values was reported when there was an apparent interference on the alternate column that produced the higher value.

**PCB Aroclors by EPA Method 8082**

**Second Source Exceptions:**
The analysis of PCB Aroclors by EPA 8082 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Aroclor 1254 in CAL 5948. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action was necessary.

**Continuing Calibration Verification (CCV) Exceptions:**
The analysis of PCB Aroclors by EPA 8082 requires the use of dual column confirmation. When the CCV criteria are met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Aroclor 1260 and Decachlorobiphenyl in CCV 0118F019. The results are reported from the column with an acceptable CCV. The data quality is not affected. No further corrective action was necessary.

The primary evaluation criterion was exceeded for the following analytes in CCV 0119F024 and 0119035: Aroclor 1016, Aroclor 1260, and/or Decachlorobiphenyl. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard meets the alternative evaluation criteria.

**Elevated Detection Limits:**
The reporting limit is elevated for Aroclor 1254 in samples B-4-24 and B-2-30. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compound at the detection limit. The result is flagged to indicate the matrix interference.

**Semivolatile Organic Compounds by EPA Method 8270C**

**Initial Calibration (ICAL) Exceptions:**
The primary evaluation criterion was exceeded for the following analytes in ICAL ID CAL5956: Benzyl Alcohol, Benzoic Acid, Hexachlorocyclopentadiene, 2,4-Dinitrophenol, 4-CHlorophenyl Phenyl Ether, 2,4,6-Tribromophenol, 4-Bromophenyl Phenyl Ether, 3,3'-Dichlorobenzidine. 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 9.1%. 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.

**Approved by** HE **Date** 2/8/07

The primary evaluation criterion was exceeded for the following analytes in ICAL ID CAL5983: 2,4-Dinitrophenol, Di-n-octyl Phthalate. 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.

**Continuing Calibration Verification (CCV) Exceptions:**
The lower control criterion was exceeded for 2,4-Dinitrophenol in CCV MS06\0125C003.D. The analyte in question is not a target analyte for the field samples analyzed in this sequence. The analyte is included as a System Performance Monitoring Compound (SPCC). The analyte meets minimum response factor criteria specified by the method. The data quality is not affected. No further corrective action was appropriate.

**Relative Percent Difference Exceptions:**
The Relative Percent Difference (RPD) for the analytes in the replicate matrix spike analyses of sample B-4-24 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.

**Approved by** HS **Date** 2/8/07

# Chain of Custody Documentation

**SQUIER ASSOCIATES**
4260 Galewood
Post Office Box 1317
Lake Oswego, Oregon
97035
(503) 635-4419
Fax 635-1430

K0611027

# Chain of Custody

LABORATORY NUMBER: ~~SVCS~~ COLUMBIA ANALYTICAL
LABORATORY NAME: 360

Project Manager: DAVE KING
Project Name: CONDIT
Project Number: 53886/4
Site Location: /
Sampled By: SRR / SES

**TURN AROUND TIME**

☐ 24 hr. ☐ 48 hr. ☐ 5 day ~~☒ 10 day~~ (15 DAY)

| LAB ID | SAMPLE ID | | DATE | TIME | MATRIX | NUMBER OF CONTAINERS | 8270 SIM | 8270 GCMS Semivolatiles | 8081OC Pesticides/~~PCBs~~ | 8082 PCBs only | SULFIDE-9030M | TOC-D 4129-82M | N, NH3-350.1 | TVS-160.4 | TS-160.3 | Hg (AISED)-7471A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B-2-20 | 11 | 12/15/06 | 1345 | S | 3 | X | X | X | X | X | X | X | X | X | X |
| | B-3-27 | 5 | 12/14/06 | 1300 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | B-4-24 | 1 | 12/14/06 | 0900 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | B-2-40 | 10 | 12/15/06 | 1330 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | B-4-35 | 4 | 12/14/06 | 1120 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | B-4-15 | 3 | 12/14/06 | 1030 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | B-2-30 | 9 | 12/15/06 | 1230 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | DUPE-1 | 2 | 12/14/06 | 0900 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | B-3-35 | 8 | 12/15/06 | 1000 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | B-3-16 | 6 | 12/14/06 | 1530 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| | DUPE-2 | 7 | 12/15/06 | 0900 | ↓ | ↓ | X | X | X | X | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |

8270 SIM column: "No" (entries scribbled out)

Analysis request columns not marked: PETROLEUM HYDROCARBONS: TPH-HCID State: OR/WA; TPH-G State: OR/WA; TPH-D State: OR/WA; 418.1M State: OR/WA; EPA 418.1; 8020M-BETX only; 8310 HPLC PAHs; 7421 Lead; TCLP Cr, Cd, Pb. ORGANICS: 8010 Halogenated VOCs; 8020 Aromatic VOCs; 8040 Phenols; 8240 GCMS Volatiles. INORG.: Drinking Water (8); Priority Pol. Metals (13); ICP Metal Scan (22). TCLP: TCLP Metals (8); TCLP Vol. 8240 ZH-EXT; TCLP Semivolatiles 8270.

+ TOTAL - Sb, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn - 200.8

Total Number of Containers: 33 + TEMP BLANK

ADD CHLOROBENZENE

Special Instructions:
PLEASE LIST ALL SAMPLES CHRONOLOGICALLY ON LAB RPT.

| RELINQUISHED BY: 1. | RELINQUISHED BY: 2. | RELINQUISHED BY: 3. |
|---|---|---|
| Signature: [signature] Time: 1100 | Signature: [signature] Time: 12:30 | Signature: Time: |
| Company: KLEINFELDER Date: 12/18/06 | Company: [signature] Date: 12/18/06 | Company: Date: |
| **RECEIVED BY: 1.** | **RECEIVED BY: 2.** | **RECEIVED BY: 3.** |
| Signature: [signature] Time: 11:05 | Signature: Time: | Signature: Tracy Black Time: 1700 |
| Company: [signature] Date: 12/18/06 | Company: Date: | Company: Black Date: 12/18/06 |
| Container: CAS | Container: | Container: |
| Sealed: Y N Iced: Y N | Sealed: Y N Iced: Y N | Sealed: Y N Iced: Y N |

DISTRIBUTION: White, Canary = Analytical Laboratory; Pink = Squier Files

**Columbia Analytical Services Inc.**
**Cooler Receipt and Preservation Form**

PC Harvey

Project/Client Kleinfelder Service Request K06 11027

Cooler received on 12-18-06 and opened on 12-18-06 by BW

1. Were custody seals on outside of coolers? Y N
   If yes, how many and where? NP
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: CAS Courier ~~Y~~ N
5. COC#

| | | | | |
|---|---|---|---|---|
| **Temperature of cooler(s) upon receipt: (°C)** | 4.0 | | | |
| **Temperature Blank: (°C)** | 0.5 | | | |

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. Were the 1631 Mercury bottles checked for absence of air bubbles, and if present, noted below? ~~Y~~ N
15. Did the bottles originate from CAS/K or a branch laboratory? Y N
16. **Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?** ~~Y~~ N
17. 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 |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

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

Columbia Analytical Services INC
An Employee - Owned Company

February 2, 2007 Service Request No: K0611088

David King
Kleinfelder
15050 SW Koll Parkway
Suite L
Beaverton, OR 97006

**RE: Condit/5388614**

Dear David:

Enclosed are the results of the sample(s) submitted to our laboratory on December 20, 2006. For your reference, these analyses have been assigned our service request number K0611088.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards. Exceptions are noted in the case narrative report where applicable. 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 3260. You may also contact me via Email at HJacky@kelso.caslab.com.

Respectfully submitted,

**Columbia Analytical Services, Inc.**

Harvey Jacky
Project Chemist

HJ/lmb



NELAP Accredited ACIL Seal of Excellence Award 100% Recycled

## 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. |

**Columbia Analytical Services, Inc.**
**Kelso, WA**
**State Certifications, Accreditations, and Licenses**

| Program | Number |
|---|---|
| Alaska DEC UST | UST-040 |
| Arizona DHS | AZ0339 |
| Arkansas - DEQ | 88-0637 |
| California DHS | 2286 |
| Colorado DPHE | - |
| Florida DOH | E87412 |
| Hawaii DOH | - |
| Idaho DHW | - |
| Indiana DOH | C-WA-01 |
| Louisiana DEQ | 3016 |
| Louisiana DHH | LA050010 |
| Maine DHS | WA0035 |
| Michigan DEQ | 9949 |
| Minnesota DOH | 053-999-368 |
| Montana DPHHS | CERT0047 |
| Nevada DEP | WA35 |
| New Jersey DEP | WA005 |
| New Mexico ED | - |
| North Carolina DWQ | 605 |
| Oklahoma DEQ | 9801 |
| Oregon - DHS | WA200001 |
| South Carolina DHEC | 61002 |
| Utah DOH | COLU |
| Washington DOE | C1203 |
| Wisconsin DNR | 998386840 |
| Wyoming (EPA Region 8) | - |

# Case Narrative

**COLUMBIA ANALYTICAL SERVICES, INC.**

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request No.:** | K0611088 |
| **Project:** | Condit / 5388614 | **Date Received:** | 12/20/06 |
| **Sample Matrix:** | Sediment | | |

## 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

Four sediment samples were received for analysis at Columbia Analytical Services on 12/20/06. 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.

### Total Metals

**Matrix Spike Recovery Exceptions:**
The matrix spike recovery of Antimony for sample B1-106 was below the CAS control criterion. Antimony recoveries are generally low for soil and sediment samples when digested using EPA Method 3050. Despite anticipated low recoveries, the method is still generally prescribed because of its versatility for general metals analyses. Antimony results (in conjunction with the matrix spike recovery) from this procedure should only be used as indicators to estimate concentrations. Since low recoveries result from a method defect and can be magnified by certain matrix components, no corrective action is appropriate other than using alternative procedures that specifically target Antimony. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicate the analysis was in control.

### Organochlorine Pesticides by EPA Method 8081A

**Continuing Calibration Verification (CCV) Exceptions:**
The primary evaluation criterion was exceeded for 4,4'-DDT in CCV 0126F004. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard meets the alternative evaluation criteria.

Results for 4,4'-DDT in sample B1-106, have been reported from a column using average percent recovery of all analytes in the verification standard.

**Matrix Spike Recovery Exceptions:**
The matrix spike recoveries of gamma-BHC, 4,4'-DDD, and 4,4'-DDT for sample Batch QC were outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential low/high bias in this matrix. No further corrective action was appropriate.

**Approved by** _____ **Date** 2/13/07

The control criteria for the matrix spike recoveries of 4,4'-DDE for sample Batch QC were not applicable. The chromatogram indicates non-target matrix background components are contributing to the reported matrix spike concentrations. Thus, the reported recoveries contain a high bias. Based on the magnitude of background contribution, the interference appears to be minimal. Also note the Method Reporting Limit (MRL) for the associated unspiked sample is elevated above the background level.

**Elevated Method Reporting Limits:**
The reporting limit is elevated for a couple analytes in some samples. 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 results are flagged to indicate the matrix interference.

**Sample Confirmation Notes:**
JP: The confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

The confirmation comparison criterion of 40% difference for a few analytes was exceeded in several samples. The higher of the two values was reported when both peaks were within the expected retention time window for this analysis and Gaussian in shape or the lower of the two values was reported when there was an apparent interference on the alternate column that produced the higher value.

**PCB Aroclors by EPA Method 8082**

**Second Source Exceptions:**
The analysis of PCB Aroclors by EPA 8082 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Aroclor 1254 in CAL 5948. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action was necessary.

**Continuing Calibration Verification (CCV) Exceptions:**
The analysis of PCB Aroclors by EPA 8082 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criteria are met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Aroclor 1260 and Decachlorobiphenyl in CCV 0118F019. The results are reported from the column with an acceptable CCV. The data quality is not affected. No further corrective action was necessary.

The primary evaluation criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) 0119F024 and 0119035: Aroclor 1016, Aroclor 1260, and/or Decachlorobiphenyl. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard meets the alternative evaluation criteria.

**Elevated Detection Limits:**
The reporting limit is elevated for Aroclor 1254 in samples Dup-3 and B1-85. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compound at the detection limit. The result is flagged to indicate the matrix interference.

**Semivolatile Organic Compounds by EPA Method 8270C**

**Holding Time Exceptions:**
The analysis of samples Dup-3 and B1-85 was initially performed on 1/31/07. The surrogate recoveries for these samples were very low for most surrogates. Efforts were made to re-extract and reanalyze the samples as soon as possible after the analytical problem was discovered. However, the re-extraction of the samples was performed 32 days past the recommended holding time. The results from the reanalysis are reported. The initial analyses are reported in a separate report. The data is flagged to indicate the holding time violation in the re-extracted analyses.

**Approved by** _____ **Date** 2/13/07

**Initial Calibration (ICAL) Exceptions:**
The primary evaluation criterion was exceeded for the following analytes in ICAL ID CAL5956: Benzyl Alcohol, Benzoic Acid, Hexachlorocyclopentadiene, 2,4-Dinitrophenol, 4-CHlorophenyl Phenyl Ether, 2,4,6-Tribromophenol, 4-Bromophenyl Phenyl Ether, 3,3'-Dichlorobenzidine. 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 9.1%. 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.

The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID CAL5983: 2,4-Dinitrophenol, Di-n-octyl Phthalate. 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.

The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID CAL6024: Benzyl Alcohol, Benzoic Acid, 2,4-Dinitrophenol, 4-Nitrophenol. 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 7.1%. 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.

**Continuing Calibration Verification (CCV) Exceptions:**
The lower control criterion was exceeded for 2,4-Dinitrophenol in CCV MS06\0125C003.D. The analyte in question is not a target analyte for the field samples analyzed in this sequence. This analyte is included in the CCV as a System Performance Monitoring Compound (SSPCC). The analyte in question met minimum response factor criteria specified by the method. The data quality is not affected. No further corrective action was appropriate.

**Laboratory Control Sample (LCS) Exceptions:**
The advisory criterion was exceeded for the following analytes in LCS KWG0701685-3: Benz(a)anthracene, Chrysene, Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was appropriate.

The advisory criterion was exceeded for Benzoic Acid in Duplicate LCS KWG0701685-4. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was appropriate.

**Approved by**_____ **Date** 2/13/07

# Chain of Custody Documentation

**SQUIER ASSOCIATES**
4260 Galewood
Post Office Box 1317
Lake Oswego, Oregon
97035
(503) 635-4419
Fax 635-1430

# Chain of Custody

LABORATORY NUMBER:
LABORATORY NAME:

Project Manager: Dave King
Project Name: Condit
Project Number: 53886/4
Site Location:
Sampled By: SRR/SES

**TURN AROUND TIME**

☐ 24 hr. ☐ 48 hr. ☐ 5 day ☐ 10 day

**ANALYSIS REQUEST**

| LAB ID | SAMPLE ID | DATE | TIME | MATRIX | NUMBER OF CONTAINERS | PETROLEUM HYDROCARBONS: TPH-HCID State: OR/WA | TPH-G State: OR/WA | TPH-D State: OR/WA | 418.1M State: OR/WA | EPA 418.1 | 8270 SIM | 8020M-BETX only | 8310 HPLC PAHs | 7421 Lead | TCLP Cr, Cd, Pb | ORGANICS: 8010 Halogenated VOCs | 8020 Aromatic VOCs | 8040 Phenols | 8240 GCMS Volatiles | 8270 GCMS Semivolatiles | 8081 OC Pesticides/PCBs | 8082 PCBs only | INORG.: Drinking Water (8) | Priority Pol. Metals (13) | ICP Metal Scan (22) | TCLP: TCLP Metals (8) | TCLP Vol. 8240 ZH-EXT | TCLP Semivolatiles 8270 | OTHER: Sulfide - 7020M | TOC - D4129-82M | N, NH3 - 350 | TVS - 160.4 | TS - 160.3 | Hg INSED - 7471A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B1-72 4 | 12/18/06 | 1325 | Soil | 3 | | | | | | | | | | | | | | | X | X | X | | | | | | | X | X | X | X | X | X |
| | B1-85 2 | " | 1200 | " | " | | | | | | | | | | | | | | | X | X | X | | | | | | | X | X | X | X | X | X |
| | B1-106 3 | " | 1310 | " | " | | | | | | | | | | | | | | | X | X | X | | | | | | | X | X | X | X | X | X |
| | DUP3 1 | " | 0900 | " | " | | | | | | | | | | | | | | | X | X | X | | | | | | | X | X | X | X | X | X |

Total Number of Containers:

add dichlorobenzene to 8270

Total - Sb, As, Cd, Cr, CN
Pb, Ni, Ag, Zn - 200.8

Special Instructions:

Please list all samples Chronologically on Lab report

| RELINQUISHED BY: 1. | RELINQUISHED BY: 2. | RELINQUISHED BY: 3. |
|---|---|---|
| Signature: Time: 12/20/06 | Signature: Time: 1:30 | Signature: Time: |
| Company: Kleinfelder Date: 1/10 | Company: Dwight Date: 12-20-06 | Company: Date: |
| **RECEIVED BY: 1.** | **RECEIVED BY: 2.** | **RECEIVED BY: 3.** |
| Signature: Dwight Time: 12:20-06 | Signature: Time: 1400 | Signature: Time: |
| Company: Dwight Date: 1/10 | Company: UPS Date: 12/20/06 | Company: Date: |
| Container: | Container: | Container: |
| Sealed: Y N Iced: Y N | Sealed: Y N Iced: Y N | Sealed: Y N Iced: Y N |

DISTRIBUTION: White, Canary = Analytical Laboratory; Pink = Squier Files

10

HARV PC 11088

**Columbia Analytical Services Inc.**
**Cooler Receipt and Preservation Form**

Project/Client Klinfelter Service Request K06

Cooler received on 12/20/06 and opened on 12/20/06 by [illegible]

| | | | |
|---|---|---|---|
| 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: | Y | N |
| 5. | COC# | | |
| | **Temperature of cooler(s) upon receipt: (°C)** | 8.3 | |
| | **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 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 FB | ~~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. | Were the 1631 Mercury bottles checked for absence of air bubbles, and if present, noted below? | ~~Y~~ | ~~N~~ |
| 15. | Did the bottles originate from CAS/K or a branch laboratory? | Y | N |
| **16.** | **Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?** | ~~Y~~ | ~~N~~ |
| 17. | 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 |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

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

Columbia Analytical Services INC
An Employee - Owned Company

February 23, 2007 Analytical Report for Service Request No: K0700504

David King
Kleinfelder
15050 SW Koll Parkway
Suite L
Beaverton, OR 97006

**RE: CONDIT/DMEF Analysis/53886**

Dear David:

Enclosed are the results of the sample(s) submitted to our laboratory on January 20, 2007. For your reference, these analyses have been assigned our service request number K0700504.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards. Exceptions are noted in the case narrative report where applicable. 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 3260. You may also contact me via Email at HJacky@kelso.caslab.com.

Respectfully submitted,

**Columbia Analytical Services, Inc.**

Harvey Jacky
Project Chemist

HJ/lmb



NELAP Accredited ACIL Seal of Excellence Award 100% Recycled

## 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. |

**Columbia Analytical Services, Inc.**
**Kelso, WA**
**State Certifications, Accreditations, and Licenses**

| Program | Number |
|---|---|
| Alaska DEC UST | UST-040 |
| Arizona DHS | AZ0339 |
| Arkansas - DEQ | 88-0637 |
| California DHS | 2286 |
| Colorado DPHE | - |
| Florida DOH | E87412 |
| Hawaii DOH | - |
| Idaho DHW | - |
| Indiana DOH | C-WA-01 |
| Louisiana DEQ | 3016 |
| Louisiana DHH | LA050010 |
| Maine DHS | WA0035 |
| Michigan DEQ | 9949 |
| Minnesota DOH | 053-999-368 |
| Montana DPHHS | CERT0047 |
| Nevada DEP | WA35 |
| New Jersey DEP | WA005 |
| New Mexico ED | - |
| North Carolina DWQ | 605 |
| Oklahoma DEQ | 9801 |
| Oregon - DHS | WA200001 |
| South Carolina DHEC | 61002 |
| Utah DOH | COLU |
| Washington DOE | C1203 |
| Wisconsin DNR | 998386840 |
| Wyoming (EPA Region 8) | - |

# Case Narrative

## COLUMBIA ANALYTICAL SERVICES, INC.

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request No.:** | K0700504 |
| **Project:** | Condit/DMEF Analysis/53886 | **Date Received:** | 1/20/07 |
| **Sample Matrix:** | Sediment | | |

## 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 sediment samples were received for analysis at Columbia Analytical Services on 1/20/07. 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.

**Approved by** _____ **Date** 2/26/07

# Chain of Custody Documentation

KLEINFELDER

K0700504

| PROJECT NO. | PROJECT NAME | RECEIVING LAB: |
|---|---|---|
| 53886 | Condit Dam | Columbia Analytical |
| L.P. NO. (P.O. NO.) | SAMPLERS: (Signature/Number) SS | INSTRUCTIONS/REMARKS |

| | DATE MM/DD/YY | SAMPLE I.D. TIME HH-MM-SS | SAMPLE I.D. | MATRIX | NO. OF CON-TAINERS | TYPE OF CON-TAINERS | Total Solids | TVS | TOC | Ammonia | Sulfides |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1/15/07 | 1400hrs | B5-011507a | Soil | 3 | Glass | X | X | X | X | X |
| 2 | 1/15/07 | 1400 | B5-011507b | | 3 | | X | X | X | X | X |
| 3 | 1/15/07 | 1400 | B5-011507c | | 3 | | X | X | X | X | X |
| 4 | 1/15/07 | 1400 | B5-011507d | | 3 | | X | X | X | X | X |
| 5 | 1/15/07 | 1400 | B5-011507e | Soil | 3 | | X | X | X | X | X |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 17 | | | | | | | | | | | |

| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Instructions/Remarks: | Send Results To: |
|---|---|---|---|---|
| | | Fridge | | KLEINFELDER<br>15050 S.W. KOLL PARKWAY<br>SUITE L<br>BEAVERTON, OR 97006<br>(503) 644-9447 |
| | | Dwight CAS 1/18/07 10:30 | | |
| Dwight CAS | 1/18/07 1:00 | Received for Laboratory by: (Signature) 1/18/07 1330 | | Attn: |

M-60 White – Sampler Canary – Return Copy To Shipper Pink – Lab Copy

# CHAIN OF CUSTODY

№ 1605

**Columbia Analytical Services Inc.**
**Cooler Receipt and Preservation Form**

PC HJ

Project/Client KLEINFELDER Service Request K07 00504

Cooler received on 1/18/07 and opened on 1/18/07 by [illegible]

1. Were custody seals on outside of coolers? — C 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: _____ Y N
5. COC#

| | | | | |
|---|---|---|---|---|
| **Temperature of cooler(s) upon receipt: (°C)** | 3.8 | | | |
| **Temperature Blank: (°C)** | 5.8 | | | |

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 _____
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. Were the 1631 Mercury bottles checked for absence of air bubbles, and if present, noted below? Y N
15. Did the bottles originate from CAS/K or a branch laboratory? Y N
16. **Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?** Y N
17. 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

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/14/2006
**Date Received:** 12/18/2006

Total Volatile Solids

Prep Method: NONE
Analysis Method: 160.4M
Test Notes:

Units: PERCENT
Basis: Dry

| Sample Name | Lab Code | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|
| B-4-24 | K0611027-001 | 0.01 | 1 | NA | 1/8/2007 | 4.37 | |
| DUPE-1 | K0611027-002 | 0.01 | 1 | NA | 1/8/2007 | 8.15 | |
| B-4-15 | K0611027-003 | 0.01 | 1 | NA | 1/8/2007 | 2.94 | |
| B-4-35 | K0611027-004 | 0.01 | 1 | NA | 1/8/2007 | 3.24 | |
| B-3-27 | K0611027-005 | 0.01 | 1 | NA | 1/8/2007 | 7.17 | |
| B-3-16 | K0611027-006 | 0.01 | 1 | NA | 1/8/2007 | 2.76 | |
| DUPE-2 | K0611027-007 | 0.01 | 1 | NA | 1/8/2007 | 7.23 | |
| B-3-35 | K0611027-008 | 0.01 | 1 | NA | 1/8/2007 | 4.56 | |
| B-2-30 | K0611027-009 | 0.01 | 1 | NA | 1/8/2007 | 7.04 | |
| B-2-40 | K0611027-010 | 0.01 | 1 | NA | 1/8/2007 | 3.68 | |
| B-2-20 | K0611027-011 | 0.01 | 1 | NA | 1/8/2007 | 2.60 | |

M Modified for analysis of soil.

Approved By: _____ Date: 1/15/07

1A/020597p

K0611027wet.cl1 - Sample 1/18/2007

Page No.:

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | NA |
| **Sample Matrix:** | Sediment | **Date Received:** | NA |
| | | **Date Extracted:** | NA |
| | | **Date Analyzed:** | 1/8/2007 |

Duplicate Summary
Inorganic Parameters

| | | | |
|---|---|---|---|
| Sample Name: | Batch QC | Units: | PERCENT |
| Lab Code: | K0700103-002DUP | Basis: | Dry |
| Test Notes: | | | |

| Analyte | Prep Method | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|
| Total Volatile Solids | NONE | 160.4M | 0.01 | 88.0 | 89.0 | 88.5 | <1 | |

M Modified for soil analysis.

Approved By: _____ Date: 1/15/07

DUP/020597p
K0611027wet.cl1 - DUP 1/24/2007

Page No.:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027

## 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 |
|---|---|---|---|---|---|---|
| B-4-24 | K0611027-001 | 12/14/2006 | 12/18/2006 | 12/20/2006 | 80.8 | |
| DUPE-1 | K0611027-002 | 12/14/2006 | 12/18/2006 | 12/20/2006 | 56.9 | |
| B-4-15 | K0611027-003 | 12/14/2006 | 12/18/2006 | 12/20/2006 | 70.0 | |
| B-4-35 | K0611027-004 | 12/14/2006 | 12/18/2006 | 12/20/2006 | 75.2 | |
| B-3-27 | K0611027-005 | 12/14/2006 | 12/18/2006 | 12/20/2006 | 58.0 | |
| B-3-16 | K0611027-006 | 12/14/2006 | 12/18/2006 | 12/20/2006 | 66.0 | |
| DUPE-2 | K0611027-007 | 12/15/2006 | 12/18/2006 | 12/20/2006 | 55.0 | |
| B-3-35 | K0611027-008 | 12/15/2006 | 12/18/2006 | 12/20/2006 | 73.1 | |
| B-2-30 | K0611027-009 | 12/15/2006 | 12/18/2006 | 12/20/2006 | 54.7 | |
| B-2-40 | K0611027-010 | 12/15/2006 | 12/18/2006 | 12/20/2006 | 77.2 | |
| B-2-20 | K0611027-011 | 12/15/2006 | 12/18/2006 | 12/20/2006 | 63.5 | |

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |
| | | **Date Analyzed:** | 12/20/2006 |

**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 |
|---|---|---|---|---|---|---|
| B-4-24 | K0611027-001 | 80.8 | 79.5 | 80.2 | 2 | |

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |
| | | **Date Analyzed:** | 12/20/2006 |

**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 |
|---|---|---|---|---|---|---|
| B-2-20 | K0611027-011 | 63.5 | 63.4 | 63.5 | <1 | |

# Total Solids

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088

## 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 |
|---|---|---|---|---|---|---|
| Dup-3 | K0611088-001 | 12/18/2006 | 12/20/2006 | 12/21/2006 | 56.2 | |
| B1-85 | K0611088-002 | 12/18/2006 | 12/20/2006 | 12/21/2006 | 59.0 | |
| B1-106 | K0611088-003 | 12/18/2006 | 12/20/2006 | 12/21/2006 | 69.4 | |
| B1-72 | K0611088-004 | 12/18/2006 | 12/20/2006 | 12/21/2006 | 48.0 | |

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

Total Volatile Solids

| | | | |
|---|---|---|---|
| Prep Method: | NONE | Units: | PERCENT |
| Analysis Method: | 160.4M | Basis: | Dry |
| Test Notes: | | | |

| Sample Name | Lab Code | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|
| Dup-3 | K0611088-001 | 0.01 | 1 | NA | 1/11/2007 | 6.32 | |
| B1-85 | K0611088-002 | 0.01 | 1 | NA | 1/11/2007 | 9.34 | |
| B1-106 | K0611088-003 | 0.01 | 1 | NA | 1/11/2007 | 7.33 | |
| B1-72 | K0611088-004 | 0.01 | 1 | NA | 1/11/2007 | 4.01 | |

M Modified for analysis of soil.

Approved By: _____ Date: 1/23/07

1A/020597p

K0611088wet.cl1 - Sample 1/18/2007

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088
**Date Collected:** 12/18/2006
**Date Received:** 12/20/2006
**Date Extracted:** NA
**Date Analyzed:** 1/11/2007

Duplicate Summary
Inorganic Parameters

Sample Name: Dup-3
Lab Code: K0611088-001DUP
Test Notes:

Units: PERCENT
Basis: Dry

| Analyte | Prep Method | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|
| Total Volatile Solids | NONE | 160.4M | 0.01 | 6.32 | 7.14 | 6.73 | 12 | |

M Modified for analysis of soil.

Approved By: _____ Date: 1/23/07

DUP/020597p
K0611088wet.cl1 - DUP 1/19/2007

Page No.:

# Total Solids

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0700504 |
| **Project:** | CONDIT/DMEF Analysis/53886 | **Date Collected:** | 1/15/2007 |
| **Sample Matrix:** | Sediment | **Date Received:** | 1/20/2007 |

Total Volatile Solids

| | | | |
|---|---|---|---|
| Prep Method: | NONE | Units: | PERCENT |
| Analysis Method: | 160.4M | Basis: | Dry |
| Test Notes: | | | |

| Sample Name | Lab Code | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|
| B5-011507a | K0700504-001 | 0.01 | 1 | NA | 2/4/2007 | 12.1 | |
| B5-011507b | K0700504-002 | 0.01 | 1 | NA | 2/4/2007 | 15.8 | |
| B5-011507c | K0700504-003 | 0.01 | 1 | NA | 2/4/2007 | 8.08 | |
| B5-011507d | K0700504-004 | 0.01 | 1 | NA | 2/4/2007 | 13.2 | |
| B5-011507e | K0700504-005 | 0.01 | 1 | NA | 2/4/2007 | 11.8 | |

M Modified for analysis of soil.

Approved By: _____ Date: 2/13/07

1A/020597p

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** CONDIT/DMEF Analysis/53886
**Sample Matrix:** Sediment

**Service Request:** K0700504
**Date Collected:** 1/15/2007
**Date Received:** 1/20/2007
**Date Extracted:** NA
**Date Analyzed:** 2/4/2007

Duplicate Summary
Inorganic Parameters

Sample Name: Batch QC
Lab Code: K0700504-001DUP
Test Notes:

Units: PERCENT
Basis: Dry

| Analyte | Prep Method | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|
| Total Volatile Solids | NONE | 160.4M | 0.01 | 12.1 | 15.3 | 13.7 | 23 | * |

M Modified for soil analysis.

* Organic matter present in sample; rocks, hair, roots, grass

Approved By: _____ Date: 2/13/07

DUP/020597p
K0700504WET.CL1 - DUP 2/13/2007

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/DMEF Analysis/53886
**Sample Matrix:** Sediment

**Service Request:** K0700504

## 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 |
|---|---|---|---|---|---|---|
| B5-011507a | K0700504-001 | 01/15/2007 | 01/20/2007 | 01/22/2007 | 29.6 | |
| B5-011507b | K0700504-002 | 01/15/2007 | 01/20/2007 | 01/22/2007 | 29.8 | |
| B5-011507c | K0700504-003 | 01/15/2007 | 01/20/2007 | 01/22/2007 | 27.5 | |
| B5-011507d | K0700504-004 | 01/15/2007 | 01/20/2007 | 01/22/2007 | 38.2 | |
| B5-011507e | K0700504-005 | 01/15/2007 | 01/20/2007 | 01/22/2007 | 36.6 | |

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0700504 |
| **Project:** | CONDIT/DMEF Analysis/53886 | **Date Collected:** | 01/15/2007 |
| **Sample Matrix:** | Soil | **Date Received:** | 01/20/2007 |
| | | **Date Analyzed:** | 01/22/2007 |

**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 |
|---|---|---|---|---|---|---|
| B5-011507a | K0700504-001 | 29.6 | 21.9 | 25.8 | 30 | |

00014

# General Chemistry Parameters

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : B-4-24
Lab Code : K0611027-001
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 2.3 | 0.06 | 5 | 12/20/06 | 12/20/06 | 52.9 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 0.63 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 0.92 | 0.37 | 1 | 12/20/06 | 12/20/06 | 7.0 | |

Report By:EMihaila

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : DUPE-1
Lab Code : K0611027-002
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 4.6 | 0.06 | 10 | 12/20/06 | 12/20/06 | 236 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 2.59 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 3.7 | 1.5 | 4 | 12/20/06 | 12/20/06 | 68.8 | |

Report By:EMihaila

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : B-4-15
Lab Code : K0611027-003
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 2.3 | 0.06 | 5 | 12/20/06 | 12/20/06 | 57.9 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 0.66 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 1.9 | 0.7 | 2 | 12/20/06 | 12/20/06 | 9.2 | |

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : B-4-35
Lab Code : K0611027-004
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 2.3 | 0.06 | 5 | 12/20/06 | 12/20/06 | 29.9 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 0.47 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 1.9 | 0.7 | 2 | 12/20/06 | 12/20/06 | 18.3 | |

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : B-3-27
Lab Code : K0611027-005
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 4.6 | 0.06 | 10 | 12/20/06 | 12/20/06 | 220 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 2.34 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 19 | 8.0 | 20 | 12/20/06 | 12/20/06 | 134 | |

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : B-3-16
Lab Code : K0611027-006
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 0.46 | 0.06 | 1 | 12/20/06 | 12/20/06 | 1.66 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 0.70 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 0.92 | 0.37 | 1 | 12/20/06 | 12/20/06 | ND | |

Report By:EMihaila

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/15/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : DUPE-2
Lab Code : K0611027-007
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 4.6 | 0.06 | 10 | 12/20/06 | 12/20/06 | 188 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 2.14 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 19 | 8.0 | 20 | 12/20/06 | 12/20/06 | 92.3 | |

Report By:EMihaila

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/15/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : B-3-35
Lab Code : K0611027-008
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 0.46 | 0.06 | 1 | 12/20/06 | 12/20/06 | 12.4 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 0.19 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 0.92 | 0.37 | 1 | 12/20/06 | 12/20/06 | ND | |

Report By:EMihaila

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/15/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : B-2-30
Lab Code : K0611027-009
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 4.6 | 0.06 | 10 | 12/20/06 | 12/20/06 | 154 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 2.06 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 19 | 8.0 | 20 | 12/20/06 | 12/20/06 | 148 | |

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/15/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : B-2-40
Lab Code : K0611027-010
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 0.46 | 0.06 | 1 | 12/20/06 | 12/20/06 | 10.4 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 0.17 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 0.92 | 0.37 | 1 | 12/20/06 | 12/20/06 | ND | |

Report By:EMihaila

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/15/06
**Date Received :** 12/18/06

Inorganic Parameters

Sample Name : B-2-20
Lab Code : K0611027-011
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 0.46 | 0.06 | 1 | 12/20/06 | 12/20/06 | 1.30 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | 12/26/06 | 0.58 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 0.92 | 0.37 | 1 | 12/20/06 | 12/20/06 | ND | |

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** NA
**Date Received :** NA

Inorganic Parameters

Sample Name : Method Blank
Lab Code : K0611027-MB
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 0.46 | 0.06 | 1 | 12/20/06 | 12/20/06 | ND | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/11/07 | NA | ND | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 0.92 | 0.37 | 1 | 12/20/06 | 12/20/06 | ND | |

Report By:EMihaila

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06
**Date Prepared :** 12/26/06
**Date Analyzed :** NA

Duplicate Summary
Inorganic Parameters

Sample Name : B-4-24
Lab Code : K0611027-001DUP
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Carbon, Total Organic | None | Percent | ASTM D4129-98M | 0.05 | 0.63 | 0.63 | 0.63 | <1 | |

Report By:EMihaila

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06
**Date Prepared :** 12/26/06
**Date Analyzed :** NA

Matrix Spike Summary
Inorganic Parameters

Sample Name : B-4-24
Lab Code : K0611027-001MS
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Spike Level | Sample Result | Spiked Sample Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Carbon, Total Organic | None | Percent | ASTM D4129-98M | 0.05 | 7.85 | 0.63 | 7.87 | 92 | 75-125 | |

Report By:EMihaila

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06
**Date Prepared :** 12/20/06
**Date Analyzed :** NA

Duplicate Summary
Inorganic Parameters

Sample Name : B-3-16
Lab Code : K0611027-006DUP
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | Method | mg/Kg (ppm) | 350.1M | 0.46 | 1.66 | 2.09 | 1.88 | 23 | * |

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** 12/14/06
**Date Received :** 12/18/06
**Date Prepared :** 12/20/06
**Date Analyzed :** NA

Matrix Spike Summary
Inorganic Parameters

Sample Name : B-3-16
Lab Code : K0611027-006MS
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Spike Level | Sample Result | Spiked Sample Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | Method | mg/Kg (ppm) | 350.1M | 23 | 722 | 1.66 | 690 | 95 | 75-125 | |

Report By:EMihaila

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** NA
**Date Received :** NA
**Date Prepared :** 12/20/06
**Date Analyzed :** NA

Duplicate Summary
Inorganic Parameters

Sample Name : BatchQC
Lab Code : K0611033-005DUP
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Sulfide, Total | Method | mg/Kg (ppm) | 9030M | 37 | 388 | 397 | 393 | 2 | |

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT
**Project Number :** 53886/4
**Sample Matrix :** SEDIMENT

**Service Request :** K0611027
**Date Collected :** NA
**Date Received :** NA
**Date Prepared :** 12/20/06
**Date Analyzed :** NA

Matrix Spike Summary
Inorganic Parameters

Sample Name : BatchQC
Lab Code : K0611033-005MS
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Spike Level | Sample Result | Spiked Sample Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfide, Total | Method | mg/Kg (ppm) | 9030M | 92 | 1230 | 388 | 1480 | 89 | 60-130 | |

Report By:EMihaila

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Kleinfelder | **Service Request :** | K0611027 |
| **Project Name :** | CONDIT | **Date Collected :** | NA |
| **Project Number :** | 53886/4 | **Date Received :** | NA |
| **Sample Matrix :** | SEDIMENT | **Date Prepared :** | 12/20/06 |
| | | **Date Analyzed :** | 12/20-01/11/07 |

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name : Lab Control Sample
Lab Code : K0611027-LCS
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | 350.1M | 6.04 | 5.70 | 94 | 90-110 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.87 | 0.74 | 85 | 85-115 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 8.1 | 6.9 | 85 | 60-130 | |

# General Chemistry Parameters

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** Condit
**Project Number :** 5388614
**Sample Matrix :** SEDIMENT

**Service Request :** K0611088
**Date Collected :** 12/18/06
**Date Received :** 12/20/06

Ammonia as Nitrogen

Prep Method : Method
Analysis Method : 350.1M
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

| Sample Name | Lab Code | MRL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|
| Dup-3 | K0611088-001 | 0.51 | 0.07 | 10 | 12/22/06 | 12/28/06 | 181 | |
| B1-85 | K0611088-002 | 0.51 | 0.07 | 10 | 12/22/06 | 12/28/06 | 244 | |
| B1-106 | K0611088-003 | 0.51 | 0.07 | 10 | 12/22/06 | 12/28/06 | 154 | |
| B1-72 | K0611088-004 | 0.51 | 0.07 | 1 | 12/22/06 | 12/28/06 | 2.88 | |
| Method Blank | K0611088-MB | 0.51 | 0.07 | 1 | 12/22/06 | 12/28/06 | ND | |

M Modified for analysis of soil.

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** Condit
**Project Number :** 5388614
**Sample Matrix :** SEDIMENT

**Service Request :** K0611088
**Date Collected :** 12/18/06
**Date Received :** 12/20/06
**Date Prepared :** 12/22/06
**Date Analyzed :** 12/28/06

Duplicate Summary
Inorganic Parameters

Sample Name : B1-72
Lab Code : K0611088-004DUP
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

| Analyte | Prep Method | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | Method | 350.1M | 0.51 | 2.88 | 3.23 | 3.06 | 11 | |

M Modified for analysis of soil.

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** Condit
**Project Number :** 5388614
**Sample Matrix :** SEDIMENT

**Service Request :** K0611088
**Date Collected :** 12/18/06
**Date Received :** 12/20/06
**Date Prepared :** 12/22/06
**Date Analyzed :** 12/28/06

Matrix Spike Summary
Inorganic Parameters

Sample Name : B1-72
Lab Code : K0611088-004MS
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

| Analyte | Prep Method | Analysis Method | MRL | Spike Level | Sample Result | Spiked Sample Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | Method | 350.1M | 0.51 | 976 | 2.88 | 1030 | 105 | 75-125 | |

M Modified for analysis of soil.

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Kleinfelder | **Service Request :** | K0611088 |
| **Project Name :** | Condit | **Date Collected :** | NA |
| **Project Number :** | 5388614 | **Date Received :** | NA |
| **Sample Matrix :** | Water | **Date Prepared :** | NA |
| | | **Date Analyzed :** | 12/29/06 |

Laboratory Control Sample Summary
Inorganic Parameters

| | | | |
|---|---|---|---|
| Sample Name : | Laboratory Control Sample | Units : | mg/Kg (ppm) |
| Lab Code : | K0611088-LCS | Basis : | Dry |
| Test Notes : | | | |

| Analyte | Prep Method | Analysis Method | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | Method | 350.1M | 6.04 | 6.09 | 101 | 90-110 | |

M Modified for analysis of soil.

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project :** Condit

**Service Request :** K0611088
**Date Collected :** NA
**Date Received :** NA

Ammonia as Nitrogen
EPA Method 350.1M
Units: mg/L (ppm)

## CONTINUING CALIBRATION VERIFICATION (CCV)

| | Date Analyzed | True Value | Measured Value | Percent Recovery |
|---|---|---|---|---|
| CCV1 Result | 12/28/06 | 2.00 | 1.96 | 98 |
| CCV2 Result | 12/28/06 | 2.00 | 1.96 | 98 |
| CCV3 Result | 12/28/06 | 2.00 | 1.95 | 98 |

## CONTINUING CALIBRATION BLANK (CCB)

| | Date Analyzed | MRL | Blank Value |
|---|---|---|---|
| CCB1 Result | 12/28/06 | 0.05 | 0.018 J |
| CCB2 Result | 12/28/06 | 0.05 | 0.008 J |
| CCB3 Result | 12/28/06 | 0.05 | 0.008 J |

## COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** Condit
**Project Number :** 5388614
**Sample Matrix :** SEDIMENT

**Service Request :** K0611088
**Date Collected :** 12/18/06
**Date Received :** 12/20/06

Carbon, Total Organic

Prep Method : Method
Analysis Method : ASTM D4129-98M
Test Notes :

Units : PERCENT
Basis : Dry

| Sample Name | Lab Code | MRL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|
| Dup-3 | K0611088-001 | 0.05 | 0.02 | 1 | 12/26/06 | 01/09/07 | 2.82 | |
| B1-85 | K0611088-002 | 0.05 | 0.02 | 1 | 12/26/06 | 01/09/07 | 2.57 | |
| B1-106 | K0611088-003 | 0.05 | 0.02 | 1 | 12/26/06 | 01/09/07 | 1.68 | |
| B1-72 | K0611088-004 | 0.05 | 0.02 | 1 | 12/26/06 | 01/09/07 | 1.05 | |
| Method Blank | K0611088-MB | 0.05 | 0.02 | 1 | NA | 01/09/07 | ND | |

M Modified

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** Condit
**Project Number :** 5388614
**Sample Matrix :** SEDIMENT

**Service Request :** K0611088
**Date Collected :** NA
**Date Received :** NA
**Date Prepared :** 01/02/07
**Date Analyzed :** 01/09/07

Duplicate Summary
Inorganic Parameters

Sample Name : Batch QC
Lab Code : K0611295-002DUP
Test Notes :

Units : PERCENT
Basis : Dry

| Analyte | Prep Method | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|
| Carbon, Total Organic | Method | ASTM D4129-98M | 0.05 | 8.96 | 8.92 | 8.94 | <1 | |

M Modified

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** Condit
**Project Number :** 5388614
**Sample Matrix :** SEDIMENT

**Service Request :** K0611088
**Date Collected :** NA
**Date Received :** NA
**Date Prepared :** 01/02/07
**Date Analyzed :** 01/09/07

Matrix Spike Summary
Inorganic Parameters

Sample Name : Batch QC
Lab Code : K0611295-002MS
Test Notes :

Units : PERCENT
Basis : Dry

| Analyte | Prep Method | Analysis Method | MRL | Spike Level | Sample Result | Spiked Sample Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Carbon, Total Organic | Method | ASTM D4129-98M | 0.05 | 8.37 | 8.96 | 17.0 | 96 | 75-125 | |

M Modified

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Kleinfelder | **Service Request :** | K0611088 |
| **Project Name :** | Condit | **Date Collected :** | NA |
| **Project Number :** | 5388614 | **Date Received :** | NA |
| **Sample Matrix :** | SEDIMENT | **Date Prepared :** | NA |
| | | **Date Analyzed :** | 01/09/07 |

Laboratory Control Sample Summary
Inorganic Parameters

| | | | |
|---|---|---|---|
| Sample Name : | Laboratory Control Sample | Units : | PERCENT |
| Lab Code : | K0611088-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 | Method | ASTM D4129-98M | 0.87 | 0.76 | 87 | 85-115 | |

M Modified

# General Chemistry Parameters

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** 01/15/07
**Date Received :** 01/20/07

Inorganic Parameters

Sample Name : B5-011507a
Lab Code : K0700504-001
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | PLUMB | 5.0 | 1.0 | 5 | 01/26/07 | 01/22/07 | 8.12 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/23/07 | NA | 12.2 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 1.9 | 0.8 | 1 | 01/29/07 | 01/29/07 | 1.6 | J |



Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** 01/15/07
**Date Received :** 01/20/07

Inorganic Parameters

Sample Name : B5-011507b
Lab Code : K0700504-002
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | PLUMB | 5.0 | 1.0 | 5 | 01/26/07 | 01/22/07 | 37.1 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/23/07 | NA | 3.7 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 1.9 | 0.8 | 1 | 01/29/07 | 01/29/07 | 1.1 | J |



Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** 01/15/07
**Date Received :** 01/20/07

Inorganic Parameters

Sample Name : B5-011507c
Lab Code : K0700504-003
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | PLUMB | 5.0 | 1.0 | 5 | 01/26/07 | 01/22/07 | 23.7 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/23/07 | NA | 5.19 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 1.9 | 0.8 | 1 | 01/29/07 | 01/29/07 | 1.9 | J |



Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** 01/15/07
**Date Received :** 01/20/07

Inorganic Parameters

Sample Name : B5-011507d
Lab Code : K0700504-004
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | PLUMB | 5.0 | 1.0 | 5 | 01/26/07 | 01/22/07 | 39.9 | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/23/07 | NA | 1.68 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 1.9 | 0.8 | 1 | 01/29/07 | 01/29/07 | 0.8 | J |



Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** 01/15/07
**Date Received :** 01/20/07

Inorganic Parameters

Sample Name : B5-011507e
Lab Code : K0700504-005
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | PLUMB | 5.0 | 1.0 | 5 | 01/26/07 | 01/22/07 | 4.2 | J |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/23/07 | NA | 5.37 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 1.9 | 0.8 | 1 | 01/29/07 | 01/29/07 | 0.9 | J |



Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** NA
**Date Received :** NA

Inorganic Parameters

Sample Name : Method Blank
Lab Code : K0700504-MB
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | MRL | MDL | Dilution Factor | Date Analyzed | Date Prepared | Result | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | PLUMB | 1.0 | 0.2 | 50 | 01/26/07 | 01/22/07 | ND | |
| Carbon, Total Organic | Percent | ASTM D4129-98M | 0.05 | 0.02 | 1 | 01/23/07 | NA | ND | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 1.9 | 0.8 | 1 | 01/29/07 | 01/29/07 | ND | |

Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** 01/15/07
**Date Received :** 01/20/07
**Date Prepared :** 01/29/07
**Date Analyzed :** 01/29/07

Duplicate Summary
Inorganic Parameters

Sample Name : B5-011507a
Lab Code : K0700504-001DUP
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Sulfide, Total | Method | mg/Kg (ppm) | 9030M | 1.9 | 1.6 | 1.5 | 1.55 | 6 | J |



Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** 01/15/07
**Date Received :** 01/20/07
**Date Prepared :** 01/22/07
**Date Analyzed :** 01/26/07

Duplicate Summary
Inorganic Parameters

Sample Name : B5-011507e
Lab Code : K0700504-005DUP
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | Method | mg/Kg (ppm) | PLUMB | 5.0 | 4.15 | 4.5 | 4.30 | 7 | J |



Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** NA
**Date Received :** NA
**Date Prepared :** NA
**Date Analyzed :** 01/23/07

Duplicate Summary
Inorganic Parameters

Sample Name : BatchQC
Lab Code : K0700362-015DUP
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Sample Result | Duplicate Sample Result | Average | Relative Percent Difference | Result Notes |
|---|---|---|---|---|---|---|---|---|---|
| Carbon, Total Organic | None | PERCENT | ASTM D4129-98M | 0.05 | 0.88 | 1.04 | 0.96 | 17 | |

Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** 01/15/07
**Date Received :** 01/20/07
**Date Prepared :** 01/29/07
**Date Analyzed :** 01/29/07

Matrix Spike Summary
Inorganic Parameters

Sample Name : B5-011507a
Lab Code : K0700504-001MS
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Spike Level | Sample Result | Spiked Sample Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfide, Total | Method | mg/Kg (ppm) | 9030M | 1.9 | | 1.6 | 1700 | 99 | 60-130 | |



Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** 01/15/07
**Date Received :** 01/20/07
**Date Prepared :** 01/22/07
**Date Analyzed :** 01/26/07

Matrix Spike Summary
Inorganic Parameters

Sample Name : B5-011507e
Lab Code : K0700504-005MS
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Spike Level | Sample Result | Spiked Sample Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | Method | mg/Kg (ppm) | PLUMB | 50 | 1350 | 4.15 | 1400 | 103 | 75-125 | |



Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client :** Kleinfelder
**Project Name :** CONDIT/DMEF Analysis
**Project Number :** 53886
**Sample Matrix :** SEDIMENT

**Service Request :** K0700504
**Date Collected :** NA
**Date Received :** NA
**Date Prepared :** NA
**Date Analyzed :** 01/23/07

Matrix Spike Summary
Inorganic Parameters

Sample Name : BatchQC
Lab Code : K0700362-015MS
Test Notes :

Basis : Dry

| Analyte | Prep Method | Units | Analysis Method | MRL | Spike Level | Sample Result | Spiked Sample Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Carbon, Total Organic | None | PERCENT | ASTM D4129-98M | 0.05 | 8.81 | 0.88 | 9.28 | 95 | 75-125 | |

Report By:Mleach

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client :** | Kleinfelder | **Service Request :** | K0700504 |
| **Project Name :** | CONDIT/DMEF Analysis | **Date Collected :** | NA |
| **Project Number :** | 53886 | **Date Received :** | NA |
| **Sample Matrix :** | SEDIMENT | **Date Prepared :** | 01/22/07 |
| | | **Date Analyzed :** | 01/23-29/07 |

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name : Lab Control Sample
Lab Code : K0700504-LCS
Test Notes :

Basis : Dry

| Analyte | Units | Analysis Method | True Value | Result | Percent Recovery | CAS Percent Recovery Acceptance Limits | Result Notes |
|---|---|---|---|---|---|---|---|
| Ammonia as Nitrogen | mg/Kg (ppm) | PLUMB | 6.04 | 6.00 | 50 | 85-115 | |
| Carbon, Total Organic | PERCENT | ASTM D4129-98M | 0.87 | 0.78 | 90 | 85-115 | |
| Sulfide, Total | mg/Kg (ppm) | 9030M | 5.1 | 5.9 | 116 | 60-130 | |

Report By: Agreer

# Organochlorine Pesticides
# EPA Method 8081

# Organic Analysis:
# Organochlorine Pesticides

## Summary Package

### Sample and QC Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4

**Service Request:** K0611027

## Cover Page - Organic Analysis Data Package
## Organochlorine Pesticides

| Sample Name | Lab Code | Date Collected | Date Received |
|---|---|---|---|
| B-4-24 | K0611027-001 | 12/14/2006 | 12/18/2006 |
| DUPE-1 | K0611027-002 | 12/14/2006 | 12/18/2006 |
| B-4-15 | K0611027-003 | 12/14/2006 | 12/18/2006 |
| B-4-35 | K0611027-004 | 12/14/2006 | 12/18/2006 |
| B-3-27 | K0611027-005 | 12/14/2006 | 12/18/2006 |
| B-3-16 | K0611027-006 | 12/14/2006 | 12/18/2006 |
| DUPE-2 | K0611027-007 | 12/15/2006 | 12/18/2006 |
| B-3-35 | K0611027-008 | 12/15/2006 | 12/18/2006 |
| B-2-30 | K0611027-009 | 12/15/2006 | 12/18/2006 |
| B-2-40 | K0611027-010 | 12/15/2006 | 12/18/2006 |
| B-2-20 | K0611027-011 | 12/15/2006 | 12/18/2006 |
| B-2-40MS | KWG0621958-1 | 12/15/2006 | 12/18/2006 |
| B-2-40DMS | KWG0621958-2 | 12/15/2006 | 12/18/2006 |
| B-2-40MS | KWG0621958-4 | 12/15/2006 | 12/18/2006 |
| B-2-40DMS | KWG0621958-5 | 12/15/2006 | 12/18/2006 |

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: Janet L. Heston

Name: Janet L. Heston

Date: 1/31/07

Title: Scientist

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/14/2006
**Date Received:** 12/18/2006

## Organochlorine Pesticides

**Sample Name:** B-4-24
**Lab Code:** K0611027-001

**Extraction Method:** EPA 3540C
**Analysis Method:** 8081A

**Units:** ug/Kg
**Basis:** Dry

**Level:** Low

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.19 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.17 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Aldrin | ND | U | 1.0 | 0.14 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Dieldrin | ND | Ui | 1.0 | 0.76 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDE** | **1.7** | P | 1.0 | 0.15 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDD** | **3.4** | | 1.0 | 0.13 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDT** | **0.94** | JP | 1.0 | 0.22 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Chlordane | ND | U | 10 | 5.1 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 66 | 18-142 | 01/22/07 | Acceptable |
| Decachlorobiphenyl | 86 | 25-134 | 01/22/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | DUPE-1 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-002 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | Ui | 1.0 | 1.0 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.23 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Aldrin | ND | Ui | 1.0 | 0.45 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.15 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDE** | **10** | | 1.0 | 0.22 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDD** | **19** | | 1.0 | 0.18 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDT** | **2.3** | | 1.0 | 0.30 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Chlordane | ND | Ui | 10 | 8.1 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 69 | 18-142 | 01/22/07 | Acceptable |
| Decachlorobiphenyl | 78 | 25-134 | 01/22/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B-4-15 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-003 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | Ui | 1.0 | 1.0 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.19 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Aldrin | ND | Ui | 1.0 | 0.35 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Dieldrin | ND | Ui | 1.0 | 0.43 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDE** | **2.8** | | 1.0 | 0.18 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDD** | **1.4** | | 1.0 | 0.14 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDT** | **2.0** | P | 1.0 | 0.25 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Chlordane | ND | Ui | 10 | 8.7 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 75 | 18-142 | 01/22/07 | Acceptable |
| Decachlorobiphenyl | 82 | 25-134 | 01/22/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B-4-35 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-004 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.20 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.18 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Aldrin | ND | U | 1.0 | 0.15 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.11 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDE** | **2.8** | | 1.0 | 0.16 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDD** | **3.0** | | 1.0 | 0.14 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDT | ND | Ui | 1.0 | 0.64 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Chlordane | ND | U | 10 | 5.5 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 71 | 18-142 | 01/22/07 | Acceptable |
| Decachlorobiphenyl | 83 | 25-134 | 01/22/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B-3-27 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-005 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | Ui | 1.0 | 1.0 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.23 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Aldrin | ND | U | 1.0 | 0.19 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.14 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDE** | **3.5** | | 1.0 | 0.21 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDD** | **9.0** | | 1.0 | 0.17 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDT** | **1.4** | | 1.0 | 0.30 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Chlordane | ND | Ui | 12 | 12 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 63 | 18-142 | 01/22/07 | Acceptable |
| Decachlorobiphenyl | 66 | 25-134 | 01/22/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B-3-16 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-006 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.23 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.20 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Aldrin | ND | U | 1.0 | 0.17 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.13 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDE | ND | U | 1.0 | 0.19 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDD | ND | U | 1.0 | 0.15 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDT | ND | Ui | 1.0 | 0.33 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Chlordane | ND | U | 10 | 6.3 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 69 | 18-142 | 01/22/07 | Acceptable |
| Decachlorobiphenyl | 81 | 25-134 | 01/22/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | DUPE-2 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-007 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.28 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.24 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Aldrin | ND | U | 1.0 | 0.20 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **Dieldrin** | **0.44** | JP | 1.0 | 0.15 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDE** | **11** | | 1.0 | 0.22 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDD** | **3.8** | | 1.0 | 0.18 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| **4,4'-DDT** | **2.1** | P | 1.0 | 0.31 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Chlordane | ND | Ui | 14 | 14 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 73 | 18-142 | 01/22/07 | Acceptable |
| Decachlorobiphenyl | 76 | 25-134 | 01/22/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B-3-35 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-008 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.21 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.18 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Aldrin | ND | U | 1.0 | 0.16 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.12 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| 4,4'-DDE | ND | U | 1.0 | 0.17 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| 4,4'-DDD | ND | U | 1.0 | 0.14 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| 4,4'-DDT | ND | U | 1.0 | 0.24 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Chlordane | ND | U | 10 | 5.7 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 74 | 18-142 | 01/23/07 | Acceptable |
| Decachlorobiphenyl | 83 | 25-134 | 01/23/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/15/2006
**Date Received:** 12/18/2006

## Organochlorine Pesticides

**Sample Name:** B-2-30
**Lab Code:** K0611027-009

**Units:** ug/Kg
**Basis:** Dry

**Extraction Method:** EPA 3540C
**Analysis Method:** 8081A

**Level:** Low

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.28 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.24 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Aldrin | ND | Ui | 1.0 | 1.0 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.15 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDE** | **11** | | 1.0 | 0.22 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDD** | **3.9** | | 1.0 | 0.18 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDT** | **2.5** | P | 1.0 | 0.32 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Chlordane | ND | Ui | 10 | 8.6 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 81 | 18-142 | 01/26/07 | Acceptable |
| Decachlorobiphenyl | 101 | 25-134 | 01/26/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B-2-40 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-010 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.20 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.17 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Aldrin | ND | U | 1.0 | 0.15 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.11 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| 4,4'-DDE | ND | Ui | 1.3 | 1.3 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| 4,4'-DDD | ND | U | 1.0 | 0.13 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| 4,4'-DDT | ND | U | 1.0 | 0.23 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Chlordane | ND | U | 10 | 5.4 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 86 | 18-142 | 01/26/07 | Acceptable |
| Decachlorobiphenyl | 98 | 25-134 | 01/26/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/15/2006
**Date Received:** 12/18/2006

## Organochlorine Pesticides

**Sample Name:** B-2-20
**Lab Code:** K0611027-011

**Units:** ug/Kg
**Basis:** Dry

**Extraction Method:** EPA 3540C
**Analysis Method:** 8081A

**Level:** Low

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.24 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.21 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Aldrin | ND | Ui | 1.0 | 0.98 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.13 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| 4,4'-DDE | ND | U | 1.0 | 0.19 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| 4,4'-DDD | ND | Ui | 1.0 | 0.83 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| 4,4'-DDT | ND | Ui | 1.0 | 0.79 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Chlordane | ND | U | 10 | 6.5 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 80 | 18-142 | 01/23/07 | Acceptable |
| Decachlorobiphenyl | 97 | 25-134 | 01/23/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | NA |
| **Sample Matrix:** | Sediment | **Date Received:** | NA |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/Kg |
| **Lab Code:** | KWG0621958-7 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 0.48 | 0.15 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Heptachlor | ND | U | 0.48 | 0.13 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Aldrin | ND | U | 0.48 | 0.11 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Dieldrin | ND | U | 0.48 | 0.081 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDE | ND | U | 0.48 | 0.12 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDD | ND | U | 0.48 | 0.098 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDT | ND | U | 0.48 | 0.17 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Chlordane | ND | U | 4.8 | 4.1 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 60 | 18-142 | 01/22/07 | Acceptable |
| Decachlorobiphenyl | 71 | 25-134 | 01/22/07 | Acceptable |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027

**Surrogate Recovery Summary**
**Organochlorine Pesticides**

**Extraction Method:** EPA 3540C
**Analysis Method:** 8081A

**Units:** PERCENT
**Level:** Low

| Sample Name | Lab Code | Sur1 | Sur2 |
|---|---|---|---|
| B-4-24 | K0611027-001 | 66 | 86 |
| DUPE-1 | K0611027-002 | 69 | 78 |
| B-4-15 | K0611027-003 | 75 | 82 |
| B-4-35 | K0611027-004 | 71 | 83 |
| B-3-27 | K0611027-005 | 63 | 66 |
| B-3-16 | K0611027-006 | 69 | 81 |
| DUPE-2 | K0611027-007 | 73 | 76 |
| B-3-35 | K0611027-008 | 74 | 83 |
| B-2-30 | K0611027-009 | 81 | 101 |
| B-2-40 | K0611027-010 | 86 | 98 |
| B-2-20 | K0611027-011 | 80 | 97 |
| Method Blank | KWG0621958-7 | 60 | 71 |
| B-2-40MS | KWG0621958-1 | 79 | 102 |
| B-2-40DMS | KWG0621958-2 | 83 | 98 |
| B-2-40MS | KWG0621958-4 | 81 | 96 |
| B-2-40DMS | KWG0621958-5 | 86 | 98 |
| Lab Control Sample | KWG0621958-3 | 68 | 84 |

**Surrogate Recovery Control Limits (%)**

| | | |
|---|---|---|
| Sur1 = | Tetrachloro-m-xylene | 18-142 |
| Sur2 = | Decachlorobiphenyl | 25-134 |

**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:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/23/2007 |

## Matrix Spike/Duplicate Matrix Spike Summary
## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B-2-40 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-010 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | **Extraction Lot:** | KWG0621958 |

| | | B-2-40MS KWG0621958-1 Matrix Spike | | | B-2-40DMS KWG0621958-2 Duplicate Matrix Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| gamma-BHC (Lindane) | ND | 25.4 | 19.9 | 128 * | 24.2 | 19.9 | 122 | 41-126 | 5 | 40 |
| Heptachlor | ND | 23.5 | 19.9 | 118 | 22.2 | 19.9 | 112 | 42-122 | 6 | 40 |
| Aldrin | ND | 23.3 | 19.9 | 117 | 21.3 | 19.9 | 107 | 38-122 | 9 | 40 |
| Dieldrin | ND | 23.4 | 19.9 | 117 | 22.1 | 19.9 | 111 | 38-122 | 6 | 40 |
| 4,4'-DDE | ND | 26.0 | 19.9 | 131 # | 24.7 | 19.9 | 124 # | 28-133 | 5 | 40 |
| 4,4'-DDD | ND | 26.5 | 19.9 | 133 * | 26.4 | 19.9 | 133 * | 43-123 | 1 | 40 |
| 4,4'-DDT | ND | 27.2 | 19.9 | 137 * | 26.8 | 19.9 | 135 * | 47-127 | 2 | 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:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Extracted:** 12/28/2006
**Date Analyzed:** 01/23/2007

## Matrix Spike/Duplicate Matrix Spike Summary
## Organochlorine Pesticides

**Sample Name:** B-2-40
**Lab Code:** K0611027-010

**Units:** ug/Kg
**Basis:** Dry

**Extraction Method:** EPA 3540C
**Analysis Method:** 8081A

**Level:** Low
**Extraction Lot:** KWG0621958

| Analyte Name | Sample Result | B-2-40MS KWG0621958-4 Matrix Spike | | | B-2-40DMS KWG0621958-5 Duplicate Matrix Spike | | | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Result | Expected | %Rec | Result | Expected | %Rec | | | |
| Chlordane | ND | 240 | 199 | 121 | 241 | 199 | 121 | 70-130 | 0 | 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:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Extracted:** 12/28/2006
**Date Analyzed:** 01/22/2007

## Lab Control Spike Summary
## Organochlorine Pesticides

**Extraction Method:** EPA 3540C
**Analysis Method:** 8081A

**Units:** ug/Kg
**Basis:** Dry
**Level:** Low
**Extraction Lot:** KWG0621958

| | Lab Control Sample KWG0621958-3 Lab Control Spike | | | |
|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **%Rec Limits** |
| gamma-BHC (Lindane) | 19.5 | 20.0 | 98 | 63-117 |
| Heptachlor | 19.4 | 20.0 | 97 | 51-116 |
| Aldrin | 18.2 | 20.0 | 91 | 47-118 |
| Dieldrin | 19.3 | 20.0 | 96 | 42-122 |
| 4,4'-DDE | 20.4 | 20.0 | 102 | 40-127 |
| 4,4'-DDD | 21.3 | 20.0 | 107 | 48-119 |
| 4,4'-DDT | 22.3 | 20.0 | 111 | 54-126 |
| Chlordane | 219 | 200 | 109 | 70-130 |

**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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/22/2007 |
| | | **Time Analyzed:** | 19:45 |

## Method Blank Summary
## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\GC23\DATA\012207\0122F007.D |
| **Lab Code:** | KWG0621958-7 | **Instrument ID:** | GC23 |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | **Extraction Lot:** | KWG0621958 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Lab Control Sample | KWG0621958-3 | J:\GC23\DATA\012207\0122F008.D | 01/22/07 | 20:12 |
| Lab Control Sample | KWG0621958-3 | J:\GC23\DATA\012207\0122F009.D | 01/22/07 | 20:38 |
| B-4-24 | K0611027-001 | J:\GC23\DATA\012207\0122F010.D | 01/22/07 | 21:05 |
| DUPE-1 | K0611027-002 | J:\GC23\DATA\012207\0122F011.D | 01/22/07 | 21:31 |
| B-4-15 | K0611027-003 | J:\GC23\DATA\012207\0122F012.D | 01/22/07 | 21:58 |
| B-4-35 | K0611027-004 | J:\GC23\DATA\012207\0122F013.D | 01/22/07 | 22:24 |
| B-3-27 | K0611027-005 | J:\GC23\DATA\012207\0122F014.D | 01/22/07 | 22:51 |
| B-3-16 | K0611027-006 | J:\GC23\DATA\012207\0122F015.D | 01/22/07 | 23:17 |
| DUPE-2 | K0611027-007 | J:\GC23\DATA\012207\0122F016.D | 01/22/07 | 23:44 |
| B-3-35 | K0611027-008 | J:\GC23\DATA\012207\0122F017.D | 01/23/07 | 00:10 |
| B-2-40MS | KWG0621958-1 | J:\GC23\DATA\012207\0122F026.D | 01/23/07 | 04:06 |
| B-2-40DMS | KWG0621958-2 | J:\GC23\DATA\012207\0122F027.D | 01/23/07 | 04:32 |
| B-2-40MS | KWG0621958-4 | J:\GC23\DATA\012207\0122F028.D | 01/23/07 | 04:58 |
| B-2-40DMS | KWG0621958-5 | J:\GC23\DATA\012207\0122F029.D | 01/23/07 | 05:25 |
| B-2-20 | K0611027-011 | J:\GC23\DATA\012207\0122F030.D | 01/23/07 | 05:51 |
| B-2-30 | K0611027-009 | J:\GC23\DATA\012607\0126F007.D | 01/26/07 | 19:42 |
| B-2-40 | K0611027-010 | J:\GC23\DATA\012607\0126F008.D | 01/26/07 | 20:08 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/22/2007 |
| | | **Time Analyzed:** | 20:12 |

## Lab Control Sample Summary
## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | Lab Control Sample | **File ID:** | J:\GC23\DATA\012207\0122F008.D |
| **Lab Code:** | KWG0621958-3 | **Instrument ID:** | GC23 |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | **Extraction Lot:** | KWG0621958 |

This Lab Control Sample applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | KWG0621958-7 | J:\GC23\DATA\012207\0122F007.D | 01/22/07 | 19:45 |
| B-4-24 | K0611027-001 | J:\GC23\DATA\012207\0122F010.D | 01/22/07 | 21:05 |
| DUPE-1 | K0611027-002 | J:\GC23\DATA\012207\0122F011.D | 01/22/07 | 21:31 |
| B-4-15 | K0611027-003 | J:\GC23\DATA\012207\0122F012.D | 01/22/07 | 21:58 |
| B-4-35 | K0611027-004 | J:\GC23\DATA\012207\0122F013.D | 01/22/07 | 22:24 |
| B-3-27 | K0611027-005 | J:\GC23\DATA\012207\0122F014.D | 01/22/07 | 22:51 |
| B-3-16 | K0611027-006 | J:\GC23\DATA\012207\0122F015.D | 01/22/07 | 23:17 |
| DUPE-2 | K0611027-007 | J:\GC23\DATA\012207\0122F016.D | 01/22/07 | 23:44 |
| B-3-35 | K0611027-008 | J:\GC23\DATA\012207\0122F017.D | 01/23/07 | 00:10 |
| B-2-40MS | KWG0621958-1 | J:\GC23\DATA\012207\0122F026.D | 01/23/07 | 04:06 |
| B-2-40DMS | KWG0621958-2 | J:\GC23\DATA\012207\0122F027.D | 01/23/07 | 04:32 |
| B-2-40MS | KWG0621958-4 | J:\GC23\DATA\012207\0122F028.D | 01/23/07 | 04:58 |
| B-2-40DMS | KWG0621958-5 | J:\GC23\DATA\012207\0122F029.D | 01/23/07 | 05:25 |
| B-2-20 | K0611027-011 | J:\GC23\DATA\012207\0122F030.D | 01/23/07 | 05:51 |
| B-2-30 | K0611027-009 | J:\GC23\DATA\012607\0126F007.D | 01/26/07 | 19:42 |
| B-2-40 | K0611027-010 | J:\GC23\DATA\012607\0126F008.D | 01/26/07 | 20:08 |

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/22/2007 |
| | | **Time Analyzed:** | 20:38 |

**Lab Control Sample Summary**
**Organochlorine Pesticides**

| | | | |
|---|---|---|---|
| **Sample Name:** | Lab Control Sample | **File ID:** | J:\GC23\DATA\012207\0122F009.D |
| **Lab Code:** | KWG0621958-3 | **Instrument ID:** | GC23 |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | **Extraction Lot:** | KWG0621958 |

This Lab Control Sample applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | KWG0621958-7 | J:\GC23\DATA\012207\0122F007.D | 01/22/07 | 19:45 |
| B-4-24 | K0611027-001 | J:\GC23\DATA\012207\0122F010.D | 01/22/07 | 21:05 |
| DUPE-1 | K0611027-002 | J:\GC23\DATA\012207\0122F011.D | 01/22/07 | 21:31 |
| B-4-15 | K0611027-003 | J:\GC23\DATA\012207\0122F012.D | 01/22/07 | 21:58 |
| B-4-35 | K0611027-004 | J:\GC23\DATA\012207\0122F013.D | 01/22/07 | 22:24 |
| B-3-27 | K0611027-005 | J:\GC23\DATA\012207\0122F014.D | 01/22/07 | 22:51 |
| B-3-16 | K0611027-006 | J:\GC23\DATA\012207\0122F015.D | 01/22/07 | 23:17 |
| DUPE-2 | K0611027-007 | J:\GC23\DATA\012207\0122F016.D | 01/22/07 | 23:44 |
| B-3-35 | K0611027-008 | J:\GC23\DATA\012207\0122F017.D | 01/23/07 | 00:10 |
| B-2-40MS | KWG0621958-1 | J:\GC23\DATA\012207\0122F026.D | 01/23/07 | 04:06 |
| B-2-40DMS | KWG0621958-2 | J:\GC23\DATA\012207\0122F027.D | 01/23/07 | 04:32 |
| B-2-40MS | KWG0621958-4 | J:\GC23\DATA\012207\0122F028.D | 01/23/07 | 04:58 |
| B-2-40DMS | KWG0621958-5 | J:\GC23\DATA\012207\0122F029.D | 01/23/07 | 05:25 |
| B-2-20 | K0611027-011 | J:\GC23\DATA\012207\0122F030.D | 01/23/07 | 05:51 |
| B-2-30 | K0611027-009 | J:\GC23\DATA\012607\0126F007.D | 01/26/07 | 19:42 |
| B-2-40 | K0611027-010 | J:\GC23\DATA\012607\0126F008.D | 01/26/07 | 20:08 |

# Organochlorine Pesticides
# EPA Method 8081

# Organic Analysis:
# Organochlorine Pesticides

## Summary Package

### Sample and QC Results

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Client:** Kleinfelder
**Project:** Condit/5388614

**Service Request:** K0611088

## Cover Page - Organic Analysis Data Package
## Organochlorine Pesticides

| Sample Name | Lab Code | Date Collected | Date Received |
|---|---|---|---|
| Dup-3 | K0611088-001 | 12/18/2006 | 12/20/2006 |
| B1-85 | K0611088-002 | 12/18/2006 | 12/20/2006 |
| B1-106 | K0611088-003 | 12/18/2006 | 12/20/2006 |
| B1-72 | K0611088-004 | 12/18/2006 | 12/20/2006 |

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: Janet L. Heston

Name: Janet L Heston

Date: 1·31·07

Title: Scientist

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | Dup-3 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-001 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.27 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.24 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Aldrin | ND | U | 1.0 | 0.20 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.15 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDE** | **5.5** | | 1.0 | 0.22 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDD** | **2.2** | | 1.0 | 0.18 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDT** | **2.0** | | 1.0 | 0.31 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Chlordane | ND | Ui | 11 | 11 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 86 | 18-142 | 01/26/07 | Acceptable |
| Decachlorobiphenyl | 95 | 25-134 | 01/26/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-85 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-002 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.26 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.23 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Aldrin | ND | Ui | 1.0 | 0.36 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.14 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDE** | **6.5** | | 1.0 | 0.21 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDD** | **2.8** | | 1.0 | 0.17 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDT** | **2.0** | P | 1.0 | 0.29 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Chlordane | ND | U | 10 | 7.0 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 88 | 18-142 | 01/26/07 | Acceptable |
| Decachlorobiphenyl | 91 | 25-134 | 01/26/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-106 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-003 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 0.99 | 0.22 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| Heptachlor | ND | U | 0.99 | 0.19 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **Aldrin** | **0.37** | J | 0.99 | 0.16 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **Dieldrin** | **0.20** | J | 0.99 | 0.12 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDE** | **1.3** | P | 0.99 | 0.18 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| 4,4'-DDD | ND | Ui | 0.99 | 0.99 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |
| **4,4'-DDT** | **1.2** | P | 0.99 | 0.25 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | * |
| Chlordane | ND | Ui | 9.9 | 7.4 | 1 | 12/28/06 | 01/26/07 | KWG0621958 | |

* See Case Narrative

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 80 | 18-142 | 01/26/07 | Acceptable |
| Decachlorobiphenyl | 88 | 25-134 | 01/26/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-72 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-004 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 1.0 | 0.32 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Heptachlor | ND | U | 1.0 | 0.28 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Aldrin | ND | U | 1.0 | 0.23 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Dieldrin | ND | U | 1.0 | 0.17 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| 4,4'-DDE | ND | U | 1.0 | 0.25 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| 4,4'-DDD | ND | U | 1.0 | 0.21 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| **4,4'-DDT** | **0.84** | JP | 1.0 | 0.36 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |
| Chlordane | ND | U | 10 | 8.6 | 1 | 12/28/06 | 01/23/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 69 | 18-142 | 01/23/07 | Acceptable |
| Decachlorobiphenyl | 86 | 25-134 | 01/23/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | NA |
| **Sample Matrix:** | Sediment | **Date Received:** | NA |

## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/Kg |
| **Lab Code:** | KWG0621958-7 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | ND | U | 0.48 | 0.15 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Heptachlor | ND | U | 0.48 | 0.13 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Aldrin | ND | U | 0.48 | 0.11 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Dieldrin | ND | U | 0.48 | 0.081 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDE | ND | U | 0.48 | 0.12 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDD | ND | U | 0.48 | 0.098 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| 4,4'-DDT | ND | U | 0.48 | 0.17 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |
| Chlordane | ND | U | 4.8 | 4.1 | 1 | 12/28/06 | 01/22/07 | KWG0621958 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Tetrachloro-m-xylene | 60 | 18-142 | 01/22/07 | Acceptable |
| Decachlorobiphenyl | 71 | 25-134 | 01/22/07 | Acceptable |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088

**Surrogate Recovery Summary**
**Organochlorine Pesticides**

**Extraction Method:** EPA 3540C
**Analysis Method:** 8081A

**Units:** PERCENT
**Level:** Low

| Sample Name | Lab Code | Sur1 | Sur2 |
|---|---|---|---|
| Dup-3 | K0611088-001 | 86 | 95 |
| B1-85 | K0611088-002 | 88 | 91 |
| B1-106 | K0611088-003 | 80 | 88 |
| B1-72 | K0611088-004 | 69 | 86 |
| Method Blank | KWG0621958-7 | 60 | 71 |
| Batch QC | K0611027-010 | 86 | 98 |
| Batch QCMS | KWG0621958-1 | 79 | 102 |
| Batch QCDMS | KWG0621958-2 | 83 | 98 |
| Batch QCMS | KWG0621958-4 | 81 | 96 |
| Batch QCDMS | KWG0621958-5 | 86 | 98 |
| Lab Control Sample | KWG0621958-3 | 68 | 84 |

**Surrogate Recovery Control Limits (%)**

| | | |
|---|---|---|
| Sur1 = | Tetrachloro-m-xylene | 18-142 |
| Sur2 = | Decachlorobiphenyl | 25-134 |

**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:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/23/2007 |

## Matrix Spike/Duplicate Matrix Spike Summary
## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | Batch QC | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-010 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | **Extraction Lot:** | KWG0621958 |

| | | Batch QCMS KWG0621958-1 Matrix Spike | | | Batch QCDMS KWG0621958-2 Duplicate Matrix Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| gamma-BHC (Lindane) | ND | 25.4 | 19.9 | 128 * | 24.2 | 19.9 | 122 | 41-126 | 5 | 40 |
| Heptachlor | ND | 23.5 | 19.9 | 118 | 22.2 | 19.9 | 112 | 42-122 | 6 | 40 |
| Aldrin | ND | 23.3 | 19.9 | 117 | 21.3 | 19.9 | 107 | 38-122 | 9 | 40 |
| Dieldrin | ND | 23.4 | 19.9 | 117 | 22.1 | 19.9 | 111 | 38-122 | 6 | 40 |
| 4,4'-DDE | ND | 26.0 | 19.9 | 131 # | 24.7 | 19.9 | 124 # | 28-133 | 5 | 40 |
| 4,4'-DDD | ND | 26.5 | 19.9 | 133 * | 26.4 | 19.9 | 133 * | 43-123 | 1 | 40 |
| 4,4'-DDT | ND | 27.2 | 19.9 | 137 * | 26.8 | 19.9 | 135 * | 47-127 | 2 | 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:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/23/2007 |

## Matrix Spike/Duplicate Matrix Spike Summary
## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | Batch QC | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-010 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | **Extraction Lot:** | KWG0621958 |

| | | Batch QCMS KWG0621958-4 Matrix Spike | | | Batch QCDMS KWG0621958-5 Duplicate Matrix Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Chlordane | ND | 240 | 199 | 121 | 241 | 199 | 121 | 70-130 | 0 | 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:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/22/2007 |

## Lab Control Spike Summary
## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 3540C | **Units:** | ug/Kg |
| **Analysis Method:** | 8081A | **Basis:** | Dry |
| | | **Level:** | Low |
| | | **Extraction Lot:** | KWG0621958 |

| | Lab Control Sample KWG0621958-3 Lab Control Spike | | | |
|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **%Rec Limits** |
| gamma-BHC (Lindane) | 19.5 | 20.0 | 98 | 63-117 |
| Heptachlor | 19.4 | 20.0 | 97 | 51-116 |
| Aldrin | 18.2 | 20.0 | 91 | 47-118 |
| Dieldrin | 19.3 | 20.0 | 96 | 42-122 |
| 4,4'-DDE | 20.4 | 20.0 | 102 | 40-127 |
| 4,4'-DDD | 21.3 | 20.0 | 107 | 48-119 |
| 4,4'-DDT | 22.3 | 20.0 | 111 | 54-126 |
| Chlordane | 219 | 200 | 109 | 70-130 |

**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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/22/2007 |
| | | **Time Analyzed:** | 19:45 |

**Method Blank Summary**
**Organochlorine Pesticides**

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\GC23\DATA\012207\0122F007.D |
| **Lab Code:** | KWG0621958-7 | **Instrument ID:** | GC23 |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | **Extraction Lot:** | KWG0621958 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Lab Control Sample | KWG0621958-3 | J:\GC23\DATA\012207\0122F008.D | 01/22/07 | 20:12 |
| Lab Control Sample | KWG0621958-3 | J:\GC23\DATA\012207\0122F009.D | 01/22/07 | 20:38 |
| Batch QCMS | KWG0621958-1 | J:\GC23\DATA\012207\0122F026.D | 01/23/07 | 04:06 |
| Batch QCDMS | KWG0621958-2 | J:\GC23\DATA\012207\0122F027.D | 01/23/07 | 04:32 |
| Batch QCMS | KWG0621958-4 | J:\GC23\DATA\012207\0122F028.D | 01/23/07 | 04:58 |
| Batch QCDMS | KWG0621958-5 | J:\GC23\DATA\012207\0122F029.D | 01/23/07 | 05:25 |
| B1-72 | K0611088-004 | J:\GC23\DATA\012207\0122F034.D | 01/23/07 | 07:36 |
| Batch QC | K0611027-010 | J:\GC23\DATA\012607\0126F008.D | 01/26/07 | 20:08 |
| Dup-3 | K0611088-001 | J:\GC23\DATA\012607\0126F009.D | 01/26/07 | 20:35 |
| B1-85 | K0611088-002 | J:\GC23\DATA\012607\0126F010.D | 01/26/07 | 21:01 |
| B1-106 | K0611088-003 | J:\GC23\DATA\012607\0126F011.D | 01/26/07 | 21:28 |

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/22/2007 |
| | | **Time Analyzed:** | 20:12 |

## Lab Control Sample Summary
## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | Lab Control Sample | **File ID:** | J:\GC23\DATA\012207\0122F008.D |
| **Lab Code:** | KWG0621958-3 | **Instrument ID:** | GC23 |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | **Extraction Lot:** | KWG0621958 |

This Lab Control Sample applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | KWG0621958-7 | J:\GC23\DATA\012207\0122F007.D | 01/22/07 | 19:45 |
| Batch QCMS | KWG0621958-1 | J:\GC23\DATA\012207\0122F026.D | 01/23/07 | 04:06 |
| Batch QCDMS | KWG0621958-2 | J:\GC23\DATA\012207\0122F027.D | 01/23/07 | 04:32 |
| Batch QCMS | KWG0621958-4 | J:\GC23\DATA\012207\0122F028.D | 01/23/07 | 04:58 |
| Batch QCDMS | KWG0621958-5 | J:\GC23\DATA\012207\0122F029.D | 01/23/07 | 05:25 |
| B1-72 | K0611088-004 | J:\GC23\DATA\012207\0122F034.D | 01/23/07 | 07:36 |
| Batch QC | K0611027-010 | J:\GC23\DATA\012607\0126F008.D | 01/26/07 | 20:08 |
| Dup-3 | K0611088-001 | J:\GC23\DATA\012607\0126F009.D | 01/26/07 | 20:35 |
| B1-85 | K0611088-002 | J:\GC23\DATA\012607\0126F010.D | 01/26/07 | 21:01 |
| B1-106 | K0611088-003 | J:\GC23\DATA\012607\0126F011.D | 01/26/07 | 21:28 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/22/2007 |
| | | **Time Analyzed:** | 20:38 |

## Lab Control Sample Summary
## Organochlorine Pesticides

| | | | |
|---|---|---|---|
| **Sample Name:** | Lab Control Sample | **File ID:** | J:\GC23\DATA\012207\0122F009.D |
| **Lab Code:** | KWG0621958-3 | **Instrument ID:** | GC23 |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8081A | **Extraction Lot:** | KWG0621958 |

This Lab Control Sample applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | KWG0621958-7 | J:\GC23\DATA\012207\0122F007.D | 01/22/07 | 19:45 |
| Batch QCMS | KWG0621958-1 | J:\GC23\DATA\012207\0122F026.D | 01/23/07 | 04:06 |
| Batch QCDMS | KWG0621958-2 | J:\GC23\DATA\012207\0122F027.D | 01/23/07 | 04:32 |
| Batch QCMS | KWG0621958-4 | J:\GC23\DATA\012207\0122F028.D | 01/23/07 | 04:58 |
| Batch QCDMS | KWG0621958-5 | J:\GC23\DATA\012207\0122F029.D | 01/23/07 | 05:25 |
| B1-72 | K0611088-004 | J:\GC23\DATA\012207\0122F034.D | 01/23/07 | 07:36 |
| Batch QC | K0611027-010 | J:\GC23\DATA\012607\0126F008.D | 01/26/07 | 20:08 |
| Dup-3 | K0611088-001 | J:\GC23\DATA\012607\0126F009.D | 01/26/07 | 20:35 |
| B1-85 | K0611088-002 | J:\GC23\DATA\012607\0126F010.D | 01/26/07 | 21:01 |
| B1-106 | K0611088-003 | J:\GC23\DATA\012607\0126F011.D | 01/26/07 | 21:28 |

# Metals

# METALS

## - Cover Page -
## INORGANIC ANALYSIS DATA PACKAGE

Client: Kleinfelder

Service Request: K0611027

Project No.: 53886/4

Project Name: CONDIT

| Sample No. | Lab Sample ID. |
|---|---|
| B-4-24 | K0611027-001 |
| DUPE-1 | K0611027-002 |
| DUPE-1D | K0611027-002D |
| DUPE-1S | K0611027-002S |
| B-4-15 | K0611027-003 |
| B-4-35 | K0611027-004 |
| B-3-27 | K0611027-005 |
| B-3-16 | K0611027-006 |
| DUPE-2 | K0611027-007 |
| B-3-35 | K0611027-008 |
| B-2-30 | K0611027-009 |
| B-2-40 | K0611027-010 |
| B-2-20 | K0611027-011 |
| PBS | K0611027-MB |

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

Signature: [signature]

Date: 01/17/07

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

| | | | |
|---|---|---|---|
| Client: | Kleinfelder | Service Request: | K0611027 |
| Project No.: | 53886/4 | Date Collected: | 12/14/06 |
| Project Name: | CONDIT | Date Received: | 12/18/06 |
| Matrix: | SEDIMENT | Units: | MG/KG |
| | | Basis: | Dry |

Sample Name: B-4-24 Lab Code: K0611027-001

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.06 | 0.05 | 5 | 12/28/06 | 12/29/06 | 0.05 | U | N |
| Arsenic | 200.8 | 0.61 | 0.07 | 5 | 12/28/06 | 1/4/07 | 0.78 | | |
| Cadmium | 200.8 | 0.025 | 0.004 | 5 | 12/28/06 | 1/4/07 | 0.071 | | |
| Chromium | 200.8 | 0.25 | 0.05 | 5 | 12/28/06 | 1/4/07 | 7.38 | | |
| Copper | 200.8 | 0.12 | 0.07 | 5 | 12/28/06 | 1/4/07 | 11.0 | | |
| Lead | 200.8 | 0.06 | 0.02 | 5 | 12/28/06 | 1/4/07 | 2.59 | | |
| Mercury | 7471A | 0.020 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.238 | | |
| Nickel | 200.8 | 0.25 | 0.06 | 5 | 12/28/06 | 1/4/07 | 10.6 | | |
| Silver | 200.8 | 0.025 | 0.007 | 5 | 12/28/06 | 12/29/06 | 0.038 | | |
| Zinc | 200.8 | 0.6 | 0.4 | 5 | 12/28/06 | 1/4/07 | 26.2 | | |

% Solids: 80.8

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 53886/4
Project Name: CONDIT
Matrix: SEDIMENT

Service Request: K0611027
Date Collected: 12/14/06
Date Received: 12/18/06
Units: MG/KG
Basis: Dry

Sample Name: DUPE-1

Lab Code: K0611027-002

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | B | N |
| Arsenic | 200.8 | 0.49 | 0.06 | 5 | 12/28/06 | 1/4/07 | 1.72 | | |
| Cadmium | 200.8 | 0.019 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.149 | | |
| Chromium | 200.8 | 0.19 | 0.04 | 5 | 12/28/06 | 1/4/07 | 10.3 | | |
| Copper | 200.8 | 0.10 | 0.06 | 5 | 12/28/06 | 1/4/07 | 17.0 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 8.56 | | |
| Mercury | 7471A | 0.040 | 0.008 | 2 | 1/9/07 | 1/10/07 | 0.915 | | |
| Nickel | 200.8 | 0.19 | 0.05 | 5 | 12/28/06 | 1/4/07 | 9.75 | | |
| Silver | 200.8 | 0.020 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.113 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 53.0 | | |

% Solids: 56.9

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 53886/4
Project Name: CONDIT
Matrix: SEDIMENT

Service Request: K0611027
Date Collected: 12/14/06
Date Received: 12/18/06
Units: MG/KG
Basis: Dry

Sample Name: B-4-15

Lab Code: K0611027-003

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.06 | 0.05 | 5 | 12/28/06 | 12/29/06 | 0.05 | U | N |
| Arsenic | 200.8 | 0.60 | 0.07 | 5 | 12/28/06 | 1/4/07 | 0.87 | | |
| Cadmium | 200.8 | 0.024 | 0.004 | 5 | 12/28/06 | 1/4/07 | 0.050 | | |
| Chromium | 200.8 | 0.24 | 0.05 | 5 | 12/28/06 | 1/4/07 | 8.04 | | |
| Copper | 200.8 | 0.12 | 0.07 | 5 | 12/28/06 | 1/4/07 | 14.1 | | |
| Lead | 200.8 | 0.06 | 0.02 | 5 | 12/28/06 | 1/4/07 | 1.80 | | |
| Mercury | 7471A | 0.020 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.449 | | |
| Nickel | 200.8 | 0.24 | 0.06 | 5 | 12/28/06 | 1/4/07 | 12.2 | | |
| Silver | 200.8 | 0.024 | 0.007 | 5 | 12/28/06 | 12/29/06 | 0.056 | | |
| Zinc | 200.8 | 0.6 | 0.4 | 5 | 12/28/06 | 1/4/07 | 25.1 | | |

% Solids: 70.0

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder

Project No.: 53886/4

Project Name: CONDIT

Matrix: SEDIMENT

Service Request: K0611027

Date Collected: 12/14/06

Date Received: 12/18/06

Units: MG/KG

Basis: Dry

Sample Name: B-4-35

Lab Code: K0611027-004

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.06 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.55 | 0.07 | 5 | 12/28/06 | 1/4/07 | 0.78 | | |
| Cadmium | 200.8 | 0.022 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.052 | | |
| Chromium | 200.8 | 0.22 | 0.04 | 5 | 12/28/06 | 1/4/07 | 6.31 | | |
| Copper | 200.8 | 0.11 | 0.07 | 5 | 12/28/06 | 1/4/07 | 9.85 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 2.07 | | |
| Mercury | 7471A | 0.019 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.378 | | |
| Nickel | 200.8 | 0.22 | 0.05 | 5 | 12/28/06 | 1/4/07 | 10.6 | | |
| Silver | 200.8 | 0.022 | 0.007 | 5 | 12/28/06 | 12/29/06 | 0.043 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 24.5 | | |

% Solids: 75.2

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 53886/4
Project Name: CONDIT
Matrix: SEDIMENT

Service Request: K0611027
Date Collected: 12/14/06
Date Received: 12/18/06
Units: MG/KG
Basis: Dry

Sample Name: B-3-27
Lab Code: K0611027-005

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.48 | 0.06 | 5 | 12/28/06 | 1/4/07 | 1.68 | | |
| Cadmium | 200.8 | 0.019 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.112 | | |
| Chromium | 200.8 | 0.19 | 0.04 | 5 | 12/28/06 | 1/4/07 | 7.80 | | |
| Copper | 200.8 | 0.10 | 0.06 | 5 | 12/28/06 | 1/4/07 | 18.0 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 7.05 | | |
| Mercury | 7471A | 0.097 | 0.019 | 5 | 1/9/07 | 1/10/07 | 1.280 | | |
| Nickel | 200.8 | 0.19 | 0.05 | 5 | 12/28/06 | 1/4/07 | 9.50 | | |
| Silver | 200.8 | 0.019 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.099 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 26.1 | | |

% Solids: 58.0

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 53886/4
Project Name: CONDIT
Matrix: SEDIMENT

Service Request: K0611027
Date Collected: 12/14/06
Date Received: 12/18/06
Units: MG/KG
Basis: Dry

Sample Name: B-3-16

Lab Code: K0611027-006

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.54 | 0.06 | 5 | 12/28/06 | 1/4/07 | 0.96 | | |
| Cadmium | 200.8 | 0.022 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.040 | | |
| Chromium | 200.8 | 0.22 | 0.04 | 5 | 12/28/06 | 1/4/07 | 5.59 | | |
| Copper | 200.8 | 0.11 | 0.06 | 5 | 12/28/06 | 1/4/07 | 17.6 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 1.07 | | |
| Mercury | 7471A | 0.020 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.738 | | |
| Nickel | 200.8 | 0.22 | 0.05 | 5 | 12/28/06 | 1/4/07 | 9.91 | | |
| Silver | 200.8 | 0.022 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.034 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 13.4 | | |

% Solids: 66.0

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 53886/4
Project Name: CONDIT
Matrix: SEDIMENT

Service Request: K0611027
Date Collected: 12/15/06
Date Received: 12/18/06
Units: MG/KG
Basis: Dry

Sample Name: DUPE-2
Lab Code: K0611027-007

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.51 | 0.06 | 5 | 12/28/06 | 1/4/07 | 1.25 | | |
| Cadmium | 200.8 | 0.020 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.132 | | |
| Chromium | 200.8 | 0.20 | 0.04 | 5 | 12/28/06 | 1/4/07 | 10.0 | | |
| Copper | 200.8 | 0.10 | 0.06 | 5 | 12/28/06 | 1/4/07 | 16.8 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 5.38 | | |
| Mercury | 7471A | 0.024 | 0.005 | 1 | 1/9/07 | 1/10/07 | 1.110 | | |
| Nickel | 200.8 | 0.20 | 0.05 | 5 | 12/28/06 | 1/4/07 | 11.8 | | |
| Silver | 200.8 | 0.020 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.116 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 35.3 | | |

% Solids: 55.0

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder

Project No.: 53886/4

Project Name: CONDIT

Matrix: SEDIMENT

Service Request: K0611027

Date Collected: 12/15/06

Date Received: 12/18/06

Units: MG/KG

Basis: Dry

Sample Name: B-3-35

Lab Code: K0611027-008

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.06 | 0.05 | 5 | 12/28/06 | 12/29/06 | 0.08 | | N |
| Arsenic | 200.8 | 0.57 | 0.07 | 5 | 12/28/06 | 1/4/07 | 2.10 | | |
| Cadmium | 200.8 | 0.023 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.101 | | |
| Chromium | 200.8 | 0.23 | 0.05 | 5 | 12/28/06 | 1/4/07 | 16.0 | | |
| Copper | 200.8 | 0.11 | 0.07 | 5 | 12/28/06 | 1/4/07 | 12.2 | | |
| Lead | 200.8 | 0.06 | 0.02 | 5 | 12/28/06 | 1/4/07 | 7.57 | | |
| Mercury | 7471A | 0.019 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.024 | | |
| Nickel | 200.8 | 0.23 | 0.06 | 5 | 12/28/06 | 1/4/07 | 10.7 | | |
| Silver | 200.8 | 0.023 | 0.007 | 5 | 12/28/06 | 12/29/06 | 0.137 | | |
| Zinc | 200.8 | 0.6 | 0.3 | 5 | 12/28/06 | 1/4/07 | 36.5 | | |

% Solids: 73.1

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

| | | | |
|---|---|---|---|
| Client: | Kleinfelder | Service Request: | K0611027 |
| Project No.: | 53886/4 | Date Collected: | 12/15/06 |
| Project Name: | CONDIT | Date Received: | 12/18/06 |
| Matrix: | SEDIMENT | Units: | MG/KG |
| | | Basis: | Dry |

Sample Name: B-2-30 Lab Code: K0611027-009

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.51 | 0.06 | 5 | 12/28/06 | 1/4/07 | 1.33 | | |
| Cadmium | 200.8 | 0.020 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.133 | | |
| Chromium | 200.8 | 0.20 | 0.04 | 5 | 12/28/06 | 1/4/07 | 9.85 | | |
| Copper | 200.8 | 0.10 | 0.06 | 5 | 12/28/06 | 1/4/07 | 18.1 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 4.84 | | |
| Mercury | 7471A | 0.099 | 0.020 | 5 | 1/9/07 | 1/10/07 | 1.320 | | |
| Nickel | 200.8 | 0.20 | 0.05 | 5 | 12/28/06 | 1/4/07 | 12.6 | | |
| Silver | 200.8 | 0.020 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.106 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 77.4 | | |

% Solids: 54.7

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 53886/4
Project Name: CONDIT
Matrix: SEDIMENT

Service Request: K0611027
Date Collected: 12/15/06
Date Received: 12/18/06
Units: MG/KG
Basis: Dry

Sample Name: B-2-40
Lab Code: K0611027-010

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.14 | | N |
| Arsenic | 200.8 | 0.54 | 0.06 | 5 | 12/28/06 | 1/4/07 | 3.96 | | |
| Cadmium | 200.8 | 0.022 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.075 | | |
| Chromium | 200.8 | 0.22 | 0.04 | 5 | 12/28/06 | 1/4/07 | 15.3 | | |
| Copper | 200.8 | 0.11 | 0.06 | 5 | 12/28/06 | 1/4/07 | 11.2 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 9.80 | | |
| Mercury | 7471A | 0.020 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.020 | | |
| Nickel | 200.8 | 0.22 | 0.05 | 5 | 12/28/06 | 1/4/07 | 9.26 | | |
| Silver | 200.8 | 0.021 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.107 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 43.8 | | |

% Solids: 77.2

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

| | | | |
|---|---|---|---|
| Client: | Kleinfelder | Service Request: | K0611027 |
| Project No.: | 53886/4 | Date Collected: | 12/15/06 |
| Project Name: | CONDIT | Date Received: | 12/18/06 |
| Matrix: | SEDIMENT | Units: | MG/KG |
| | | Basis: | Dry |

Sample Name: B-2-20 Lab Code: K0611027-011

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.07 | 0.05 | 5 | 12/28/06 | 12/29/06 | 0.05 | U | N |
| Arsenic | 200.8 | 0.65 | 0.08 | 5 | 12/28/06 | 1/4/07 | 1.09 | | |
| Cadmium | 200.8 | 0.026 | 0.004 | 5 | 12/28/06 | 1/4/07 | 0.048 | | |
| Chromium | 200.8 | 0.26 | 0.05 | 5 | 12/28/06 | 1/4/07 | 5.43 | | |
| Copper | 200.8 | 0.13 | 0.08 | 5 | 12/28/06 | 1/4/07 | 21.9 | | |
| Lead | 200.8 | 0.07 | 0.03 | 5 | 12/28/06 | 1/4/07 | 1.23 | | |
| Mercury | 7471A | 0.019 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.790 | | |
| Nickel | 200.8 | 0.26 | 0.07 | 5 | 12/28/06 | 1/4/07 | 9.45 | | |
| Silver | 200.8 | 0.026 | 0.008 | 5 | 12/28/06 | 12/29/06 | 0.057 | | |
| Zinc | 200.8 | 0.7 | 0.4 | 5 | 12/28/06 | 1/4/07 | 13.6 | | |

% Solids: 63.5

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 53886/4
Project Name: CONDIT
Matrix: SEDIMENT

Service Request: K0611027
Date Collected:
Date Received:
Units: MG/KG
Basis: Dry

Sample Name: Method Blank
Lab Code: K0611027-MB

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.50 | 0.06 | 5 | 12/28/06 | 1/4/07 | 0.06 | U | |
| Cadmium | 200.8 | 0.020 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.003 | U | |
| Chromium | 200.8 | 0.20 | 0.04 | 5 | 12/28/06 | 1/4/07 | 0.12 | B | |
| Copper | 200.8 | 0.10 | 0.06 | 5 | 12/28/06 | 1/4/07 | 0.06 | U | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 0.03 | B | |
| Mercury | 7471A | 0.020 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.004 | U | |
| Nickel | 200.8 | 0.20 | 0.05 | 5 | 12/28/06 | 1/4/07 | 0.05 | U | |
| Silver | 200.8 | 0.020 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.013 | B | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 0.3 | U | |

% Solids: 100.0

Comments:

# METALS
## - 3 -
## BLANKS

Client: Kleinfelder

Service Request: K0611027

Project No.: 53886/4

Project Name: CONDIT

Preparation Blank Matrix (soil/water): WATER

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

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | | Preparation Blank | C | | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.08 | U | 0.08 | U | 0.08 | U | 0.08 | U | | | | | 200.8 |
| Arsenic | 0.12 | U | 0.12 | U | 0.12 | U | 0.12 | U | | | | | 200.8 |
| Cadmium | 0.006 | U | 0.006 | U | 0.007 | B | 0.006 | U | | | | | 200.8 |
| Chromium | 0.08 | U | 0.08 | U | 0.08 | U | 0.08 | U | | | | | 200.8 |
| Copper | 0.12 | U | 0.12 | U | 0.12 | U | 0.12 | U | | | | | 200.8 |
| Lead | 0.04 | U | 0.04 | U | 0.04 | U | 0.04 | U | | | | | 200.8 |
| Mercury | 0.040 | U | 0.040 | U | 0.04 | U | 0.040 | U | | | | | 7471A |
| Nickel | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | | | | | 200.8 |
| Silver | 0.012 | U | 0.012 | U | 0.01 | U | 0.012 | U | | | | | 200.8 |
| Zinc | 0.6 | U | 0.6 | U | 0.6 | U | 0.6 | U | | | | | 200.8 |

# METALS
## - 3 -
## BLANKS

Client: Kleinfelder

Service Request: K0611027

Project No.: 53886/4

Project Name: CONDIT

Preparation Blank Matrix (soil/water): WATER

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

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | | Preparation Blank | C | | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | | | 0.08 | U | 0.08 | U | 0.08 | U | | | | | 200.8 |
| Mercury | | | 0.040 | U | 0.04 | U | | | | | | | 7471A |
| Silver | | | 0.012 | U | 0.01 | U | 0.012 | U | | | | | 200.8 |

# METALS
## - 3 -
## BLANKS

Client: Kleinfelder

Service Request: K0611027

Project No.: 53886/4

Project Name: CONDIT

Preparation Blank Matrix (soil/water): WATER

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

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | | Preparation Blank | C | | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | | | 0.08 | U | 0.08 | U | | | | | | | 200.8 |
| Silver | | | 0.012 | U | 0.01 | U | | | | | | | 200.8 |

# METALS
## - 5a -
## SPIKE SAMPLE RECOVERY

Client: Kleinfelder
Project No.: 53886/4
Project Name: CONDIT
Matrix: SEDIMENT

Service Request: K0611027
Units: mg/kg
Basis: Dry
% Solids: 56.9

Sample Name: DUPE-1S
Lab Code: K0611027-002S

| Analyte | Control Limit %R | Spike Result | C | Sample Result | C | Spike Added | %R | Q | Method |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 70 - 130 | 32.7 | | 0.04 | B | 97.1 | 34 | N | 200.8 |
| Arsenic | 70 - 130 | 78.7 | | 1.72 | | 97.1 | 79 | | 200.8 |
| Cadmium | 70 - 130 | 9.410 | | 0.149 | | 9.710 | 95 | | 200.8 |
| Chromium | 70 - 130 | 48.9 | | 10.3 | | 38.8 | 99 | | 200.8 |
| Copper | 70 - 130 | 67.2 | | 17.0 | | 48.5 | 104 | | 200.8 |
| Lead | 70 - 130 | 107 | | 8.56 | | 97.1 | 100 | | 200.8 |
| Mercury | 60 - 128 | 1.460 | | 0.915 | | 0.498 | 109 | | 7471A |
| Nickel | 70 - 130 | 99.5 | | 9.75 | | 97.1 | 92 | | 200.8 |
| Silver | 70 - 130 | 9.430 | | 0.113 | | 9.710 | 96 | | 200.8 |
| Zinc | 70 - 130 | 153 | | 53.0 | | 97.1 | 103 | | 200.8 |

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

# METALS
## - 6 -
## DUPLICATES

Client: Kleinfelder
Project No.: 53886/4
Project Name: CONDIT
Matrix: SEDIMENT

Service Request: K0611027
Units: mg/kg
Basis: Dry
% Solids: 56.9

Sample Name: DUPE-1D
Lab Code: K0611027-002D

| Analyte | Control Limit (%) | Sample (S) | C | Duplicate (D) | C | RPD | Q | Method |
|---|---|---|---|---|---|---|---|---|
| Antimony | | 0.04 | B | 0.05 | | 24 | | 200.8 |
| Arsenic | | 1.72 | | 1.67 | | 3 | | 200.8 |
| Cadmium | 30 | 0.149 | | 0.153 | | 2 | | 200.8 |
| Chromium | 30 | 10.3 | | 10.2 | | 1 | | 200.8 |
| Copper | 30 | 17.0 | | 17.0 | | 0 | | 200.8 |
| Lead | 30 | 8.56 | | 8.66 | | 1 | | 200.8 |
| Mercury | 30 | 0.915 | | 0.902 | | 1 | | 7471A |
| Nickel | 30 | 9.75 | | 9.63 | | 1 | | 200.8 |
| Silver | 30 | 0.113 | | 0.119 | | 5 | | 200.8 |
| Zinc | 30 | 53.0 | | 52.3 | | 1 | | 200.8 |

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

# METALS

- 7 -

## LABORATORY CONTROL SAMPLE

Client: Kleinfelder

Service Request: K0611027

Project No.: 53886/4

Project Name: CONDIT

Aqueous LCS Source: Inorganic Ventures

Solid LCS Source: ERA Lot #D045540

| Analyte | Aqueous mg/L | | | Solid (mg/kg) | | | | |
|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | C | Limits | %R |
| Antimony | | | | 86.2 | 78.9 | 0.0500 | 192 | 92 |
| Arsenic | | | | 146 | 154 | 112 | 180 | 105 |
| Cadmium | | | | 92.8 | 98.4 | 73.9 | 112 | 106 |
| Chromium | | | | 172 | 191 | 135 | 209 | 111 |
| Copper | | | | 67.0 | 75.1 | 53.8 | 80.2 | 112 |
| Lead | | | | 67.5 | 77.8 | 53.1 | 81.9 | 115 |
| Mercury | | | | 1.77 | 1.68 | 1.21 | 2.34 | 95 |
| Nickel | | | | 80.0 | 92.0 | 65.0 | 95.0 | 115 |
| Silver | | | | 93.0 | 105 | 57.0 | 129 | 113 |
| Zinc | | | | 380 | 413 | 300 | 460 | 109 |

# Metals

# METALS

## - Cover Page -
## INORGANIC ANALYSIS DATA PACKAGE

Client: Kleinfelder

Service Request: K0611088

Project No.: 5388614

Project Name: Condit

| Sample No. | Lab Sample ID. |
|---|---|
| Dup-3 | K0611088-001 |
| B1-85 | K0611088-002 |
| B1-106 | K0611088-003 |
| B1-106D | K0611088-003D |
| B1-106S | K0611088-003S |
| B1-72 | K0611088-004 |
| B1-72D | K0611088-004D |
| B1-72S | K0611088-004S |
| Method Blank | K0611088-MB |

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

Signature: [illegible]

Date: 01/17/07

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

| | | | |
|---|---|---|---|
| Client: | Kleinfelder | Service Request: | K0611088 |
| Project No.: | 5388614 | Date Collected: | 12/18/06 |
| Project Name: | Condit | Date Received: | 12/20/06 |
| Matrix: | SEDIMENT | Units: | MG/KG |
| | | Basis: | Dry |

Sample Name: Dup-3 Lab Code: K0611088-001

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.49 | 0.06 | 5 | 12/28/06 | 1/4/07 | 1.16 | | |
| Cadmium | 200.8 | 0.020 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.114 | | |
| Chromium | 200.8 | 0.20 | 0.04 | 5 | 12/28/06 | 1/4/07 | 8.78 | | |
| Copper | 200.8 | 0.10 | 0.06 | 5 | 12/28/06 | 1/4/07 | 16.3 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 4.17 | | |
| Mercury | 7471A | 0.041 | 0.008 | 2 | 1/9/07 | 1/10/07 | 1.240 | | |
| Nickel | 200.8 | 0.20 | 0.05 | 5 | 12/28/06 | 1/4/07 | 10.2 | | |
| Silver | 200.8 | 0.020 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.106 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 158 | | |

% Solids: 56.2

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 5388614
Project Name: Condit
Matrix: SEDIMENT

Service Request: K0611088
Date Collected: 12/18/06
Date Received: 12/20/06
Units: MG/KG
Basis: Dry

Sample Name: B1-85
Lab Code: K0611088-002

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.47 | 0.06 | 5 | 12/28/06 | 1/4/07 | 1.05 | | |
| Cadmium | 200.8 | 0.019 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.169 | | |
| Chromium | 200.8 | 0.19 | 0.04 | 5 | 12/28/06 | 1/4/07 | 10.4 | | |
| Copper | 200.8 | 0.09 | 0.06 | 5 | 12/28/06 | 1/4/07 | 13.7 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 6.42 | | |
| Mercury | 7471A | 0.020 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.715 | | |
| Nickel | 200.8 | 0.19 | 0.05 | 5 | 12/28/06 | 1/4/07 | 8.59 | | |
| Silver | 200.8 | 0.019 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.134 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 37.3 | | |

% Solids: 59.0

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 5388614
Project Name: Condit
Matrix: SEDIMENT

Service Request: K0611088
Date Collected: 12/18/06
Date Received: 12/20/06
Units: MG/KG
Basis: Dry

Sample Name: B1-106
Lab Code: K0611088-003

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.52 | 0.06 | 5 | 12/28/06 | 1/4/07 | 1.79 | | |
| Cadmium | 200.8 | 0.021 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.139 | | |
| Chromium | 200.8 | 0.21 | 0.04 | 5 | 12/28/06 | 1/4/07 | 10.6 | | |
| Copper | 200.8 | 0.10 | 0.06 | 5 | 12/28/06 | 1/4/07 | 17.5 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 5.37 | | |
| Mercury | 7471A | 0.020 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.702 | | |
| Nickel | 200.8 | 0.21 | 0.05 | 5 | 12/28/06 | 1/4/07 | 11.5 | | |
| Silver | 200.8 | 0.021 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.101 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 53.5 | | |

% Solids: 69.4

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder
Project No.: 5388614
Project Name: Condit
Matrix: SEDIMENT

Service Request: K0611088
Date Collected: 12/18/06
Date Received: 12/20/06
Units: MG/KG
Basis: Dry

Sample Name: B1-72
Lab Code: K0611088-004

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.47 | 0.06 | 5 | 12/28/06 | 1/4/07 | 2.18 | | |
| Cadmium | 200.8 | 0.019 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.112 | | |
| Chromium | 200.8 | 0.19 | 0.04 | 5 | 12/28/06 | 1/4/07 | 7.59 | | |
| Copper | 200.8 | 0.09 | 0.06 | 5 | 12/28/06 | 1/4/07 | 46.2 | | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 3.03 | | |
| Mercury | 7471A | 0.099 | 0.020 | 5 | 1/9/07 | 1/10/07 | 2.030 | | |
| Nickel | 200.8 | 0.19 | 0.05 | 5 | 12/28/06 | 1/4/07 | 10.0 | | |
| Silver | 200.8 | 0.019 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.124 | | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 18.0 | | |

% Solids: 48.0

Comments:

# METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Kleinfelder

Project No.: 5388614

Project Name: Condit

Matrix: SEDIMENT

Service Request: K0611088

Date Collected:

Date Received:

Units: MG/KG

Basis: Dry

Sample Name: Method Blank

Lab Code: K0611088-MB

| Analyte | Analysis Method | MRL | MDL | Dil. | Date Extracted | Date Analyzed | Result | C | Q |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 200.8 | 0.05 | 0.04 | 5 | 12/28/06 | 12/29/06 | 0.04 | U | N |
| Arsenic | 200.8 | 0.50 | 0.06 | 5 | 12/28/06 | 1/4/07 | 0.06 | U | |
| Cadmium | 200.8 | 0.020 | 0.003 | 5 | 12/28/06 | 1/4/07 | 0.003 | U | |
| Chromium | 200.8 | 0.20 | 0.04 | 5 | 12/28/06 | 1/4/07 | 0.12 | B | |
| Copper | 200.8 | 0.10 | 0.06 | 5 | 12/28/06 | 1/4/07 | 0.06 | U | |
| Lead | 200.8 | 0.05 | 0.02 | 5 | 12/28/06 | 1/4/07 | 0.03 | B | |
| Mercury | 7471A | 0.020 | 0.004 | 1 | 1/9/07 | 1/10/07 | 0.004 | U | |
| Nickel | 200.8 | 0.20 | 0.05 | 5 | 12/28/06 | 1/4/07 | 0.05 | U | |
| Silver | 200.8 | 0.020 | 0.006 | 5 | 12/28/06 | 12/29/06 | 0.013 | B | |
| Zinc | 200.8 | 0.5 | 0.3 | 5 | 12/28/06 | 1/4/07 | 0.3 | U | |

% Solids: 100.0

Comments:

# METALS
## - 3 -
## BLANKS

Client: Kleinfelder

Service Request: K0611088

Project No.: 5388614

Project Name: Condit

Preparation Blank Matrix (soil/water): WATER

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

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | | Preparation Blank | C | | | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.08 | U | 0.08 | U | 0.08 | U | 0.08 | U | | | | | | 200.8 |
| Arsenic | 0.12 | U | 0.12 | U | 0.12 | U | 0.12 | U | | | | | | 200.8 |
| Cadmium | 0.006 | U | 0.006 | U | 0.007 | B | 0.006 | U | | | | | | 200.8 |
| Chromium | 0.08 | U | 0.08 | U | 0.08 | U | 0.08 | U | | | | | | 200.8 |
| Copper | 0.12 | U | 0.12 | U | 0.12 | U | 0.12 | U | | | | | | 200.8 |
| Lead | 0.04 | U | 0.04 | U | 0.04 | U | 0.04 | U | | | | | | 200.8 |
| Mercury | 0.040 | U | 0.040 | U | 0.04 | U | 0.040 | U | | | | | | 7471A |
| Nickel | 0.10 | U | 0.10 | U | 0.10 | U | 0.10 | U | | | | | | 200.8 |
| Silver | 0.012 | U | 0.012 | U | 0.01 | U | 0.012 | U | | | | | | 200.8 |
| Zinc | 0.6 | U | 0.6 | U | 0.6 | U | 0.6 | U | | | | | | 200.8 |

# METALS
## - 3 -
## BLANKS

Client: Kleinfelder

Service Request: K0611088

Project No.: 5388614

Project Name: Condit

Preparation Blank Matrix (soil/water): WATER

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

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | | Preparation Blank | C | | | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | | | 0.08 | U | 0.08 | U | 0.08 | U | | | | | | 200.8 |
| Arsenic | | | 0.12 | U | | | | | | | | | | 200.8 |
| Cadmium | | | 0.007 | B | | | | | | | | | | 200.8 |
| Chromium | | | 0.08 | U | | | | | | | | | | 200.8 |
| Copper | | | 0.12 | U | | | | | | | | | | 200.8 |
| Lead | | | 0.04 | U | | | | | | | | | | 200.8 |
| Mercury | | | 0.040 | U | 0.04 | U | 0.040 | U | | | | | | 7471A |
| Nickel | | | 0.10 | U | | | | | | | | | | 200.8 |
| Silver | | | 0.012 | U | 0.01 | U | 0.012 | U | | | | | | 200.8 |
| Zinc | | | 0.6 | U | | | | | | | | | | 200.8 |

# METALS
## - 3 -
## BLANKS

Client: Kleinfelder

Service Request: K0611088

Project No.: 5388614

Project Name: Condit

Preparation Blank Matrix (soil/water): WATER

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

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | | Preparation Blank | C | | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | | | 0.08 | U | 0.08 | U | | | | | | | 200.8 |
| Silver | | | 0.012 | U | 0.01 | U | | | | | | | 200.8 |

# METALS
## - 5a -
## SPIKE SAMPLE RECOVERY

Client: Kleinfelder
Project No.: 5388614
Project Name: Condit
Matrix: SEDIMENT

Service Request: K0611088
Units: mg/kg
Basis: Dry
% Solids: 69.4

Sample Name: B1-106S
Lab Code: K0611088-003S

| Analyte | Control Limit %R | Spike Result | C | Sample Result | C | Spike Added | %R | Q | Method |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 70 - 130 | 37.2 | | 0.04 | U | 103 | 36 | N | 200.8 |
| Arsenic | 70 - 130 | 85.1 | | 1.79 | | 102 | 82 | | 200.8 |
| Cadmium | 70 - 130 | 9.520 | | 0.139 | | 10.2 | 92 | | 200.8 |
| Chromium | 70 - 130 | 48.7 | | 10.6 | | 40.9 | 93 | | 200.8 |
| Copper | 70 - 130 | 68.0 | | 17.5 | | 51.1 | 99 | | 200.8 |
| Lead | 70 - 130 | 105 | | 5.37 | | 102 | 97 | | 200.8 |
| Nickel | 70 - 130 | 104 | | 11.5 | | 102 | 91 | | 200.8 |
| Silver | 70 - 130 | 10.2 | | 0.101 | | 10.3 | 98 | | 200.8 |
| Zinc | 70 - 130 | 125 | | 53.5 | | 102 | 70 | | 200.8 |

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

# METALS
## - 5a -
## SPIKE SAMPLE RECOVERY

Client: Kleinfelder
Project No.: 5388614
Project Name: Condit
Matrix: SEDIMENT

Service Request: K0611088
Units: mg/kg
Basis: Dry
% Solids: 48.0

Sample Name: B1-72S
Lab Code: K0611088-004S

| Analyte | Control Limit %R | Spike Result | C | Sample Result | C | Spike Added | %R | Q | Method |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | | 2.490 | | 2.030 | | 0.497 | 93 | | 7471A |

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

# METALS
## - 6 -
## DUPLICATES

Client: Kleinfelder
Project No.: 5388614
Project Name: Condit
Matrix: SEDIMENT

Service Request: K0611088
Units: mg/kg
Basis: Dry
% Solids: 69.4

Sample Name: B1-106D
Lab Code: K0611088-003D

| Analyte | Control Limit (%) | Sample (S) | C | Duplicate (D) | C | RPD | Q | Method |
|---|---|---|---|---|---|---|---|---|
| Antimony | | 0.04 | U | 0.04 | U | | | 200.8 |
| Arsenic | | 1.79 | | 1.83 | | 2 | | 200.8 |
| Cadmium | 30 | 0.139 | | 0.132 | | 5 | | 200.8 |
| Chromium | 30 | 10.6 | | 10.8 | | 2 | | 200.8 |
| Copper | 30 | 17.5 | | 17.2 | | 2 | | 200.8 |
| Lead | 30 | 5.37 | | 5.91 | | 10 | | 200.8 |
| Nickel | 30 | 11.5 | | 11.6 | | 1 | | 200.8 |
| Silver | | 0.101 | | 0.102 | | 1 | | 200.8 |
| Zinc | 30 | 53.5 | | 39.6 | | 30 | | 200.8 |

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

# METALS
## - 6 -
## DUPLICATES

Client: Kleinfelder
Project No.: 5388614
Project Name: Condit
Matrix: SEDIMENT

Service Request: K0611088
Units: mg/kg
Basis: Dry
% Solids: 48.0

Sample Name: B1-72D
Lab Code: K0611088-004D

| Analyte | Control Limit (%) | Sample (S) | C | Duplicate (D) | C | RPD | Q | Method |
|---|---|---|---|---|---|---|---|---|
| Mercury | 30 | 2.030 | | 1.980 | | 2 | | 7471A |

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

# METALS

- 7 -

## LABORATORY CONTROL SAMPLE

Client: Kleinfelder

Service Request: K0611088

Project No.: 5388614

Project Name: Condit

Aqueous LCS Source: Inorganic Ventures

Solid LCS Source: ERA Lot #D045540

| Analyte | Aqueous mg/L | | | Solid (mg/kg) | | | | |
|---|---|---|---|---|---|---|---|---|
| | True | Found | %R | True | Found | C | Limits | %R |
| Antimony | | | | 86.2 | 78.9 | 0.0500 | 192 | 92 |
| Arsenic | | | | 146 | 154 | 112 | 180 | 105 |
| Cadmium | | | | 92.8 | 98.4 | 73.9 | 112 | 106 |
| Chromium | | | | 172 | 191 | 135 | 209 | 111 |
| Copper | | | | 67.0 | 75.1 | 53.8 | 80.2 | 112 |
| Lead | | | | 67.5 | 77.8 | 53.1 | 81.9 | 115 |
| Mercury | | | | 1.77 | 1.80 | 1.21 | 2.34 | 102 |
| Nickel | | | | 80.0 | 92.0 | 65.0 | 95.0 | 115 |
| Silver | | | | 93.0 | 105 | 57.0 | 129 | 113 |
| Zinc | | | | 380 | 413 | 300 | 460 | 109 |

# Polychlorinated Biphenyls
# PCB's
# EPA Method 8082

# Organic Analysis:
# Polychlorinated Biphenyls (PCBs)

## Summary Package

### Sample and QC Results

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Client:** Kleinfelder
**Project:** CONDIT/53886/4

**Service Request:** K0611027

## Cover Page - Organic Analysis Data Package
## Polychlorinated Biphenyls (PCBs)

| Sample Name | Lab Code | Date Collected | Date Received |
|---|---|---|---|
| B-4-24 | K0611027-001 | 12/14/2006 | 12/18/2006 |
| DUPE-1 | K0611027-002 | 12/14/2006 | 12/18/2006 |
| B-4-15 | K0611027-003 | 12/14/2006 | 12/18/2006 |
| B-4-35 | K0611027-004 | 12/14/2006 | 12/18/2006 |
| B-3-27 | K0611027-005 | 12/14/2006 | 12/18/2006 |
| B-3-16 | K0611027-006 | 12/14/2006 | 12/18/2006 |
| DUPE-2 | K0611027-007 | 12/15/2006 | 12/18/2006 |
| B-3-35 | K0611027-008 | 12/15/2006 | 12/18/2006 |
| B-2-30 | K0611027-009 | 12/15/2006 | 12/18/2006 |
| B-2-40 | K0611027-010 | 12/15/2006 | 12/18/2006 |
| B-2-20 | K0611027-011 | 12/15/2006 | 12/18/2006 |
| B-2-40MS | KWG0621959-1 | 12/15/2006 | 12/18/2006 |
| B-2-40DMS | KWG0621959-2 | 12/15/2006 | 12/18/2006 |

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: Janet L Heston

Name: Janet L. Heston

Date: 1-24-07

Title: Scientist

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | B-4-24 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-001 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 2.2 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 2.2 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 2.2 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 2.2 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 2.2 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | Ui | 10 | 6.2 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 2.2 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 69 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | DUPE-1 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-002 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 67 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/14/2006
**Date Received:** 12/18/2006

## Polychlorinated Biphenyls (PCBs)

**Sample Name:** B-4-15
**Lab Code:** K0611027-003

**Units:** ug/Kg
**Basis:** Dry

**Extraction Method:** EPA 3540C
**Analysis Method:** 8082

**Level:** Low

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 2.5 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 2.5 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 2.5 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 2.5 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 2.5 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 2.5 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 2.5 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 69 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | B-4-35 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-004 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 2.3 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 70 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | B-3-27 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-005 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 3.0 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 58 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | B-3-16 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-006 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 2.6 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 2.6 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 2.6 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 2.6 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 2.6 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 2.6 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 2.6 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 68 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | DUPE-2 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-007 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 3.1 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 68 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | B-3-35 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-008 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 2.4 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 2.4 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 2.4 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 2.4 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 2.4 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 2.4 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 2.4 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 70 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/15/2006
**Date Received:** 12/18/2006

## Polychlorinated Biphenyls (PCBs)

**Sample Name:** B-2-30
**Lab Code:** K0611027-009

**Units:** ug/Kg
**Basis:** Dry

**Extraction Method:** EPA 3540C
**Analysis Method:** 8082

**Level:** Low

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 3.2 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 3.2 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 3.2 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 3.2 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 3.2 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1254 | ND | Ui | 10 | 7.8 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 3.2 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 82 | 33-153 | 01/19/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | B-2-40 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-010 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 2.3 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 2.3 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 78 | 33-153 | 01/19/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/15/2006
**Date Received:** 12/18/2006

## Polychlorinated Biphenyls (PCBs)

**Sample Name:** B-2-20
**Lab Code:** K0611027-011

**Units:** ug/Kg
**Basis:** Dry

**Extraction Method:** EPA 3540C
**Analysis Method:** 8082

**Level:** Low

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 2.7 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 2.7 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 2.7 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 2.7 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 2.7 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 2.7 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 2.7 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 79 | 33-153 | 01/19/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | NA |
| **Sample Matrix:** | Sediment | **Date Received:** | NA |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/Kg |
| **Lab Code:** | KWG0621959-4 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 9.6 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 58 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027

## Surrogate Recovery Summary
## Polychlorinated Biphenyls (PCBs)

**Extraction Method:** EPA 3540C
**Analysis Method:** 8082

**Units:** PERCENT
**Level:** Low

| Sample Name | Lab Code | Sur1 |
|---|---|---|
| B-4-24 | K0611027-001 | 69 |
| DUPE-1 | K0611027-002 | 67 |
| B-4-15 | K0611027-003 | 69 |
| B-4-35 | K0611027-004 | 70 |
| B-3-27 | K0611027-005 | 58 |
| B-3-16 | K0611027-006 | 68 |
| DUPE-2 | K0611027-007 | 68 |
| B-3-35 | K0611027-008 | 70 |
| B-2-30 | K0611027-009 | 82 |
| B-2-40 | K0611027-010 | 78 |
| B-2-20 | K0611027-011 | 79 |
| Method Blank | KWG0621959-4 | 58 |
| B-2-40MS | KWG0621959-1 | 77 |
| B-2-40DMS | KWG0621959-2 | 78 |
| Lab Control Sample | KWG0621959-3 | 71 |

**Surrogate Recovery Control Limits (%)**

Sur1 = Decachlorobiphenyl 33-153

**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:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/19/2007 |

## Matrix Spike/Duplicate Matrix Spike Summary
## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | B-2-40 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-010 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | **Extraction Lot:** | KWG0621959 |

| | | B-2-40MS KWG0621959-1 Matrix Spike | | | B-2-40DMS KWG0621959-2 Duplicate Matrix Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Aroclor 1016 | ND | 155 | 199 | 78 | 163 | 199 | 82 | 26-163 | 5 | 50 |
| Aroclor 1260 | ND | 168 | 199 | 84 | 166 | 199 | 83 | 24-171 | 1 | 50 |

**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:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/19/2007 |

## Lab Control Spike Summary
## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 3540C | **Units:** | ug/Kg |
| **Analysis Method:** | 8082 | **Basis:** | Dry |
| | | **Level:** | Low |
| | | **Extraction Lot:** | KWG0621959 |

| | Lab Control Sample KWG0621959-3 Lab Control Spike | | | |
|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **%Rec Limits** |
| Aroclor 1016 | 128 | 200 | 64 | 39-145 |
| Aroclor 1260 | 149 | 200 | 75 | 51-146 |

**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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/18/2007 |
| | | **Time Analyzed:** | 20:13 |

## Method Blank Summary
## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\GC09\DATA\011807.B\0118F020.D |
| **Lab Code:** | KWG0621959-4 | **Instrument ID:** | GC09.i |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | **Extraction Lot:** | KWG0621959 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| B-4-24 | K0611027-001 | J:\GC09\DATA\011807.B\0118F022.D | 01/18/07 | 21:02 |
| DUPE-1 | K0611027-002 | J:\GC09\DATA\011807.B\0118F023.D | 01/18/07 | 21:26 |
| B-4-15 | K0611027-003 | J:\GC09\DATA\011807.B\0118F024.D | 01/18/07 | 21:51 |
| B-4-35 | K0611027-004 | J:\GC09\DATA\011807.B\0118F025.D | 01/18/07 | 22:15 |
| B-3-27 | K0611027-005 | J:\GC09\DATA\011807.B\0118F026.D | 01/18/07 | 22:39 |
| B-3-16 | K0611027-006 | J:\GC09\DATA\011807.B\0118F027.D | 01/18/07 | 23:03 |
| DUPE-2 | K0611027-007 | J:\GC09\DATA\011807.B\0118F028.D | 01/18/07 | 23:28 |
| B-3-35 | K0611027-008 | J:\GC09\DATA\011807.B\0118F029.D | 01/18/07 | 23:52 |
| B-2-40 | K0611027-010 | J:\GC09\DATA\011807.B\0118F034.D | 01/19/07 | 02:09 |
| B-2-40MS | KWG0621959-1 | J:\GC09\DATA\011807.B\0118F035.D | 01/19/07 | 02:34 |
| B-2-40DMS | KWG0621959-2 | J:\GC09\DATA\011807.B\0118F036.D | 01/19/07 | 02:58 |
| B-2-20 | K0611027-011 | J:\GC09\DATA\011807.B\0118F037.D | 01/19/07 | 03:22 |
| Lab Control Sample | KWG0621959-3 | J:\GC09\DATA\011907.B\0119F025.D | 01/19/07 | 23:07 |
| B-2-30 | K0611027-009 | J:\GC09\DATA\011907.B\0119F026.D | 01/19/07 | 23:31 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/19/2007 |
| | | **Time Analyzed:** | 23:07 |

## Lab Control Sample Summary
## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | Lab Control Sample | **File ID:** | J:\GC09\DATA\011907.B\0119F025.D |
| **Lab Code:** | KWG0621959-3 | **Instrument ID:** | GC09.i |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | **Extraction Lot:** | KWG0621959 |

This Lab Control Sample applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | KWG0621959-4 | J:\GC09\DATA\011807.B\0118F020.D | 01/18/07 | 20:13 |
| B-4-24 | K0611027-001 | J:\GC09\DATA\011807.B\0118F022.D | 01/18/07 | 21:02 |
| DUPE-1 | K0611027-002 | J:\GC09\DATA\011807.B\0118F023.D | 01/18/07 | 21:26 |
| B-4-15 | K0611027-003 | J:\GC09\DATA\011807.B\0118F024.D | 01/18/07 | 21:51 |
| B-4-35 | K0611027-004 | J:\GC09\DATA\011807.B\0118F025.D | 01/18/07 | 22:15 |
| B-3-27 | K0611027-005 | J:\GC09\DATA\011807.B\0118F026.D | 01/18/07 | 22:39 |
| B-3-16 | K0611027-006 | J:\GC09\DATA\011807.B\0118F027.D | 01/18/07 | 23:03 |
| DUPE-2 | K0611027-007 | J:\GC09\DATA\011807.B\0118F028.D | 01/18/07 | 23:28 |
| B-3-35 | K0611027-008 | J:\GC09\DATA\011807.B\0118F029.D | 01/18/07 | 23:52 |
| B-2-40 | K0611027-010 | J:\GC09\DATA\011807.B\0118F034.D | 01/19/07 | 02:09 |
| B-2-40MS | KWG0621959-1 | J:\GC09\DATA\011807.B\0118F035.D | 01/19/07 | 02:34 |
| B-2-40DMS | KWG0621959-2 | J:\GC09\DATA\011807.B\0118F036.D | 01/19/07 | 02:58 |
| B-2-20 | K0611027-011 | J:\GC09\DATA\011807.B\0118F037.D | 01/19/07 | 03:22 |
| B-2-30 | K0611027-009 | J:\GC09\DATA\011907.B\0119F026.D | 01/19/07 | 23:31 |

# Polychlorinated Biphenyls
# PCB's
# EPA Method 8082

# Organic Analysis:
# Polychlorinated Biphenyls (PCBs)

## Summary Package

### Sample and QC Results

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Client:** Kleinfelder
**Project:** Condit/5388614

**Service Request:** K0611088

## Cover Page - Organic Analysis Data Package
## Polychlorinated Biphenyls (PCBs)

| Sample Name | Lab Code | Date Collected | Date Received |
|---|---|---|---|
| Dup-3 | K0611088-001 | 12/18/2006 | 12/20/2006 |
| B1-85 | K0611088-002 | 12/18/2006 | 12/20/2006 |
| B1-106 | K0611088-003 | 12/18/2006 | 12/20/2006 |
| B1-72 | K0611088-004 | 12/18/2006 | 12/20/2006 |

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: Janet L. Heston

Name: Janet L. Heston

Date: 1-24-07

Title: Scientist

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | Dup-3 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-001 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 3.1 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1254 | ND | Ui | 10 | 5.8 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 3.1 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 79 | 33-153 | 01/19/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-85 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-002 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 2.9 | 1 | 12/28/06 | 01/20/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 2.9 | 1 | 12/28/06 | 01/20/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 2.9 | 1 | 12/28/06 | 01/20/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 2.9 | 1 | 12/28/06 | 01/20/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 2.9 | 1 | 12/28/06 | 01/20/07 | KWG0621959 | |
| Aroclor 1254 | ND | Ui | 10 | 9.5 | 1 | 12/28/06 | 01/20/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 2.9 | 1 | 12/28/06 | 01/20/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 79 | 33-153 | 01/20/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088
**Date Collected:** 12/18/2006
**Date Received:** 12/20/2006

## Polychlorinated Biphenyls (PCBs)

**Sample Name:** B1-106
**Lab Code:** K0611088-003

**Units:** ug/Kg
**Basis:** Dry

**Extraction Method:** EPA 3540C
**Analysis Method:** 8082

**Level:** Low

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 9.9 | 2.5 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 2.5 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 9.9 | 2.5 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 9.9 | 2.5 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 9.9 | 2.5 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 9.9 | 2.5 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 9.9 | 2.5 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 75 | 33-153 | 01/19/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-72 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-004 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 10 | 3.6 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 20 | 3.6 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 10 | 3.6 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 10 | 3.6 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 10 | 3.6 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 10 | 3.6 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 10 | 3.6 | 1 | 12/28/06 | 01/19/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 76 | 33-153 | 01/19/07 | Acceptable |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088
**Date Collected:** NA
**Date Received:** NA

## Polychlorinated Biphenyls (PCBs)

**Sample Name:** Method Blank
**Lab Code:** KWG0621959-4

**Units:** ug/Kg
**Basis:** Dry

**Extraction Method:** EPA 3540C
**Analysis Method:** 8082

**Level:** Low

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1221 | ND | U | 9.6 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1232 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1242 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1248 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1254 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |
| Aroclor 1260 | ND | U | 4.8 | 1.7 | 1 | 12/28/06 | 01/18/07 | KWG0621959 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| Decachlorobiphenyl | 58 | 33-153 | 01/18/07 | Acceptable |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088

**Surrogate Recovery Summary**
**Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3540C
**Analysis Method:** 8082

**Units:** PERCENT
**Level:** Low

| Sample Name | Lab Code | Sur1 |
|---|---|---|
| Dup-3 | K0611088-001 | 79 |
| B1-85 | K0611088-002 | 79 |
| B1-106 | K0611088-003 | 75 |
| B1-72 | K0611088-004 | 76 |
| Method Blank | KWG0621959-4 | 58 |
| Batch QC | K0611027-010 | 78 |
| Batch QCMS | KWG0621959-1 | 77 |
| Batch QCDMS | KWG0621959-2 | 78 |
| Lab Control Sample | KWG0621959-3 | 71 |

**Surrogate Recovery Control Limits (%)**

Sur1 = Decachlorobiphenyl 33-153

**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:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088
**Date Extracted:** 12/28/2006
**Date Analyzed:** 01/19/2007

## Matrix Spike/Duplicate Matrix Spike Summary
## Polychlorinated Biphenyls (PCBs)

**Sample Name:** Batch QC
**Lab Code:** K0611027-010

**Extraction Method:** EPA 3540C
**Analysis Method:** 8082

**Units:** ug/Kg
**Basis:** Dry

**Level:** Low
**Extraction Lot:** KWG0621959

| Analyte Name | Sample Result | Batch QCMS KWG0621959-1 Matrix Spike | | | Batch QCDMS KWG0621959-2 Duplicate Matrix Spike | | | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Result | Expected | %Rec | Result | Expected | %Rec | | | |
| Aroclor 1016 | ND | 155 | 199 | 78 | 163 | 199 | 82 | 26-163 | 5 | 50 |
| Aroclor 1260 | ND | 168 | 199 | 84 | 166 | 199 | 83 | 24-171 | 1 | 50 |

**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:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/19/2007 |

**Lab Control Spike Summary**
**Polychlorinated Biphenyls (PCBs)**

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 3540C | **Units:** | ug/Kg |
| **Analysis Method:** | 8082 | **Basis:** | Dry |
| | | **Level:** | Low |
| | | **Extraction Lot:** | KWG0621959 |

| | Lab Control Sample KWG0621959-3 Lab Control Spike | | | |
|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **%Rec Limits** |
| Aroclor 1016 | 128 | 200 | 64 | 39-145 |
| Aroclor 1260 | 149 | 200 | 75 | 51-146 |

**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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/18/2007 |
| | | **Time Analyzed:** | 20:13 |

**Method Blank Summary**
**Polychlorinated Biphenyls (PCBs)**

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\GC09\DATA\011807.B\0118F020.D |
| **Lab Code:** | KWG0621959-4 | **Instrument ID:** | GC09.i |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | **Extraction Lot:** | KWG0621959 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Batch QC | K0611027-010 | J:\GC09\DATA\011807.B\0118F034.D | 01/19/07 | 02:09 |
| Batch QCMS | KWG0621959-1 | J:\GC09\DATA\011807.B\0118F035.D | 01/19/07 | 02:34 |
| Batch QCDMS | KWG0621959-2 | J:\GC09\DATA\011807.B\0118F036.D | 01/19/07 | 02:58 |
| B1-106 | K0611088-003 | J:\GC09\DATA\011807.B\0118F040.D | 01/19/07 | 04:35 |
| B1-72 | K0611088-004 | J:\GC09\DATA\011807.B\0118F041.D | 01/19/07 | 04:59 |
| Lab Control Sample | KWG0621959-3 | J:\GC09\DATA\011907.B\0119F025.D | 01/19/07 | 23:07 |
| Dup-3 | K0611088-001 | J:\GC09\DATA\011907.B\0119F027.D | 01/19/07 | 23:55 |
| B1-85 | K0611088-002 | J:\GC09\DATA\011907.B\0119F028.D | 01/20/07 | 00:20 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/28/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/19/2007 |
| | | **Time Analyzed:** | 23:07 |

## Lab Control Sample Summary
## Polychlorinated Biphenyls (PCBs)

| | | | |
|---|---|---|---|
| **Sample Name:** | Lab Control Sample | **File ID:** | J:\GC09\DATA\011907.B\0119F025.D |
| **Lab Code:** | KWG0621959-3 | **Instrument ID:** | GC09.i |
| **Extraction Method:** | EPA 3540C | **Level:** | Low |
| **Analysis Method:** | 8082 | **Extraction Lot:** | KWG0621959 |

This Lab Control Sample applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | KWG0621959-4 | J:\GC09\DATA\011807.B\0118F020.D | 01/18/07 | 20:13 |
| Batch QC | K0611027-010 | J:\GC09\DATA\011807.B\0118F034.D | 01/19/07 | 02:09 |
| Batch QCMS | KWG0621959-1 | J:\GC09\DATA\011807.B\0118F035.D | 01/19/07 | 02:34 |
| Batch QCDMS | KWG0621959-2 | J:\GC09\DATA\011807.B\0118F036.D | 01/19/07 | 02:58 |
| B1-106 | K0611088-003 | J:\GC09\DATA\011807.B\0118F040.D | 01/19/07 | 04:35 |
| B1-72 | K0611088-004 | J:\GC09\DATA\011807.B\0118F041.D | 01/19/07 | 04:59 |
| Dup-3 | K0611088-001 | J:\GC09\DATA\011907.B\0119F027.D | 01/19/07 | 23:55 |
| B1-85 | K0611088-002 | J:\GC09\DATA\011907.B\0119F028.D | 01/20/07 | 00:20 |

# 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:** Kleinfelder
**Project:** CONDIT/53886/4

**Service Request:** K0611027

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

| Sample Name | Lab Code | Date Collected | Date Received |
|---|---|---|---|
| B-4-24 | K0611027-001 | 12/14/2006 | 12/18/2006 |
| DUPE-1 | K0611027-002 | 12/14/2006 | 12/18/2006 |
| B-4-15 | K0611027-003 | 12/14/2006 | 12/18/2006 |
| B-4-35 | K0611027-004 | 12/14/2006 | 12/18/2006 |
| B-3-27 | K0611027-005 | 12/14/2006 | 12/18/2006 |
| B-3-16 | K0611027-006 | 12/14/2006 | 12/18/2006 |
| DUPE-2 | K0611027-007 | 12/15/2006 | 12/18/2006 |
| B-3-35 | K0611027-008 | 12/15/2006 | 12/18/2006 |
| B-2-30 | K0611027-009 | 12/15/2006 | 12/18/2006 |
| B-2-40 | K0611027-010 | 12/15/2006 | 12/18/2006 |
| B-2-20 | K0611027-011 | 12/15/2006 | 12/18/2006 |
| B-4-24MS | KWG0621706-1 | 12/14/2006 | 12/18/2006 |
| B-4-24DMS | KWG0621706-2 | 12/14/2006 | 12/18/2006 |

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: Carl Degner

Date: 2/2/07 Title: SVM Supervisor

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/14/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B-4-24
**Lab Code:** K0611027-001

**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 |
|---|---|---|---|---|---|---|---|---|---|
| **Phenol** | **15** | J | 30 | 2.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 10 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 10 | 1.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 10 | 4.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 10 | 4.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 10 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **4-Methylphenol†** | **10** | J | 10 | 3.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 6.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Benzoic Acid** | **140** | J | 200 | 120 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Naphthalene | ND | U | 10 | 1.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 10 | 1.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 10 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthene | ND | U | 10 | 1.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 10 | 1.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluorene | ND | U | 10 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 10 | 4.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 10 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 100 | 11 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Phenanthrene | ND | U | 10 | 1.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Anthracene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Di-n-butyl Phthalate** | **6.5** | J | 10 | 3.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluoranthene | ND | U | 10 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pyrene | ND | U | 10 | 1.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Chrysene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **120** | J | 200 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 10 | 1.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B-4-24 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-001 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 3.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 10 | 3.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 10 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 10 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 10 | 2.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 71 | 12-88 | 01/31/07 | Acceptable |
| Phenol-d6 | 76 | 20-101 | 01/31/07 | Acceptable |
| Nitrobenzene-d5 | 70 | 10-97 | 01/31/07 | Acceptable |
| 2-Fluorobiphenyl | 74 | 10-107 | 01/31/07 | Acceptable |
| 2,4,6-Tribromophenol | 95 | 16-122 | 01/31/07 | Acceptable |
| Terphenyl-d14 | 89 | 28-135 | 01/31/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/14/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** DUPE-1
**Lab Code:** K0611027-002

**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 |
|---|---|---|---|---|---|---|---|---|---|
| **Phenol** | **37** | | 30 | 3.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 10 | 2.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 10 | 3.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 10 | 2.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 50 | 6.6 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 10 | 6.0 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 10 | 3.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| **4-Methylphenol†** | **69** | | 10 | 5.1 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 9.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| **Benzoic Acid** | **380** | | 200 | 170 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 2.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| **Naphthalene** | **3.0** | J | 10 | 2.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 10 | 2.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 10 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 10 | 2.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 10 | 3.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Acenaphthene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 10 | 2.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Fluorene | ND | U | 10 | 3.0 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 10 | 6.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 10 | 3.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 10 | 3.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 100 | 15 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| **Phenanthrene** | **3.7** | J | 10 | 2.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Anthracene | ND | U | 10 | 2.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| **Di-n-butyl Phthalate** | **4.9** | J | 10 | 4.6 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Fluoranthene | ND | U | 10 | 3.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| **Pyrene** | **3.9** | J | 10 | 2.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 10 | 2.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 10 | 2.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Chrysene | ND | U | 10 | 2.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **21** | J | 200 | 3.0 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 10 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | DUPE-1 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-002 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 4.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 10 | 4.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 10 | 2.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 10 | 3.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 10 | 3.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 10 | 4.1 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 59 | 12-88 | 01/25/07 | Acceptable |
| Phenol-d6 | 83 | 20-101 | 01/25/07 | Acceptable |
| Nitrobenzene-d5 | 78 | 10-97 | 01/25/07 | Acceptable |
| 2-Fluorobiphenyl | 79 | 10-107 | 01/25/07 | Acceptable |
| 2,4,6-Tribromophenol | 88 | 16-122 | 01/25/07 | Acceptable |
| Terphenyl-d14 | 53 | 28-135 | 01/25/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/14/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B-4-15
**Lab Code:** K0611027-003

**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 |
|---|---|---|---|---|---|---|---|---|---|
| **Phenol** | **10** | J | 30 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 9.9 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 9.9 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 9.9 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 9.9 | 5.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 9.9 | 4.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 9.9 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **4-Methylphenol†** | **25** | | 9.9 | 4.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 7.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Benzoic Acid** | **150** | J | 200 | 140 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 9.9 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Naphthalene | ND | U | 9.9 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 9.9 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 9.9 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthene | ND | U | 9.9 | 1.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 9.9 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluorene | ND | U | 9.9 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 9.9 | 5.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 9.9 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 9.9 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 99 | 13 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Phenanthrene | ND | U | 9.9 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Anthracene | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Di-n-butyl Phthalate** | **6.0** | J | 9.9 | 3.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluoranthene | ND | U | 9.9 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pyrene | ND | U | 9.9 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 9.9 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Chrysene | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **71** | J | 200 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 9.9 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B-4-15 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-003 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 9.9 | 3.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 9.9 | 3.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 9.9 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 9.9 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 9.9 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 9.9 | 3.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 59 | 12-88 | 01/31/07 | Acceptable |
| Phenol-d6 | 65 | 20-101 | 01/31/07 | Acceptable |
| Nitrobenzene-d5 | 60 | 10-97 | 01/31/07 | Acceptable |
| 2-Fluorobiphenyl | 59 | 10-107 | 01/31/07 | Acceptable |
| 2,4,6-Tribromophenol | 86 | 16-122 | 01/31/07 | Acceptable |
| Terphenyl-d14 | 81 | 28-135 | 01/31/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/14/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B-4-35
**Lab Code:** K0611027-004

**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 |
|---|---|---|---|---|---|---|---|---|---|
| **Phenol** | **9.9** | J | 30 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 10 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 10 | 5.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 10 | 4.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 10 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 4-Methylphenol† | ND | U | 10 | 3.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 7.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Benzoic Acid** | **170** | J | 200 | 130 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Naphthalene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 10 | 1.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 10 | 2.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthene | ND | U | 10 | 1.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluorene | ND | U | 10 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 10 | 4.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 10 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 10 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 100 | 12 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Phenanthrene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Anthracene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Di-n-butyl Phthalate** | **6.4** | J | 10 | 3.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluoranthene | ND | U | 10 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Pyrene** | **2.3** | J | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 10 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Chrysene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **61** | J | 200 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 10 | 1.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B-4-35 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-004 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 3.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 10 | 3.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 10 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 10 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 10 | 3.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 64 | 12-88 | 01/31/07 | Acceptable |
| Phenol-d6 | 69 | 20-101 | 01/31/07 | Acceptable |
| Nitrobenzene-d5 | 65 | 10-97 | 01/31/07 | Acceptable |
| 2-Fluorobiphenyl | 67 | 10-107 | 01/31/07 | Acceptable |
| 2,4,6-Tribromophenol | 90 | 16-122 | 01/31/07 | Acceptable |
| Terphenyl-d14 | 90 | 28-135 | 01/31/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/14/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B-3-27
**Lab Code:** K0611027-005

**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 |
|---|---|---|---|---|---|---|---|---|---|
| **Phenol** | **16** | J | 30 | 3.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 9.9 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 9.9 | 3.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 9.9 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 9.9 | 6.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 9.9 | 5.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 9.9 | 3.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **4-Methylphenol†** | **22** | | 9.9 | 5.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 9.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Benzoic Acid** | **210** | | 200 | 170 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 9.9 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Naphthalene** | **4.0** | J | 9.9 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 9.9 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **2-Methylnaphthalene** | **2.4** | J | 9.9 | 2.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 9.9 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 9.9 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthene | ND | U | 9.9 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 9.9 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluorene | ND | U | 9.9 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 9.9 | 6.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 9.9 | 3.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 9.9 | 3.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 99 | 15 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Phenanthrene** | **3.3** | J | 9.9 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Anthracene | ND | U | 9.9 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Di-n-butyl Phthalate** | **6.1** | J | 9.9 | 4.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluoranthene | ND | U | 9.9 | 3.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Pyrene** | **3.5** | J | 9.9 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 9.9 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 9.9 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Chrysene | ND | U | 9.9 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **15** | J | 200 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 9.9 | 2.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B-3-27 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-005 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 9.9 | 4.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 9.9 | 4.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 9.9 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 9.9 | 3.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 9.9 | 3.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 9.9 | 4.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 77 | 12-88 | 01/31/07 | Acceptable |
| Phenol-d6 | 80 | 20-101 | 01/31/07 | Acceptable |
| Nitrobenzene-d5 | 80 | 10-97 | 01/31/07 | Acceptable |
| 2-Fluorobiphenyl | 80 | 10-107 | 01/31/07 | Acceptable |
| 2,4,6-Tribromophenol | 94 | 16-122 | 01/31/07 | Acceptable |
| Terphenyl-d14 | 88 | 28-135 | 01/31/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/14/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B-3-16
**Lab Code:** K0611027-006

**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 |
|---|---|---|---|---|---|---|---|---|---|
| **Phenol** | **9.5** | J | 30 | 2.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 9.9 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 9.9 | 2.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 9.9 | 5.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 9.9 | 5.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 9.9 | 3.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 4-Methylphenol† | ND | U | 9.9 | 4.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 8.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Benzoic Acid** | **150** | J | 200 | 150 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 9.9 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Naphthalene | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 9.9 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 9.9 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 9.9 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 9.9 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthene | ND | U | 9.9 | 1.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluorene | ND | U | 9.9 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 9.9 | 5.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 9.9 | 3.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 9.9 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 99 | 13 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Phenanthrene | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Anthracene | ND | U | 9.9 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Di-n-butyl Phthalate** | **8.9** | J | 9.9 | 4.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluoranthene | ND | U | 9.9 | 3.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pyrene | ND | U | 9.9 | 2.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 9.9 | 2.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 9.9 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Chrysene | ND | U | 9.9 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **10** | J | 200 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 9.9 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/14/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B-3-16 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-006 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 9.9 | 3.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 9.9 | 3.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 9.9 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 9.9 | 2.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 9.9 | 3.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 9.9 | 3.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 75 | 12-88 | 01/31/07 | Acceptable |
| Phenol-d6 | 79 | 20-101 | 01/31/07 | Acceptable |
| Nitrobenzene-d5 | 76 | 10-97 | 01/31/07 | Acceptable |
| 2-Fluorobiphenyl | 81 | 10-107 | 01/31/07 | Acceptable |
| 2,4,6-Tribromophenol | 99 | 16-122 | 01/31/07 | Acceptable |
| Terphenyl-d14 | 92 | 28-135 | 01/31/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/15/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** DUPE-2
**Lab Code:** K0611027-007

**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 |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | U | 30 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 9.9 | 3.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 9.9 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 9.9 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 9.9 | 6.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 9.9 | 6.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 9.9 | 4.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 4-Methylphenol† | ND | U | 9.9 | 5.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 10 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Benzoic Acid** | **200** | J | 200 | 180 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 9.9 | 2.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Naphthalene | ND | U | 9.9 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 9.9 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 9.9 | 2.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 9.9 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 9.9 | 3.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthene | ND | U | 9.9 | 1.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 9.9 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluorene | ND | U | 9.9 | 3.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 9.9 | 6.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 9.9 | 4.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 9.9 | 3.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 99 | 16 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Phenanthrene | ND | U | 9.9 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Anthracene | ND | U | 9.9 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Di-n-butyl Phthalate | ND | U | 9.9 | 4.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluoranthene | ND | U | 9.9 | 4.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Pyrene** | **3.8** | J | 9.9 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 9.9 | 2.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Benz(a)anthracene** | **2.9** | J | 9.9 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Chrysene** | **4.0** | J | 9.9 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **21** | J | 200 | 3.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 9.9 | 2.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | DUPE-2 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-007 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 9.9 | 4.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 9.9 | 4.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 9.9 | 3.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 9.9 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 9.9 | 4.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 9.9 | 4.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 42 | 12-88 | 02/01/07 | Acceptable |
| Phenol-d6 | 48 | 20-101 | 02/01/07 | Acceptable |
| Nitrobenzene-d5 | 43 | 10-97 | 02/01/07 | Acceptable |
| 2-Fluorobiphenyl | 42 | 10-107 | 02/01/07 | Acceptable |
| 2,4,6-Tribromophenol | 57 | 16-122 | 02/01/07 | Acceptable |
| Terphenyl-d14 | 53 | 28-135 | 02/01/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/15/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B-3-35
**Lab Code:** K0611027-008

**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 |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | U | 30 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 10 | 2.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 10 | 5.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 10 | 4.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 10 | 3.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 4-Methylphenol† | ND | U | 10 | 4.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 7.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzoic Acid | ND | U | 200 | 140 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 2.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Naphthalene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 10 | 2.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 10 | 1.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 10 | 2.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 10 | 2.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthene | ND | U | 10 | 1.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 10 | 1.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluorene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 10 | 4.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 10 | 3.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 10 | 2.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 100 | 12 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Phenanthrene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Anthracene | ND | U | 10 | 2.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Di-n-butyl Phthalate | ND | U | 10 | 3.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluoranthene | ND | U | 10 | 3.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Pyrene | ND | U | 10 | 1.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 10 | 2.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 10 | 2.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Chrysene | ND | U | 10 | 2.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **27** | **J** | 200 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 10 | 1.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B-3-35 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-008 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 10 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 10 | 2.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 10 | 3.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 10 | 3.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 45 | 12-88 | 02/01/07 | Acceptable |
| Phenol-d6 | 47 | 20-101 | 02/01/07 | Acceptable |
| Nitrobenzene-d5 | 46 | 10-97 | 02/01/07 | Acceptable |
| 2-Fluorobiphenyl | 41 | 10-107 | 02/01/07 | Acceptable |
| 2,4,6-Tribromophenol | 50 | 16-122 | 02/01/07 | Acceptable |
| Terphenyl-d14 | 58 | 28-135 | 02/01/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/15/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B-2-30
**Lab Code:** K0611027-009

**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 |
|---|---|---|---|---|---|---|---|---|---|
| **Phenol** | **8.5** | J | 30 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 10 | 3.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 10 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 10 | 6.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 10 | 6.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 10 | 4.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **4-Methylphenol†** | **38** | | 10 | 5.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 11 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Benzoic Acid** | **230** | | 200 | 180 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 2.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Naphthalene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 10 | 2.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 10 | 3.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 10 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluorene | ND | U | 10 | 3.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 10 | 6.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 10 | 4.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 10 | 3.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 100 | 16 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Phenanthrene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Anthracene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Di-n-butyl Phthalate | ND | U | 10 | 4.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluoranthene | ND | U | 10 | 4.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Pyrene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 10 | 2.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Chrysene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **35** | J | 200 | 3.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 10 | 2.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B-2-30 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-009 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 4.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 10 | 4.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 10 | 3.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 10 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 10 | 4.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 10 | 4.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 52 | 12-88 | 02/01/07 | Acceptable |
| Phenol-d6 | 55 | 20-101 | 02/01/07 | Acceptable |
| Nitrobenzene-d5 | 53 | 10-97 | 02/01/07 | Acceptable |
| 2-Fluorobiphenyl | 49 | 10-107 | 02/01/07 | Acceptable |
| 2,4,6-Tribromophenol | 67 | 16-122 | 02/01/07 | Acceptable |
| Terphenyl-d14 | 61 | 28-135 | 02/01/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/15/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B-2-40
**Lab Code:** K0611027-010

**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 |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | U | 30 | 2.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 10 | 2.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 10 | 2.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 10 | 1.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 10 | 4.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 10 | 4.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 10 | 2.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 4-Methylphenol† | ND | U | 10 | 3.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 7.2 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzoic Acid | ND | U | 200 | 130 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 2.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Naphthalene | ND | U | 10 | 1.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 10 | 1.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 10 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthene | ND | U | 10 | 1.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 10 | 1.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluorene | ND | U | 10 | 2.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 10 | 4.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 10 | 2.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 10 | 2.8 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 100 | 12 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Phenanthrene | ND | U | 10 | 1.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Anthracene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Di-n-butyl Phthalate** | **3.5** | J | 10 | 3.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluoranthene | ND | U | 10 | 2.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Pyrene | ND | U | 10 | 1.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 10 | 2.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Chrysene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **27** | J | 200 | 2.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 10 | 1.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B-2-40 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-010 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 3.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 10 | 3.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 10 | 2.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 10 | 2.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 10 | 2.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 10 | 3.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 45 | 12-88 | 02/01/07 | Acceptable |
| Phenol-d6 | 46 | 20-101 | 02/01/07 | Acceptable |
| Nitrobenzene-d5 | 45 | 10-97 | 02/01/07 | Acceptable |
| 2-Fluorobiphenyl | 44 | 10-107 | 02/01/07 | Acceptable |
| 2,4,6-Tribromophenol | 56 | 16-122 | 02/01/07 | Acceptable |
| Terphenyl-d14 | 59 | 28-135 | 02/01/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** 12/15/2006
**Date Received:** 12/18/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B-2-20
**Lab Code:** K0611027-011

**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 |
|---|---|---|---|---|---|---|---|---|---|
| **Phenol** | **4.4** | J | 30 | 3.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 10 | 3.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 10 | 2.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 10 | 5.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 10 | 5.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 10 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 4-Methylphenol† | ND | U | 10 | 4.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 8.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzoic Acid | ND | U | 200 | 160 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Naphthalene | ND | U | 10 | 2.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 10 | 2.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 10 | 2.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 10 | 2.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Acenaphthene | ND | U | 10 | 1.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 10 | 2.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluorene | ND | U | 10 | 2.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 10 | 5.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 10 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 10 | 3.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 100 | 14 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Phenanthrene | ND | U | 10 | 2.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Anthracene | ND | U | 10 | 2.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Di-n-butyl Phthalate | ND | U | 10 | 4.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Fluoranthene | ND | U | 10 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Pyrene | ND | U | 10 | 2.1 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 10 | 2.4 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 10 | 2.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Chrysene | ND | U | 10 | 2.3 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **4.8** | J | 200 | 2.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 10 | 1.9 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | 12/15/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/18/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B-2-20 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-011 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 4.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 10 | 4.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 10 | 2.6 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 10 | 3.0 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 10 | 3.5 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 10 | 3.7 | 1 | 12/27/06 | 02/01/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 47 | 12-88 | 02/01/07 | Acceptable |
| Phenol-d6 | 51 | 20-101 | 02/01/07 | Acceptable |
| Nitrobenzene-d5 | 50 | 10-97 | 02/01/07 | Acceptable |
| 2-Fluorobiphenyl | 46 | 10-107 | 02/01/07 | Acceptable |
| 2,4,6-Tribromophenol | 59 | 16-122 | 02/01/07 | Acceptable |
| Terphenyl-d14 | 59 | 28-135 | 02/01/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Collected:** NA
**Date Received:** NA

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** KWG0621706-5

**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 |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | U | 15 | 1.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 5.0 | 1.6 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 5.0 | 1.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 25 | 3.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 5.0 | 3.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 5.0 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 4-Methylphenol† | ND | U | 5.0 | 2.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 25 | 5.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzoic Acid | ND | U | 100 | 96 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 5.0 | 1.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Naphthalene | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 5.0 | 1.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 5.0 | 1.8 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Acenaphthene | ND | U | 5.0 | 1.0 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Fluorene | ND | U | 5.0 | 1.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 5.0 | 3.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 5.0 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 5.0 | 2.1 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 50 | 8.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Phenanthrene | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Anthracene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Di-n-butyl Phthalate | ND | U | 5.0 | 2.6 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Fluoranthene | ND | U | 5.0 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Pyrene | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 5.0 | 1.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Chrysene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **3.2** | J | 100 | 1.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 5.0 | 1.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Collected:** | NA |
| **Sample Matrix:** | Sediment | **Date Received:** | NA |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/Kg |
| **Lab Code:** | KWG0621706-5 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 5.0 | 2.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 5.0 | 2.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 5.0 | 1.6 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 5.0 | 1.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 5.0 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 5.0 | 2.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 72 | 12-88 | 01/25/07 | Acceptable |
| Phenol-d6 | 79 | 20-101 | 01/25/07 | Acceptable |
| Nitrobenzene-d5 | 82 | 10-97 | 01/25/07 | Acceptable |
| 2-Fluorobiphenyl | 82 | 10-107 | 01/25/07 | Acceptable |
| 2,4,6-Tribromophenol | 81 | 16-122 | 01/25/07 | Acceptable |
| Terphenyl-d14 | 106 | 28-135 | 01/25/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027

**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 | Sur3 | Sur4 | Sur5 | Sur6 |
|---|---|---|---|---|---|---|---|
| B-4-24 | K0611027-001 | 71 | 76 | 70 | 74 | 95 | 89 |
| DUPE-1 | K0611027-002 | 59 | 83 | 78 | 79 | 88 | 53 |
| B-4-15 | K0611027-003 | 59 | 65 | 60 | 59 | 86 | 81 |
| B-4-35 | K0611027-004 | 64 | 69 | 65 | 67 | 90 | 90 |
| B-3-27 | K0611027-005 | 77 | 80 | 80 | 80 | 94 | 88 |
| B-3-16 | K0611027-006 | 75 | 79 | 76 | 81 | 99 | 92 |
| DUPE-2 | K0611027-007 | 42 | 48 | 43 | 42 | 57 | 53 |
| B-3-35 | K0611027-008 | 45 | 47 | 46 | 41 | 50 | 58 |
| B-2-30 | K0611027-009 | 52 | 55 | 53 | 49 | 67 | 61 |
| B-2-40 | K0611027-010 | 45 | 46 | 45 | 44 | 56 | 59 |
| B-2-20 | K0611027-011 | 47 | 51 | 50 | 46 | 59 | 59 |
| Method Blank | KWG0621706-5 | 72 | 79 | 82 | 82 | 81 | 106 |
| Batch QC | K0611088-003 | 53 | 64 | 60 | 64 | 83 | 79 |
| B-4-24MS | KWG0621706-1 | 30 | 36 | 35 | 33 | 40 | 40 |
| B-4-24DMS | KWG0621706-2 | 66 | 85 | 81 | 81 | 100 | 90 |
| Batch QCMS | KWG0621706-6 | 50 | 59 | 63 | 66 | 81 | 62 |
| Batch QCDMS | KWG0621706-7 | 66 | 75 | 75 | 77 | 88 | 85 |
| Lab Control Sample | KWG0621706-3 | 54 | 68 | 64 | 65 | 75 | 102 |
| Duplicate Lab Control Sample | KWG0621706-4 | 52 | 66 | 62 | 61 | 68 | 107 |

**Surrogate Recovery Control Limits (%)**

| | | | | | |
|---|---|---|---|---|---|
| Sur1 = | 2-Fluorophenol | 12-88 | Sur5 = | 2,4,6-Tribromophenol | 16-122 |
| Sur2 = | Phenol-d6 | 20-101 | Sur6 = | Terphenyl-d14 | 28-135 |
| Sur3 = | Nitrobenzene-d5 | 10-97 | | | |
| Sur4 = | 2-Fluorobiphenyl | 10-107 | | | |

**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:** Kleinfelder
**Project:** CONDIT/53886/4

**Service Request:** K0611027
**Date Analyzed:** 01/25/2007
**Time Analyzed:** 06:42

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

**File ID:** J:\MS06\DATA\012507\0125C003.D
**Instrument ID:** MS06
**Analysis Method:** 8270C

**Lab Code:** KWG0701187-2
**Analysis Lot:** KWG0701187

| | | 1,4-Dichlorobenzene-d4 | | Naphthalene-d8 | | Acenaphthene-d10 | |
|---|---|---|---|---|---|---|---|
| | | Area | RT | Area | RT | Area | RT |
| | **Results ==>** | 134,716 | 8.73 | 554,046 | 10.68 | 285,616 | 13.51 |
| | **Upper Limit ==>** | 269,432 | 9.23 | 1,108,092 | 11.18 | 571,232 | 14.01 |
| | **Lower Limit ==>** | 67,358 | 8.23 | 277,023 | 10.18 | 142,808 | 13.01 |
| | **ICAL Result ==>** | 72,626 | 8.74 | 290,105 | 10.69 | 147,832 | 13.51 |
| ***Associated Analyses*** | | | | | | | |
| Method Blank | KWG0621706-5 | 82,333 | 8.73 | 341,329 | 10.67 | 167,096 | 13.50 |
| Lab Control Sample | KWG0621706-3 | 86,080 | 8.73 | 355,102 | 10.67 | 182,321 | 13.50 |
| Duplicate Lab Control Sample | KWG0621706-4 | 86,880 | 8.73 | 354,516 | 10.67 | 174,383 | 13.50 |
| B-4-24MS | KWG0621706-1 | 83,123 | 8.73 | 318,008 | 10.67 | 167,002 | 13.50 |
| B-4-24DMS | KWG0621706-2 | 82,935 | 8.73 | 339,712 | 10.67 | 164,457 | 13.50 |
| Batch QCMS | KWG0621706-6 | 82,652 | 8.73 | 343,812 | 10.68 | 165,317 | 13.51 |
| DUPE-1 | K0611027-002 | 83,272 | 8.74 | 343,106 | 10.68 | 163,018 | 13.51 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** CONDIT/53886/4

**Service Request:** K0611027
**Date Analyzed:** 01/25/2007
**Time Analyzed:** 06:42

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

**File ID:** J:\MS06\DATA\012507\0125C003.D
**Instrument ID:** MS06
**Analysis Method:** 8270C

**Lab Code:** KWG0701187-2
**Analysis Lot:** KWG0701187

| | | Phenanthrene-d10 | | Chrysene-d12 | | Perylene-d12 | |
|---|---|---|---|---|---|---|---|
| | | Area | RT | Area | RT | Area | RT |
| | **Results ==>** | 358,048 | 15.94 | 304,827 | 20.45 | 186,180 | 24.14 |
| | **Upper Limit ==>** | 716,096 | 16.44 | 609,654 | 20.95 | 372,360 | 24.64 |
| | **Lower Limit ==>** | 179,024 | 15.44 | 152,414 | 19.95 | 93,090 | 23.64 |
| | **ICAL Result ==>** | 212,586 | 15.94 | 257,686 | 20.45 | 169,935 | 24.15 |
| ***Associated Analyses*** | | | | | | | |
| Method Blank | KWG0621706-5 | 209,171 | 15.92 | 170,480 | 20.42 | 114,803 | 24.12 |
| Lab Control Sample | KWG0621706-3 | 227,342 | 15.93 | 191,486 | 20.44 | 121,238 | 24.13 |
| Duplicate Lab Control Sample | KWG0621706-4 | 232,333 | 15.93 | 182,449 | 20.44 | 118,135 | 24.13 |
| B-4-24MS | KWG0621706-1 | 207,646 | 15.93 | 168,025 | 20.44 | 113,696 | 24.13 |
| B-4-24DMS | KWG0621706-2 | 202,663 | 15.93 | 190,878 | 20.45 | 109,441 | 24.15 |
| Batch QCMS | KWG0621706-6 | 205,497 | 15.93 | 237,305 | 20.47 | 121,429 | 24.19 |
| DUPE-1 | K0611027-002 | 219,226 | 15.94 | 304,159 | 20.51 | 110,874 | 24.22 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Analyzed:** | 01/31/2007 |
| | | **Time Analyzed:** | 07:36 |

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

| | | | |
|---|---|---|---|
| **File ID:** | J:\MS06\DATA\013107\0131C001.D | **Lab Code:** | KWG0701558-2 |
| **Instrument ID:** | MS06 | **Analysis Lot:** | KWG0701558 |
| **Analysis Method:** | 8270C | | |

| | | 1,4-Dichlorobenzene-d4 | | Naphthalene-d8 | | Acenaphthene-d10 | |
|---|---|---|---|---|---|---|---|
| | | **Area** | **RT** | **Area** | **RT** | **Area** | **RT** |
| | **Results ==>** | 70,872 | 8.89 | 248,132 | 10.81 | 143,510 | 13.64 |
| | **Upper Limit ==>** | 141,744 | 9.39 | 496,264 | 11.31 | 287,020 | 14.14 |
| | **Lower Limit ==>** | 35,436 | 8.39 | 124,066 | 10.31 | 71,755 | 13.14 |
| | **ICAL Result ==>** | 77,539 | 8.89 | 277,478 | 10.81 | 165,484 | 13.64 |
| ***Associated Analyses*** | | | | | | | |
| Batch QCDMS | KWG0621706-7 | 76,322 | 8.89 | 264,837 | 10.81 | 155,203 | 13.63 |
| Batch QC | K0611088-003 | 75,394 | 8.89 | 263,493 | 10.81 | 159,641 | 13.64 |
| B-4-24 | K0611027-001 | 79,070 | 8.90 | 284,709 | 10.81 | 166,532 | 13.65 |
| B-4-15 | K0611027-003 | 73,148 | 8.90 | 276,930 | 10.82 | 165,178 | 13.64 |
| B-4-35 | K0611027-004 | 81,302 | 8.90 | 293,947 | 10.82 | 171,307 | 13.64 |
| B-3-27 | K0611027-005 | 72,409 | 8.90 | 257,641 | 10.81 | 149,117 | 13.65 |
| B-3-16 | K0611027-006 | 72,541 | 8.90 | 254,105 | 10.82 | 152,150 | 13.65 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** CONDIT/53886/4

**Service Request:** K0611027
**Date Analyzed:** 01/31/2007
**Time Analyzed:** 07:36

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

**File ID:** J:\MS06\DATA\013107\0131C001.D
**Instrument ID:** MS06
**Analysis Method:** 8270C

**Lab Code:** KWG0701558-2
**Analysis Lot:** KWG0701558

| | | Phenanthrene-d10 | | Chrysene-d12 | | Perylene-d12 | |
|---|---|---|---|---|---|---|---|
| | | Area | RT | Area | RT | Area | RT |
| | Results ==> | 254,185 | 16.07 | 346,767 | 20.63 | 258,406 | 24.35 |
| | Upper Limit ==> | 508,370 | 16.57 | 693,534 | 21.13 | 516,812 | 24.85 |
| | Lower Limit ==> | 127,093 | 15.57 | 173,384 | 20.13 | 129,203 | 23.85 |
| | ICAL Result ==> | 306,102 | 16.06 | 403,853 | 20.63 | 287,430 | 24.34 |
| *Associated Analyses* | | | | | | | |
| Batch QCDMS | KWG0621706-7 | 295,245 | 16.06 | 346,691 | 20.64 | 237,697 | 24.37 |
| Batch QC | K0611088-003 | 295,055 | 16.07 | 361,532 | 20.64 | 256,740 | 24.37 |
| B-4-24 | K0611027-001 | 311,012 | 16.08 | 355,819 | 20.65 | 268,797 | 24.37 |
| B-4-15 | K0611027-003 | 293,416 | 16.07 | 344,909 | 20.64 | 250,383 | 24.38 |
| B-4-35 | K0611027-004 | 316,563 | 16.07 | 374,403 | 20.65 | 280,686 | 24.38 |
| B-3-27 | K0611027-005 | 283,755 | 16.08 | 339,195 | 20.67 | 247,965 | 24.39 |
| B-3-16 | K0611027-006 | 271,253 | 16.08 | 328,713 | 20.65 | 240,806 | 24.39 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Analyzed:** | 02/01/2007 |
| | | **Time Analyzed:** | 10:08 |

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

| | | | |
|---|---|---|---|
| **File ID:** | J:\MS06\DATA\020107\0201C001.D | **Lab Code:** | KWG0701660-2 |
| **Instrument ID:** | MS06 | **Analysis Lot:** | KWG0701660 |
| **Analysis Method:** | 8270C | | |

| | | 1,4-Dichlorobenzene-d4 | | Naphthalene-d8 | | Acenaphthene-d10 | |
|---|---|---|---|---|---|---|---|
| | | **Area** | **RT** | **Area** | **RT** | **Area** | **RT** |
| | **Results ==>** | 85,351 | 8.88 | 294,595 | 10.80 | 182,770 | 13.64 |
| | **Upper Limit ==>** | 170,702 | 9.38 | 589,190 | 11.30 | 365,540 | 14.14 |
| | **Lower Limit ==>** | 42,676 | 8.38 | 147,298 | 10.30 | 91,385 | 13.14 |
| | **ICAL Result ==>** | 77,539 | 8.89 | 277,478 | 10.81 | 165,484 | 13.64 |
| ***Associated Analyses*** | | | | | | | |
| DUPE-2 | K0611027-007 | 95,021 | 8.88 | 350,245 | 10.80 | 213,905 | 13.63 |
| B-3-35 | K0611027-008 | 89,938 | 8.88 | 332,811 | 10.80 | 206,470 | 13.64 |
| B-2-30 | K0611027-009 | 82,151 | 8.88 | 306,492 | 10.80 | 193,214 | 13.63 |
| B-2-40 | K0611027-010 | 87,838 | 8.88 | 320,682 | 10.80 | 196,971 | 13.63 |
| B-2-20 | K0611027-011 | 95,903 | 8.88 | 359,192 | 10.80 | 218,453 | 13.63 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** CONDIT/53886/4

**Service Request:** K0611027
**Date Analyzed:** 02/01/2007
**Time Analyzed:** 10:08

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

**File ID:** J:\MS06\DATA\020107\0201C001.D
**Instrument ID:** MS06
**Analysis Method:** 8270C

**Lab Code:** KWG0701660-2
**Analysis Lot:** KWG0701660

| | | Phenanthrene-d10 | | Chrysene-d12 | | Perylene-d12 | |
|---|---|---|---|---|---|---|---|
| | | Area | RT | Area | RT | Area | RT |
| | **Results ==>** | 343,436 | 16.07 | 424,804 | 20.63 | 319,964 | 24.35 |
| | **Upper Limit ==>** | 686,872 | 16.57 | 849,608 | 21.13 | 639,928 | 24.85 |
| | **Lower Limit ==>** | 171,718 | 15.57 | 212,402 | 20.13 | 159,982 | 23.85 |
| | **ICAL Result ==>** | 306,102 | 16.06 | 403,853 | 20.63 | 287,430 | 24.34 |
| ***Associated Analyses*** | | | | | | | |
| DUPE-2 | K0611027-007 | 406,100 | 16.06 | 466,262 | 20.64 | 319,684 | 24.36 |
| B-3-35 | K0611027-008 | 375,322 | 16.07 | 425,636 | 20.62 | 337,250 | 24.35 |
| B-2-30 | K0611027-009 | 353,024 | 16.06 | 409,278 | 20.63 | 291,649 | 24.36 |
| B-2-40 | K0611027-010 | 359,615 | 16.06 | 422,060 | 20.62 | 320,608 | 24.35 |
| B-2-20 | K0611027-011 | 401,801 | 16.06 | 465,116 | 20.63 | 341,524 | 24.36 |

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

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/27/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/25/2007 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | B-4-24 | **Units:** | ug/Kg |
| **Lab Code:** | K0611027-001 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | **Extraction Lot:** | KWG0621706 |

| | | B-4-24MS KWG0621706-1 Matrix Spike | | | B-4-24DMS KWG0621706-2 Duplicate Matrix Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Phenol | 15 | 91.6 | 248 | 31 | 236 | 249 | 89 | 14-114 | 88 * | 40 |
| 1,4-Dichlorobenzene | ND | 71.2 | 248 | 29 | 162 | 249 | 65 | 10-72 | 78 * | 40 |
| 1,2,4-Trichlorobenzene | ND | 74.8 | 248 | 30 | 173 | 249 | 70 | 10-80 | 79 * | 40 |
| Acenaphthene | ND | 91.5 | 248 | 37 | 211 | 249 | 85 | 10-132 | 79 * | 40 |
| Pentachlorophenol | ND | 134 | 248 | 54 | 279 | 249 | 112 | 10-145 | 70 * | 40 |
| Pyrene | ND | 110 | 248 | 44 | 309 | 249 | 124 | 10-136 | 95 * | 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:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Extracted:** 12/27/2006
**Date Analyzed:** 01/25/2007 - 01/31/2007

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

**Sample Name:** Batch QC
**Lab Code:** K0611088-003

**Extraction Method:** EPA 3541
**Analysis Method:** 8270C

**Units:** ug/Kg
**Basis:** Dry

**Level:** Low
**Extraction Lot:** KWG0621706

| Analyte Name | Sample Result | Batch QCMS KWG0621706-6 Matrix Spike | | | Batch QCDMS KWG0621706-7 Duplicate Matrix Spike | | | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Result | Expected | %Rec | Result | Expected | %Rec | | | |
| Phenol | 5.8 | 140 | 248 | 54 | 191 | 248 | 75 | 14-114 | 31 | 40 |
| 1,4-Dichlorobenzene | ND | 120 | 248 | 48 | 161 | 248 | 65 | 10-72 | 29 | 40 |
| 1,2,4-Trichlorobenzene | ND | 125 | 248 | 50 | 175 | 248 | 70 | 10-80 | 33 | 40 |
| Acenaphthene | 2.4 | 167 | 248 | 67 | 182 | 248 | 72 | 10-132 | 9 | 40 |
| Pentachlorophenol | ND | 244 | 248 | 99 | 201 | 248 | 81 | 10-145 | 20 | 40 |
| Pyrene | 12 | 213 | 248 | 81 | 221 | 248 | 84 | 10-136 | 3 | 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:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/27/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/25/2007 |

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

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 3541 | **Units:** | ug/Kg |
| **Analysis Method:** | 8270C | **Basis:** | Dry |
| | | **Level:** | Low |
| | | **Extraction Lot:** | KWG0621706 |

| | Lab Control Sample KWG0621706-3 Lab Control Spike | | | Duplicate Lab Control Sample KWG0621706-4 Duplicate Lab Control Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Phenol | 169 | 250 | 68 | 158 | 250 | 63 | 35-102 | 6 | 40 |
| 1,3-Dichlorobenzene | 140 | 250 | 56 | 125 | 250 | 50 | 36-89 | 11 | 40 |
| 1,4-Dichlorobenzene | 140 | 250 | 56 | 131 | 250 | 53 | 37-87 | 7 | 40 |
| 1,2-Dichlorobenzene | 142 | 250 | 57 | 130 | 250 | 52 | 39-91 | 9 | 40 |
| Benzyl Alcohol | 189 | 250 | 76 | 177 | 250 | 71 | 35-88 | 6 | 40 |
| 2-Methylphenol | 161 | 250 | 65 | 155 | 250 | 62 | 30-91 | 4 | 40 |
| Hexachloroethane | 153 | 250 | 61 | 136 | 250 | 54 | 37-90 | 12 | 40 |
| 4-Methylphenol | 159 | 250 | 64 | 152 | 250 | 61 | 28-94 | 4 | 40 |
| 2,4-Dimethylphenol | 73.7 | 250 | 29 | 87.3 | 250 | 35 | 10-63 | 17 | 40 |
| Benzoic Acid | 336 | 750 | 45 | 288 | 750 | 38 | 10-88 | 15 | 40 |
| 1,2,4-Trichlorobenzene | 143 | 250 | 57 | 130 | 250 | 52 | 40-91 | 10 | 40 |
| Naphthalene | 157 | 250 | 63 | 146 | 250 | 58 | 41-90 | 7 | 40 |
| Hexachlorobutadiene | 135 | 250 | 54 | 124 | 250 | 50 | 37-92 | 9 | 40 |
| 2-Methylnaphthalene | 163 | 250 | 65 | 148 | 250 | 59 | 41-87 | 9 | 40 |
| Acenaphthylene | 177 | 250 | 71 | 170 | 250 | 68 | 49-100 | 4 | 40 |
| Dimethyl Phthalate | 196 | 250 | 78 | 188 | 250 | 75 | 48-99 | 4 | 40 |
| Acenaphthene | 173 | 250 | 69 | 169 | 250 | 68 | 44-92 | 2 | 40 |
| Dibenzofuran | 173 | 250 | 69 | 170 | 250 | 68 | 44-91 | 1 | 40 |
| Fluorene | 172 | 250 | 69 | 166 | 250 | 66 | 46-97 | 4 | 40 |
| Diethyl Phthalate | 202 | 250 | 81 | 200 | 250 | 80 | 48-107 | 1 | 40 |
| N-Nitrosodiphenylamine | 179 | 250 | 72 | 180 | 250 | 72 | 47-108 | 0 | 40 |
| Hexachlorobenzene | 171 | 250 | 68 | 159 | 250 | 64 | 46-103 | 7 | 40 |
| Pentachlorophenol | 198 | 250 | 79 | 195 | 250 | 78 | 22-100 | 1 | 40 |
| Phenanthrene | 191 | 250 | 76 | 183 | 250 | 73 | 50-96 | 4 | 40 |
| Anthracene | 188 | 250 | 75 | 179 | 250 | 72 | 51-97 | 5 | 40 |
| Di-n-butyl Phthalate | 209 | 250 | 84 | 208 | 250 | 83 | 51-111 | 1 | 40 |
| Fluoranthene | 185 | 250 | 74 | 182 | 250 | 73 | 53-108 | 2 | 40 |
| Pyrene | 265 | 250 | 106 | 271 | 250 | 108 | 50-108 | 2 | 40 |
| Butyl Benzyl Phthalate | 254 | 250 | 102 | 266 | 250 | 107 | 48-119 | 5 | 40 |
| Benz(a)anthracene | 195 | 250 | 78 | 198 | 250 | 79 | 58-106 | 2 | 40 |
| Chrysene | 199 | 250 | 80 | 204 | 250 | 81 | 57-111 | 2 | 40 |
| Bis(2-ethylhexyl) Phthalate | 252 | 250 | 101 | 258 | 250 | 103 | 47-124 | 2 | 40 |
| Di-n-octyl Phthalate | 253 | 250 | 101 | 291 | 250 | 117 | 41-123 | 14 | 40 |
| Benzo(b)fluoranthene | 214 | 250 | 86 | 223 | 250 | 89 | 56-104 | 4 | 40 |
| Benzo(k)fluoranthene | 200 | 250 | 80 | 207 | 250 | 83 | 58-106 | 4 | 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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027
**Date Extracted:** 12/27/2006
**Date Analyzed:** 01/25/2007

**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:** KWG0621706

| | Lab Control Sample KWG0621706-3 Lab Control Spike | | | Duplicate Lab Control Sample KWG0621706-4 Duplicate Lab Control Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Benzo(a)pyrene | 207 | 250 | 83 | 216 | 250 | 86 | 56-107 | 4 | 40 |
| Indeno(1,2,3-cd)pyrene | 214 | 250 | 86 | 221 | 250 | 88 | 55-107 | 3 | 40 |
| Dibenz(a,h)anthracene | 214 | 250 | 86 | 222 | 250 | 89 | 55-107 | 4 | 40 |
| Benzo(g,h,i)perylene | 210 | 250 | 84 | 215 | 250 | 86 | 27-121 | 3 | 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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611027 |
| **Project:** | CONDIT/53886/4 | **Date Extracted:** | 12/27/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/25/2007 |
| | | **Time Analyzed:** | 07:20 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\MS06\DATA\012507\0125F004.D |
| **Lab Code:** | KWG0621706-5 | **Instrument ID:** | MS06 |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | **Extraction Lot:** | KWG0621706 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Lab Control Sample | KWG0621706-3 | J:\MS06\DATA\012507\0125F005.D | 01/25/07 | 07:58 |
| Duplicate Lab Control Sample | KWG0621706-4 | J:\MS06\DATA\012507\0125F006.D | 01/25/07 | 08:36 |
| B-4-24MS | KWG0621706-1 | J:\MS06\DATA\012507\0125F007.D | 01/25/07 | 09:13 |
| B-4-24DMS | KWG0621706-2 | J:\MS06\DATA\012507\0125F008.D | 01/25/07 | 09:51 |
| Batch QCMS | KWG0621706-6 | J:\MS06\DATA\012507\0125F009.D | 01/25/07 | 10:29 |
| DUPE-1 | K0611027-002 | J:\MS06\DATA\012507\0125F018.D | 01/25/07 | 16:22 |
| Batch QC | K0611088-003 | J:\MS06\DATA\013107\0131F006.D | 01/31/07 | 10:50 |
| B-4-24 | K0611027-001 | J:\MS06\DATA\013107\0131F016.D | 01/31/07 | 17:06 |
| B-4-15 | K0611027-003 | J:\MS06\DATA\013107\0131F017.D | 01/31/07 | 17:43 |
| B-4-35 | K0611027-004 | J:\MS06\DATA\013107\0131F018.D | 01/31/07 | 18:20 |
| B-3-27 | K0611027-005 | J:\MS06\DATA\013107\0131F019.D | 01/31/07 | 18:58 |
| B-3-16 | K0611027-006 | J:\MS06\DATA\013107\0131F020.D | 01/31/07 | 19:35 |
| Batch QCDMS | KWG0621706-7 | J:\MS06\DATA\013107\0131F005.D | 01/31/07 | 10:13 |
| DUPE-2 | K0611027-007 | J:\MS06\DATA\020107\0201F010.D | 02/01/07 | 15:42 |
| B-3-35 | K0611027-008 | J:\MS06\DATA\020107\0201F011.D | 02/01/07 | 16:19 |
| B-2-30 | K0611027-009 | J:\MS06\DATA\020107\0201F012.D | 02/01/07 | 16:56 |
| B-2-40 | K0611027-010 | J:\MS06\DATA\020107\0201F013.D | 02/01/07 | 17:33 |
| B-2-20 | K0611027-011 | J:\MS06\DATA\020107\0201F014.D | 02/01/07 | 18:10 |

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** CONDIT/53886/4
**Sample Matrix:** Sediment

**Service Request:** K0611027

## 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:** | KWG0621706-3 | **Lab Code:** | KWG0621706-4 |
| **File ID:** | J:\MS06\DATA\012507\0125F005.D | **File ID:** | J:\MS06\DATA\012507\0125F006.D |
| **Instrument ID:** | MS06 | **Instrument ID:** | MS06 |
| **Date Extracted:** | 12/27/2006 | **Date Extracted:** | 12/27/2006 |
| **Date Analyzed:** | 01/25/2007 | **Date Analyzed:** | 01/25/2007 |
| **Time Analyzed:** | 07:58 | **Time Analyzed:** | 08:36 |

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | **Extraction Lot:** | KWG0621706 |

These Lab Control Samples apply to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | KWG0621706-5 | J:\MS06\DATA\012507\0125F004.D | 01/25/07 | 07:20 |
| B-4-24MS | KWG0621706-1 | J:\MS06\DATA\012507\0125F007.D | 01/25/07 | 09:13 |
| B-4-24DMS | KWG0621706-2 | J:\MS06\DATA\012507\0125F008.D | 01/25/07 | 09:51 |
| Batch QCMS | KWG0621706-6 | J:\MS06\DATA\012507\0125F009.D | 01/25/07 | 10:29 |
| DUPE-1 | K0611027-002 | J:\MS06\DATA\012507\0125F018.D | 01/25/07 | 16:22 |
| Batch QCDMS | KWG0621706-7 | J:\MS06\DATA\013107\0131F005.D | 01/31/07 | 10:13 |
| Batch QC | K0611088-003 | J:\MS06\DATA\013107\0131F006.D | 01/31/07 | 10:50 |
| B-4-24 | K0611027-001 | J:\MS06\DATA\013107\0131F016.D | 01/31/07 | 17:06 |
| B-4-15 | K0611027-003 | J:\MS06\DATA\013107\0131F017.D | 01/31/07 | 17:43 |
| B-4-35 | K0611027-004 | J:\MS06\DATA\013107\0131F018.D | 01/31/07 | 18:20 |
| B-3-27 | K0611027-005 | J:\MS06\DATA\013107\0131F019.D | 01/31/07 | 18:58 |
| B-3-16 | K0611027-006 | J:\MS06\DATA\013107\0131F020.D | 01/31/07 | 19:35 |
| DUPE-2 | K0611027-007 | J:\MS06\DATA\020107\0201F010.D | 02/01/07 | 15:42 |
| B-3-35 | K0611027-008 | J:\MS06\DATA\020107\0201F011.D | 02/01/07 | 16:19 |
| B-2-30 | K0611027-009 | J:\MS06\DATA\020107\0201F012.D | 02/01/07 | 16:56 |
| B-2-40 | K0611027-010 | J:\MS06\DATA\020107\0201F013.D | 02/01/07 | 17:33 |
| B-2-20 | K0611027-011 | J:\MS06\DATA\020107\0201F014.D | 02/01/07 | 18:10 |

# Semi-Volatile Organic Compounds
# EPA Method 8270C

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Client:** Kleinfelder
**Project:** Condit/5388614

**Service Request:** K0611088

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

| Sample Name | Lab Code | Date Collected | Date Received |
|---|---|---|---|
| Dup-3 | K0611088-001 | 12/18/2006 | 12/20/2006 |
| B1-85 | K0611088-002 | 12/18/2006 | 12/20/2006 |
| B1-106 | K0611088-003 | 12/18/2006 | 12/20/2006 |
| B1-72 | K0611088-004 | 12/18/2006 | 12/20/2006 |
| B1-106MS | KWG0621706-6 | 12/18/2006 | 12/20/2006 |
| B1-106DMS | KWG0621706-7 | 12/18/2006 | 12/20/2006 |
| B1-85MS | KWG0701685-1 | 12/18/2006 | 12/20/2006 |
| B1-85DMS | KWG0701685-2 | 12/18/2006 | 12/20/2006 |

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: Carl Dagner

Name: Carl Dagner

Date: 2/12/07

Title: SVM Supervisor

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Dup-3 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-001 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | U | 30 | 3.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 1,3-Dichlorobenzene | ND | U | 10 | 2.9 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 1,4-Dichlorobenzene | ND | U | 10 | 3.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 1,2-Dichlorobenzene | ND | U | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzyl Alcohol | ND | U | 20 | 6.6 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 2-Methylphenol | ND | U | 10 | 6.1 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Hexachloroethane | ND | U | 10 | 4.0 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 4-Methylphenol† | ND | U | 10 | 5.2 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 2,4-Dimethylphenol | ND | U | 50 | 9.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzoic Acid | ND | U | 200 | 180 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 2.7 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Naphthalene** | **2.6** | J | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Hexachlorobutadiene | ND | U | 10 | 2.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **2-Methylnaphthalene** | **2.5** | J | 10 | 2.2 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Acenaphthylene | ND | U | 10 | 2.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Dimethyl Phthalate | ND | U | 10 | 3.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Acenaphthene | ND | U | 10 | 1.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Dibenzofuran | ND | U | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Fluorene | ND | U | 10 | 3.1 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Diethyl Phthalate | ND | U | 10 | 6.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| N-Nitrosodiphenylamine | ND | U | 10 | 4.0 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Hexachlorobenzene | ND | U | 10 | 3.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Pentachlorophenol | ND | U | 100 | 16 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Phenanthrene** | **2.9** | J | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Anthracene | ND | U | 10 | 2.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Di-n-butyl Phthalate** | **7.6** | J | 10 | 4.7 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Fluoranthene | ND | U | 10 | 4.0 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Pyrene | ND | U | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Butyl Benzyl Phthalate | ND | U | 10 | 2.7 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benz(a)anthracene | ND | U | 10 | 2.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Chrysene | ND | U | 10 | 2.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Bis(2-ethylhexyl) Phthalate | ND | U | 100 | 3.1 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Di-n-octyl Phthalate | ND | U | 10 | 2.2 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Dup-3 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-001 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 4.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzo(k)fluoranthene | ND | U | 10 | 4.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzo(a)pyrene | ND | U | 10 | 2.9 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Indeno(1,2,3-cd)pyrene | ND | U | 10 | 3.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Dibenz(a,h)anthracene | ND | U | 10 | 4.0 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzo(g,h,i)perylene | ND | U | 10 | 4.1 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |

* See Case Narrative

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 49 | 12-88 | 02/09/07 | Acceptable |
| Phenol-d6 | 55 | 20-101 | 02/09/07 | Acceptable |
| Nitrobenzene-d5 | 55 | 10-97 | 02/09/07 | Acceptable |
| 2-Fluorobiphenyl | 48 | 10-107 | 02/09/07 | Acceptable |
| 2,4,6-Tribromophenol | 66 | 16-122 | 02/09/07 | Acceptable |
| Terphenyl-d14 | 56 | 28-135 | 02/09/07 | Acceptable |

† **Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-85 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-002 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | U | 30 | 3.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 1,3-Dichlorobenzene | ND | U | 10 | 2.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 1,4-Dichlorobenzene | ND | U | 10 | 3.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 1,2-Dichlorobenzene | ND | U | 10 | 2.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzyl Alcohol | ND | U | 20 | 6.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 2-Methylphenol | ND | U | 10 | 5.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Hexachloroethane | ND | U | 10 | 3.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 4-Methylphenol† | ND | U | 10 | 5.0 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 2,4-Dimethylphenol | ND | U | 50 | 9.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzoic Acid | ND | U | 200 | 170 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 2.6 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Naphthalene** | **2.8** | J | 10 | 2.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Hexachlorobutadiene | ND | U | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **2-Methylnaphthalene** | **2.1** | J | 10 | 2.1 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Acenaphthylene | ND | U | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Dimethyl Phthalate | ND | U | 10 | 3.1 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Acenaphthene | ND | U | 10 | 1.7 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Dibenzofuran | ND | U | 10 | 2.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Fluorene | ND | U | 10 | 2.9 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Diethyl Phthalate | ND | U | 10 | 6.0 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| N-Nitrosodiphenylamine | ND | U | 10 | 3.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Hexachlorobenzene | ND | U | 10 | 3.6 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Pentachlorophenol | ND | U | 100 | 15 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Phenanthrene** | **8.7** | J | 10 | 2.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Anthracene | ND | U | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Di-n-butyl Phthalate** | **7.1** | J | 10 | 4.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Fluoranthene** | **8.5** | J | 10 | 3.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Pyrene** | **7.0** | J | 10 | 2.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Butyl Benzyl Phthalate | ND | U | 10 | 2.6 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Benz(a)anthracene** | **3.7** | J | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Chrysene** | **5.5** | J | 10 | 2.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Bis(2-ethylhexyl) Phthalate** | **38** | J | 100 | 2.9 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Di-n-octyl Phthalate | ND | U | 10 | 2.1 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-85 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-002 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 4.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzo(k)fluoranthene | ND | U | 10 | 4.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzo(a)pyrene | ND | U | 10 | 2.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Indeno(1,2,3-cd)pyrene | ND | U | 10 | 3.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Dibenz(a,h)anthracene | ND | U | 10 | 3.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzo(g,h,i)perylene | ND | U | 10 | 3.9 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |

* See Case Narrative

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 50 | 12-88 | 02/09/07 | Acceptable |
| Phenol-d6 | 55 | 20-101 | 02/09/07 | Acceptable |
| Nitrobenzene-d5 | 50 | 10-97 | 02/09/07 | Acceptable |
| 2-Fluorobiphenyl | 52 | 10-107 | 02/09/07 | Acceptable |
| 2,4,6-Tribromophenol | 74 | 16-122 | 02/09/07 | Acceptable |
| Terphenyl-d14 | 58 | 28-135 | 02/09/07 | Acceptable |

† **Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088
**Date Collected:** 12/18/2006
**Date Received:** 12/20/2006

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** B1-106
**Lab Code:** K0611088-003

**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 |
|---|---|---|---|---|---|---|---|---|---|
| **Phenol** | **5.8** | J | 30 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 10 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 20 | 5.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 10 | 4.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 10 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **4-Methylphenol†** | **47** | | 10 | 4.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 50 | 8.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Benzoic Acid** | **210** | | 200 | 140 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 10 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Naphthalene** | **11** | | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 10 | 2.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **2-Methylnaphthalene** | **3.8** | J | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Acenaphthylene** | **4.3** | J | 10 | 2.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 10 | 2.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Acenaphthene** | **2.4** | J | 10 | 1.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Dibenzofuran** | **2.2** | J | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Fluorene** | **3.5** | J | 10 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 10 | 5.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 10 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 10 | 3.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 100 | 13 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Phenanthrene** | **11** | | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Anthracene** | **5.0** | J | 10 | 2.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Di-n-butyl Phthalate** | **7.9** | J | 10 | 3.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Fluoranthene** | **10** | | 10 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Pyrene** | **12** | | 10 | 1.9 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 10 | 2.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Benz(a)anthracene** | **4.5** | J | 10 | 2.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Chrysene** | **7.9** | J | 10 | 2.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **21** | J | 100 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 10 | 1.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-106 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-003 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 10 | 3.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 10 | 3.7 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 10 | 2.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Indeno(1,2,3-cd)pyrene** | **3.4** | J | 10 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 10 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| **Benzo(g,h,i)perylene** | **4.3** | J | 10 | 3.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 53 | 12-88 | 01/31/07 | Acceptable |
| Phenol-d6 | 64 | 20-101 | 01/31/07 | Acceptable |
| Nitrobenzene-d5 | 60 | 10-97 | 01/31/07 | Acceptable |
| 2-Fluorobiphenyl | 64 | 10-107 | 01/31/07 | Acceptable |
| 2,4,6-Tribromophenol | 83 | 16-122 | 01/31/07 | Acceptable |
| Terphenyl-d14 | 79 | 28-135 | 01/31/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-72 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-004 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | U | 32 | 4.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 11 | 3.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 11 | 4.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 11 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 21 | 7.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 11 | 7.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 11 | 4.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 4-Methylphenol† | ND | U | 11 | 6.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 53 | 12 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzoic Acid | ND | U | 210 | 200 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 11 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Naphthalene | ND | U | 11 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 11 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 11 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 11 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 11 | 3.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Acenaphthene | ND | U | 11 | 2.1 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 11 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluorene | ND | U | 11 | 3.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 11 | 7.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 11 | 4.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 11 | 4.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 110 | 18 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Phenanthrene | ND | U | 11 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Anthracene | ND | U | 11 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Di-n-butyl Phthalate | ND | U | 11 | 5.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Fluoranthene | ND | U | 11 | 4.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Pyrene | ND | U | 11 | 2.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 11 | 3.2 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 11 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Chrysene | ND | U | 11 | 3.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Bis(2-ethylhexyl) Phthalate | ND | U | 110 | 3.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 11 | 2.5 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | 12/18/2006 |
| **Sample Matrix:** | Sediment | **Date Received:** | 12/20/2006 |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-72 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-004 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 11 | 5.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 11 | 5.3 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 11 | 3.4 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 11 | 4.0 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 11 | 4.6 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 11 | 4.8 | 1 | 12/27/06 | 01/31/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 35 | 12-88 | 01/31/07 | Acceptable |
| Phenol-d6 | 43 | 20-101 | 01/31/07 | Acceptable |
| Nitrobenzene-d5 | 37 | 10-97 | 01/31/07 | Acceptable |
| 2-Fluorobiphenyl | 38 | 10-107 | 01/31/07 | Acceptable |
| 2,4,6-Tribromophenol | 52 | 16-122 | 01/31/07 | Acceptable |
| Terphenyl-d14 | 47 | 28-135 | 01/31/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | NA |
| **Sample Matrix:** | Sediment | **Date Received:** | NA |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/Kg |
| **Lab Code:** | KWG0621706-5 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | U | 15 | 1.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,3-Dichlorobenzene | ND | U | 5.0 | 1.6 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,4-Dichlorobenzene | ND | U | 5.0 | 1.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,2-Dichlorobenzene | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzyl Alcohol | ND | U | 25 | 3.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 2-Methylphenol | ND | U | 5.0 | 3.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Hexachloroethane | ND | U | 5.0 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 4-Methylphenol† | ND | U | 5.0 | 2.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 2,4-Dimethylphenol | ND | U | 25 | 5.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzoic Acid | ND | U | 100 | 96 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 1,2,4-Trichlorobenzene | ND | U | 5.0 | 1.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Naphthalene | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Hexachlorobutadiene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| 2-Methylnaphthalene | ND | U | 5.0 | 1.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Acenaphthylene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Dimethyl Phthalate | ND | U | 5.0 | 1.8 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Acenaphthene | ND | U | 5.0 | 1.0 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Dibenzofuran | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Fluorene | ND | U | 5.0 | 1.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Diethyl Phthalate | ND | U | 5.0 | 3.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| N-Nitrosodiphenylamine | ND | U | 5.0 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Hexachlorobenzene | ND | U | 5.0 | 2.1 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Pentachlorophenol | ND | U | 50 | 8.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Phenanthrene | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Anthracene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Di-n-butyl Phthalate | ND | U | 5.0 | 2.6 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Fluoranthene | ND | U | 5.0 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Pyrene | ND | U | 5.0 | 1.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Butyl Benzyl Phthalate | ND | U | 5.0 | 1.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benz(a)anthracene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Chrysene | ND | U | 5.0 | 1.4 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| **Bis(2-ethylhexyl) Phthalate** | **3.2** | J | 50 | 1.7 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Di-n-octyl Phthalate | ND | U | 5.0 | 1.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |

**Comments:**

# COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | NA |
| **Sample Matrix:** | Sediment | **Date Received:** | NA |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/Kg |
| **Lab Code:** | KWG0621706-5 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 5.0 | 2.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzo(k)fluoranthene | ND | U | 5.0 | 2.5 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzo(a)pyrene | ND | U | 5.0 | 1.6 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 5.0 | 1.9 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Dibenz(a,h)anthracene | ND | U | 5.0 | 2.2 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |
| Benzo(g,h,i)perylene | ND | U | 5.0 | 2.3 | 1 | 12/27/06 | 01/25/07 | KWG0621706 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 72 | 12-88 | 01/25/07 | Acceptable |
| Phenol-d6 | 79 | 20-101 | 01/25/07 | Acceptable |
| Nitrobenzene-d5 | 82 | 10-97 | 01/25/07 | Acceptable |
| 2-Fluorobiphenyl | 82 | 10-107 | 01/25/07 | Acceptable |
| 2,4,6-Tribromophenol | 81 | 16-122 | 01/25/07 | Acceptable |
| Terphenyl-d14 | 106 | 28-135 | 01/25/07 | Acceptable |

**† Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | NA |
| **Sample Matrix:** | Sediment | **Date Received:** | NA |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/Kg |
| **Lab Code:** | KWG0701685-5 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | U | 17 | 1.9 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| 1,3-Dichlorobenzene | ND | U | 5.6 | 1.6 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| 1,4-Dichlorobenzene | ND | U | 5.6 | 1.9 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| 1,2-Dichlorobenzene | ND | U | 5.6 | 1.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Benzyl Alcohol | ND | U | 12 | 3.7 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| 2-Methylphenol | ND | U | 5.6 | 3.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Hexachloroethane | ND | U | 5.6 | 2.2 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| 4-Methylphenol† | ND | U | 5.6 | 2.9 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| 2,4-Dimethylphenol | ND | U | 28 | 5.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Benzoic Acid | ND | U | 120 | 96 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| 1,2,4-Trichlorobenzene | ND | U | 5.6 | 1.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Naphthalene | ND | U | 5.6 | 1.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Hexachlorobutadiene | ND | U | 5.6 | 1.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| 2-Methylnaphthalene | ND | U | 5.6 | 1.2 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Acenaphthylene | ND | U | 5.6 | 1.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Dimethyl Phthalate | ND | U | 5.6 | 1.8 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Acenaphthene | ND | U | 5.6 | 1.0 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Dibenzofuran | ND | U | 5.6 | 1.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Fluorene | ND | U | 5.6 | 1.7 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Diethyl Phthalate | ND | U | 5.6 | 3.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| N-Nitrosodiphenylamine | ND | U | 5.6 | 2.2 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Hexachlorobenzene | ND | U | 5.6 | 2.1 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Pentachlorophenol | ND | U | 56 | 8.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Phenanthrene | ND | U | 5.6 | 1.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Anthracene | ND | U | 5.6 | 1.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Di-n-butyl Phthalate | ND | U | 5.6 | 2.6 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Fluoranthene | ND | U | 5.6 | 2.2 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Pyrene | ND | U | 5.6 | 1.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Butyl Benzyl Phthalate | ND | U | 5.6 | 1.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Benz(a)anthracene | ND | U | 5.6 | 1.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Chrysene | ND | U | 5.6 | 1.4 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| **Bis(2-ethylhexyl) Phthalate** | **1.8** | J | 56 | 1.7 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Di-n-octyl Phthalate | ND | U | 5.6 | 1.2 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Results

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Collected:** | NA |
| **Sample Matrix:** | Sediment | **Date Received:** | NA |

## Semi-Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Units:** | ug/Kg |
| **Lab Code:** | KWG0701685-5 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | | |

| Analyte Name | Result | Q | MRL | MDL | Dilution Factor | Date Extracted | Date Analyzed | Extraction Lot | Note |
|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | ND | U | 5.6 | 2.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Benzo(k)fluoranthene | ND | U | 5.6 | 2.5 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Benzo(a)pyrene | ND | U | 5.6 | 1.6 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Indeno(1,2,3-cd)pyrene | ND | U | 5.6 | 1.9 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | * |
| Dibenz(a,h)anthracene | ND | U | 5.6 | 2.2 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |
| Benzo(g,h,i)perylene | ND | U | 5.6 | 2.3 | 1 | 02/02/07 | 02/09/07 | KWG0701685 | |

* See Case Narrative

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Note |
|---|---|---|---|---|
| 2-Fluorophenol | 42 | 12-88 | 02/09/07 | Acceptable |
| Phenol-d6 | 46 | 20-101 | 02/09/07 | Acceptable |
| Nitrobenzene-d5 | 40 | 10-97 | 02/09/07 | Acceptable |
| 2-Fluorobiphenyl | 41 | 10-107 | 02/09/07 | Acceptable |
| 2,4,6-Tribromophenol | 48 | 16-122 | 02/09/07 | Acceptable |
| Terphenyl-d14 | 62 | 28-135 | 02/09/07 | Acceptable |

† **Analyte Comments**

| | |
|---|---|
| 4-Methylphenol | This analyte cannot be separated from 3-Methylphenol. |

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088

**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 | Sur3 | Sur4 | Sur5 | Sur6 |
|---|---|---|---|---|---|---|---|
| Dup-3 | K0611088-001 | 49 | 55 | 55 | 48 | 66 | 56 |
| B1-85 | K0611088-002 | 50 | 55 | 50 | 52 | 74 | 58 |
| B1-106 | K0611088-003 | 53 | 64 | 60 | 64 | 83 | 79 |
| B1-72 | K0611088-004 | 35 | 43 | 37 | 38 | 52 | 47 |
| Method Blank | KWG0621706-5 | 72 | 79 | 82 | 82 | 81 | 106 |
| Method Blank | KWG0701685-5 | 42 | 46 | 40 | 41 | 48 | 62 |
| B1-106MS | KWG0621706-6 | 50 | 59 | 63 | 66 | 81 | 62 |
| B1-106DMS | KWG0621706-7 | 66 | 75 | 75 | 77 | 88 | 85 |
| B1-85MS | KWG0701685-1 | 48 | 55 | 55 | 49 | 65 | 53 |
| B1-85DMS | KWG0701685-2 | 50 | 57 | 55 | 55 | 73 | 62 |
| Lab Control Sample | KWG0621706-3 | 54 | 68 | 64 | 65 | 75 | 102 |
| Duplicate Lab Control Sample | KWG0621706-4 | 52 | 66 | 62 | 61 | 68 | 107 |
| Lab Control Sample | KWG0701685-3 | 50 | 57 | 53 | 48 | 56 | 54 |
| Duplicate Lab Control Sample | KWG0701685-4 | 47 | 53 | 52 | 49 | 58 | 63 |

**Surrogate Recovery Control Limits (%)**

| | | | | | |
|---|---|---|---|---|---|
| Sur1 = | 2-Fluorophenol | 12-88 | Sur5 = | 2,4,6-Tribromophenol | 16-122 |
| Sur2 = | Phenol-d6 | 20-101 | Sur6 = | Terphenyl-d14 | 28-135 |
| Sur3 = | Nitrobenzene-d5 | 10-97 | | | |
| Sur4 = | 2-Fluorobiphenyl | 10-107 | | | |

**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:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Analyzed:** | 01/25/2007 |
| | | **Time Analyzed:** | 06:42 |

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

| | | | |
|---|---|---|---|
| **File ID:** | J:\MS06\DATA\012507\0125C003.D | **Lab Code:** | KWG0701187-2 |
| **Instrument ID:** | MS06 | **Analysis Lot:** | KWG0701187 |
| **Analysis Method:** | 8270C | | |

| | | 1,4-Dichlorobenzene-d4 | | Naphthalene-d8 | | Acenaphthene-d10 | |
|---|---|---|---|---|---|---|---|
| | | **Area** | **RT** | **Area** | **RT** | **Area** | **RT** |
| | **Results ==>** | 134,716 | 8.73 | 554,046 | 10.68 | 285,616 | 13.51 |
| | **Upper Limit ==>** | 269,432 | 9.23 | 1,108,092 | 11.18 | 571,232 | 14.01 |
| | **Lower Limit ==>** | 67,358 | 8.23 | 277,023 | 10.18 | 142,808 | 13.01 |
| | **ICAL Result ==>** | 72,626 | 8.74 | 290,105 | 10.69 | 147,832 | 13.51 |
| ***Associated Analyses*** | | | | | | | |
| Method Blank | KWG0621706-5 | 82,333 | 8.73 | 341,329 | 10.67 | 167,096 | 13.50 |
| Lab Control Sample | KWG0621706-3 | 86,080 | 8.73 | 355,102 | 10.67 | 182,321 | 13.50 |
| Duplicate Lab Control Sample | KWG0621706-4 | 86,880 | 8.73 | 354,516 | 10.67 | 174,383 | 13.50 |
| B1-106MS | KWG0621706-6 | 82,652 | 8.73 | 343,812 | 10.68 | 165,317 | 13.51 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614

**Service Request:** K0611088
**Date Analyzed:** 01/25/2007
**Time Analyzed:** 06:42

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

**File ID:** J:\MS06\DATA\012507\0125C003.D
**Instrument ID:** MS06
**Analysis Method:** 8270C

**Lab Code:** KWG0701187-2
**Analysis Lot:** KWG0701187

| | | Phenanthrene-d10 | | Chrysene-d12 | | Perylene-d12 | |
|---|---|---|---|---|---|---|---|
| | | Area | RT | Area | RT | Area | RT |
| | **Results ==>** | 358,048 | 15.94 | 304,827 | 20.45 | 186,180 | 24.14 |
| | **Upper Limit ==>** | 716,096 | 16.44 | 609,654 | 20.95 | 372,360 | 24.64 |
| | **Lower Limit ==>** | 179,024 | 15.44 | 152,414 | 19.95 | 93,090 | 23.64 |
| | **ICAL Result ==>** | 212,586 | 15.94 | 257,686 | 20.45 | 169,935 | 24.15 |
| ***Associated Analyses*** | | | | | | | |
| Method Blank | KWG0621706-5 | 209,171 | 15.92 | 170,480 | 20.42 | 114,803 | 24.12 |
| Lab Control Sample | KWG0621706-3 | 227,342 | 15.93 | 191,486 | 20.44 | 121,238 | 24.13 |
| Duplicate Lab Control Sample | KWG0621706-4 | 232,333 | 15.93 | 182,449 | 20.44 | 118,135 | 24.13 |
| B1-106MS | KWG0621706-6 | 205,497 | 15.93 | 237,305 | 20.47 | 121,429 | 24.19 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Analyzed:** | 01/31/2007 |
| | | **Time Analyzed:** | 07:36 |

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

| | | | |
|---|---|---|---|
| **File ID:** | J:\MS06\DATA\013107\0131C001.D | **Lab Code:** | KWG0701558-2 |
| **Instrument ID:** | MS06 | **Analysis Lot:** | KWG0701558 |
| **Analysis Method:** | 8270C | | |

| | | 1,4-Dichlorobenzene-d4 | | Naphthalene-d8 | | Acenaphthene-d10 | |
|---|---|---|---|---|---|---|---|
| | | **Area** | **RT** | **Area** | **RT** | **Area** | **RT** |
| | **Results ==>** | 70,872 | 8.89 | 248,132 | 10.81 | 143,510 | 13.64 |
| | **Upper Limit ==>** | 141,744 | 9.39 | 496,264 | 11.31 | 287,020 | 14.14 |
| | **Lower Limit ==>** | 35,436 | 8.39 | 124,066 | 10.31 | 71,755 | 13.14 |
| | **ICAL Result ==>** | 77,539 | 8.89 | 277,478 | 10.81 | 165,484 | 13.64 |
| ***Associated Analyses*** | | | | | | | |
| B1-106DMS | KWG0621706-7 | 76,322 | 8.89 | 264,837 | 10.81 | 155,203 | 13.63 |
| B1-106 | K0611088-003 | 75,394 | 8.89 | 263,493 | 10.81 | 159,641 | 13.64 |
| B1-72 | K0611088-004 | 89,369 | 8.90 | 331,770 | 10.81 | 187,731 | 13.65 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Analyzed:** | 01/31/2007 |
| | | **Time Analyzed:** | 07:36 |

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

| | | | |
|---|---|---|---|
| **File ID:** | J:\MS06\DATA\013107\0131C001.D | **Lab Code:** | KWG0701558-2 |
| **Instrument ID:** | MS06 | **Analysis Lot:** | KWG0701558 |
| **Analysis Method:** | 8270C | | |

| | | Phenanthrene-d10 | | Chrysene-d12 | | Perylene-d12 | |
|---|---|---|---|---|---|---|---|
| | | **Area** | **RT** | **Area** | **RT** | **Area** | **RT** |
| | **Results ==>** | 254,185 | 16.07 | 346,767 | 20.63 | 258,406 | 24.35 |
| | **Upper Limit ==>** | 508,370 | 16.57 | 693,534 | 21.13 | 516,812 | 24.85 |
| | **Lower Limit ==>** | 127,093 | 15.57 | 173,384 | 20.13 | 129,203 | 23.85 |
| | **ICAL Result ==>** | 306,102 | 16.06 | 403,853 | 20.63 | 287,430 | 24.34 |
| ***Associated Analyses*** | | | | | | | |
| B1-106DMS | KWG0621706-7 | 295,245 | 16.06 | 346,691 | 20.64 | 237,697 | 24.37 |
| B1-106 | K0611088-003 | 295,055 | 16.07 | 361,532 | 20.64 | 256,740 | 24.37 |
| B1-72 | K0611088-004 | 347,845 | 16.08 | 430,503 | 20.64 | 305,295 | 24.37 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614

**Service Request:** K0611088
**Date Analyzed:** 02/09/2007
**Time Analyzed:** 10:45

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

**File ID:** J:\MS06\DATA\020907\0209F001.D
**Instrument ID:** MS06
**Analysis Method:** 8270C

**Lab Code:** KWG0702206-2
**Analysis Lot:** KWG0702206

| | | 1,4-Dichlorobenzene-d4 | | Naphthalene-d8 | | Acenaphthene-d10 | |
|---|---|---|---|---|---|---|---|
| | | Area | RT | Area | RT | Area | RT |
| | Results ==> | 58,470 | 8.84 | 215,322 | 10.78 | 131,951 | 13.61 |
| | Upper Limit ==> | 116,940 | 9.34 | 430,644 | 11.28 | 263,902 | 14.11 |
| | Lower Limit ==> | 29,235 | 8.34 | 107,661 | 10.28 | 65,976 | 13.11 |
| | ICAL Result ==> | 75,395 | 8.84 | 268,475 | 10.78 | 160,887 | 13.61 |
| ***Associated Analyses*** | | | | | | | |
| Method Blank | KWG0701685-5 | 75,424 | 8.83 | 281,067 | 10.77 | 171,713 | 13.60 |
| Lab Control Sample | KWG0701685-3 | 78,945 | 8.84 | 296,614 | 10.77 | 177,562 | 13.60 |
| Duplicate Lab Control Sample | KWG0701685-4 | 81,888 | 8.84 | 293,160 | 10.77 | 181,390 | 13.60 |
| B1-85MS | KWG0701685-1 | 77,461 | 8.84 | 298,740 | 10.77 | 188,031 | 13.61 |
| B1-85DMS | KWG0701685-2 | 74,369 | 8.84 | 271,536 | 10.78 | 163,902 | 13.61 |
| Dup-3 | K0611088-001 | 77,893 | 8.85 | 289,688 | 10.78 | 175,853 | 13.61 |
| B1-85 | K0611088-002 | 78,267 | 8.84 | 285,445 | 10.78 | 165,798 | 13.62 |

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

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614

**Service Request:** K0611088
**Date Analyzed:** 02/09/2007
**Time Analyzed:** 10:45

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

**File ID:** J:\MS06\DATA\020907\0209F001.D
**Instrument ID:** MS06
**Analysis Method:** 8270C

**Lab Code:** KWG0702206-2
**Analysis Lot:** KWG0702206

| | | Phenanthrene-d10 | | Chrysene-d12 | | Perylene-d12 | |
|---|---|---|---|---|---|---|---|
| | | Area | RT | Area | RT | Area | RT |
| | **Results ==>** | 233,457 | 16.03 | 320,747 | 20.58 | 242,080 | 24.28 |
| | **Upper Limit ==>** | 466,914 | 16.53 | 641,494 | 21.08 | 484,160 | 24.78 |
| | **Lower Limit ==>** | 116,729 | 15.53 | 160,374 | 20.08 | 121,040 | 23.78 |
| | **ICAL Result ==>** | 289,594 | 16.03 | 382,869 | 20.58 | 283,319 | 24.28 |
| ***Associated Analyses*** | | | | | | | |
| Method Blank | KWG0701685-5 | 307,052 | 16.03 | 380,533 | 20.56 | 290,708 | 24.27 |
| Lab Control Sample | KWG0701685-3 | 324,499 | 16.03 | 423,008 | 20.57 | 306,416 | 24.27 |
| Duplicate Lab Control Sample | KWG0701685-4 | 324,501 | 16.03 | 401,117 | 20.56 | 308,164 | 24.27 |
| B1-85MS | KWG0701685-1 | 318,931 | 16.04 | 408,816 | 20.58 | 254,852 | 24.31 |
| B1-85DMS | KWG0701685-2 | 292,516 | 16.04 | 349,201 | 20.59 | 252,563 | 24.32 |
| Dup-3 | K0611088-001 | 298,491 | 16.04 | 385,240 | 20.62 | 265,585 | 24.38 |
| B1-85 | K0611088-002 | 282,165 | 16.05 | 350,388 | 20.60 | 279,295 | 24.34 |

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

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088
**Date Extracted:** 12/27/2006
**Date Analyzed:** 01/25/2007 - 01/31/2007

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

**Sample Name:** B1-106
**Lab Code:** K0611088-003

**Units:** ug/Kg
**Basis:** Dry

**Extraction Method:** EPA 3541
**Analysis Method:** 8270C

**Level:** Low
**Extraction Lot:** KWG0621706

| Analyte Name | Sample Result | B1-106MS KWG0621706-6 Matrix Spike | | | B1-106DMS KWG0621706-7 Duplicate Matrix Spike | | | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Result | Expected | %Rec | Result | Expected | %Rec | | | |
| Phenol | 5.8 | 140 | 248 | 54 | 191 | 248 | 75 | 14-114 | 31 | 40 |
| 1,4-Dichlorobenzene | ND | 120 | 248 | 48 | 161 | 248 | 65 | 10-72 | 29 | 40 |
| 1,2,4-Trichlorobenzene | ND | 125 | 248 | 50 | 175 | 248 | 70 | 10-80 | 33 | 40 |
| Acenaphthene | 2.4 | 167 | 248 | 67 | 182 | 248 | 72 | 10-132 | 9 | 40 |
| Pentachlorophenol | ND | 244 | 248 | 99 | 201 | 248 | 81 | 10-145 | 20 | 40 |
| Pyrene | 12 | 213 | 248 | 81 | 221 | 248 | 84 | 10-136 | 3 | 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:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 02/02/2007 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 02/09/2007 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | B1-85 | **Units:** | ug/Kg |
| **Lab Code:** | K0611088-002 | **Basis:** | Dry |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | **Extraction Lot:** | KWG0701685 |

| | | B1-85MS KWG0701685-1 Matrix Spike | | | B1-85DMS KWG0701685-2 Duplicate Matrix Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Phenol | ND | 130 | 249 | 52 | 141 | 250 | 57 | 14-114 | 8 | 40 |
| 1,4-Dichlorobenzene | ND | 100 | 249 | 40 | 88.6 | 250 | 35 | 10-72 | 12 | 40 |
| 1,2,4-Trichlorobenzene | ND | 112 | 249 | 45 | 112 | 250 | 45 | 10-80 | 0 | 40 |
| Acenaphthene | ND | 132 | 249 | 53 | 142 | 250 | 57 | 10-132 | 7 | 40 |
| Pentachlorophenol | ND | 179 | 249 | 72 | 192 | 250 | 77 | 10-145 | 7 | 40 |
| Pyrene | 7.0 | 131 | 249 | 50 | 158 | 250 | 60 | 10-136 | 19 | 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:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088
**Date Extracted:** 12/27/2006
**Date Analyzed:** 01/25/2007

## 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:** KWG0621706

| | Lab Control Sample KWG0621706-3 Lab Control Spike | | | Duplicate Lab Control Sample KWG0621706-4 Duplicate Lab Control Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Phenol | 169 | 250 | 68 | 158 | 250 | 63 | 35-102 | 6 | 40 |
| 1,3-Dichlorobenzene | 140 | 250 | 56 | 125 | 250 | 50 | 36-89 | 11 | 40 |
| 1,4-Dichlorobenzene | 140 | 250 | 56 | 131 | 250 | 53 | 37-87 | 7 | 40 |
| 1,2-Dichlorobenzene | 142 | 250 | 57 | 130 | 250 | 52 | 39-91 | 9 | 40 |
| Benzyl Alcohol | 189 | 250 | 76 | 177 | 250 | 71 | 35-88 | 6 | 40 |
| 2-Methylphenol | 161 | 250 | 65 | 155 | 250 | 62 | 30-91 | 4 | 40 |
| Hexachloroethane | 153 | 250 | 61 | 136 | 250 | 54 | 37-90 | 12 | 40 |
| 4-Methylphenol | 159 | 250 | 64 | 152 | 250 | 61 | 28-94 | 4 | 40 |
| 2,4-Dimethylphenol | 73.7 | 250 | 29 | 87.3 | 250 | 35 | 10-63 | 17 | 40 |
| Benzoic Acid | 336 | 750 | 45 | 288 | 750 | 38 | 10-88 | 15 | 40 |
| 1,2,4-Trichlorobenzene | 143 | 250 | 57 | 130 | 250 | 52 | 40-91 | 10 | 40 |
| Naphthalene | 157 | 250 | 63 | 146 | 250 | 58 | 41-90 | 7 | 40 |
| Hexachlorobutadiene | 135 | 250 | 54 | 124 | 250 | 50 | 37-92 | 9 | 40 |
| 2-Methylnaphthalene | 163 | 250 | 65 | 148 | 250 | 59 | 41-87 | 9 | 40 |
| Acenaphthylene | 177 | 250 | 71 | 170 | 250 | 68 | 49-100 | 4 | 40 |
| Dimethyl Phthalate | 196 | 250 | 78 | 188 | 250 | 75 | 48-99 | 4 | 40 |
| Acenaphthene | 173 | 250 | 69 | 169 | 250 | 68 | 44-92 | 2 | 40 |
| Dibenzofuran | 173 | 250 | 69 | 170 | 250 | 68 | 44-91 | 1 | 40 |
| Fluorene | 172 | 250 | 69 | 166 | 250 | 66 | 46-97 | 4 | 40 |
| Diethyl Phthalate | 202 | 250 | 81 | 200 | 250 | 80 | 48-107 | 1 | 40 |
| N-Nitrosodiphenylamine | 179 | 250 | 72 | 180 | 250 | 72 | 47-108 | 0 | 40 |
| Hexachlorobenzene | 171 | 250 | 68 | 159 | 250 | 64 | 46-103 | 7 | 40 |
| Pentachlorophenol | 198 | 250 | 79 | 195 | 250 | 78 | 22-100 | 1 | 40 |
| Phenanthrene | 191 | 250 | 76 | 183 | 250 | 73 | 50-96 | 4 | 40 |
| Anthracene | 188 | 250 | 75 | 179 | 250 | 72 | 51-97 | 5 | 40 |
| Di-n-butyl Phthalate | 209 | 250 | 84 | 208 | 250 | 83 | 51-111 | 1 | 40 |
| Fluoranthene | 185 | 250 | 74 | 182 | 250 | 73 | 53-108 | 2 | 40 |
| Pyrene | 265 | 250 | 106 | 271 | 250 | 108 | 50-108 | 2 | 40 |
| Butyl Benzyl Phthalate | 254 | 250 | 102 | 266 | 250 | 107 | 48-119 | 5 | 40 |
| Benz(a)anthracene | 195 | 250 | 78 | 198 | 250 | 79 | 58-106 | 2 | 40 |
| Chrysene | 199 | 250 | 80 | 204 | 250 | 81 | 57-111 | 2 | 40 |
| Bis(2-ethylhexyl) Phthalate | 252 | 250 | 101 | 258 | 250 | 103 | 47-124 | 2 | 40 |
| Di-n-octyl Phthalate | 253 | 250 | 101 | 291 | 250 | 117 | 41-123 | 14 | 40 |
| Benzo(b)fluoranthene | 214 | 250 | 86 | 223 | 250 | 89 | 56-104 | 4 | 40 |
| Benzo(k)fluoranthene | 200 | 250 | 80 | 207 | 250 | 83 | 58-106 | 4 | 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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/27/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/25/2007 |

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

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 3541 | **Units:** | ug/Kg |
| **Analysis Method:** | 8270C | **Basis:** | Dry |
| | | **Level:** | Low |
| | | **Extraction Lot:** | KWG0621706 |

| | Lab Control Sample KWG0621706-3 Lab Control Spike | | | Duplicate Lab Control Sample KWG0621706-4 Duplicate Lab Control Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Benzo(a)pyrene | 207 | 250 | 83 | 216 | 250 | 86 | 56-107 | 4 | 40 |
| Indeno(1,2,3-cd)pyrene | 214 | 250 | 86 | 221 | 250 | 88 | 55-107 | 3 | 40 |
| Dibenz(a,h)anthracene | 214 | 250 | 86 | 222 | 250 | 89 | 55-107 | 4 | 40 |
| Benzo(g,h,i)perylene | 210 | 250 | 84 | 215 | 250 | 86 | 27-121 | 3 | 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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088
**Date Extracted:** 02/02/2007
**Date Analyzed:** 02/09/2007

## 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:** KWG0701685

| | Lab Control Sample KWG0701685-3 Lab Control Spike | | | Duplicate Lab Control Sample KWG0701685-4 Duplicate Lab Control Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Phenol | 133 | 250 | 53 | 120 | 250 | 48 | 35-102 | 10 | 40 |
| 1,3-Dichlorobenzene | 125 | 250 | 50 | 112 | 250 | 45 | 36-89 | 11 | 40 |
| 1,4-Dichlorobenzene | 126 | 250 | 50 | 111 | 250 | 44 | 37-87 | 12 | 40 |
| 1,2-Dichlorobenzene | 127 | 250 | 51 | 113 | 250 | 45 | 39-91 | 12 | 40 |
| Benzyl Alcohol | 144 | 250 | 58 | 134 | 250 | 54 | 35-88 | 8 | 40 |
| 2-Methylphenol | 128 | 250 | 51 | 124 | 250 | 50 | 30-91 | 3 | 40 |
| Hexachloroethane | 133 | 250 | 53 | 114 | 250 | 46 | 37-90 | 15 | 40 |
| 4-Methylphenol | 133 | 250 | 53 | 122 | 250 | 49 | 28-94 | 9 | 40 |
| 2,4-Dimethylphenol | 113 | 250 | 45 | 117 | 250 | 47 | 10-63 | 4 | 40 |
| Benzoic Acid | 72.5 | 750 | 10 | 65.7 | 750 | 9 * | 10-88 | 10 | 40 |
| 1,2,4-Trichlorobenzene | 123 | 250 | 49 | 118 | 250 | 47 | 40-91 | 3 | 40 |
| Naphthalene | 125 | 250 | 50 | 123 | 250 | 49 | 41-90 | 2 | 40 |
| Hexachlorobutadiene | 125 | 250 | 50 | 117 | 250 | 47 | 37-92 | 6 | 40 |
| 2-Methylnaphthalene | 124 | 250 | 50 | 124 | 250 | 50 | 41-87 | 0 | 40 |
| Acenaphthylene | 134 | 250 | 54 | 133 | 250 | 53 | 49-100 | 1 | 40 |
| Dimethyl Phthalate | 138 | 250 | 55 | 135 | 250 | 54 | 48-99 | 3 | 40 |
| Acenaphthene | 127 | 250 | 51 | 125 | 250 | 50 | 44-92 | 2 | 40 |
| Dibenzofuran | 126 | 250 | 51 | 123 | 250 | 49 | 44-91 | 2 | 40 |
| Fluorene | 127 | 250 | 51 | 119 | 250 | 48 | 46-97 | 7 | 40 |
| Diethyl Phthalate | 142 | 250 | 57 | 144 | 250 | 57 | 48-107 | 1 | 40 |
| N-Nitrosodiphenylamine | 134 | 250 | 53 | 128 | 250 | 51 | 47-108 | 4 | 40 |
| Hexachlorobenzene | 132 | 250 | 53 | 131 | 250 | 52 | 46-103 | 1 | 40 |
| Pentachlorophenol | 133 | 250 | 53 | 150 | 250 | 60 | 22-100 | 12 | 40 |
| Phenanthrene | 125 | 250 | 50 | 128 | 250 | 51 | 50-96 | 2 | 40 |
| Anthracene | 129 | 250 | 52 | 128 | 250 | 51 | 51-97 | 1 | 40 |
| Di-n-butyl Phthalate | 142 | 250 | 57 | 153 | 250 | 61 | 51-111 | 8 | 40 |
| Fluoranthene | 136 | 250 | 54 | 145 | 250 | 58 | 53-108 | 6 | 40 |
| Pyrene | 140 | 250 | 56 | 158 | 250 | 63 | 50-108 | 12 | 40 |
| Butyl Benzyl Phthalate | 147 | 250 | 59 | 164 | 250 | 65 | 48-119 | 11 | 40 |
| Benz(a)anthracene | 140 | 250 | 56 * | 153 | 250 | 61 | 58-106 | 9 | 40 |
| Chrysene | 139 | 250 | 56 * | 153 | 250 | 61 | 57-111 | 10 | 40 |
| Bis(2-ethylhexyl) Phthalate | 155 | 250 | 62 | 167 | 250 | 67 | 47-124 | 7 | 40 |
| Di-n-octyl Phthalate | 154 | 250 | 61 | 164 | 250 | 65 | 41-123 | 6 | 40 |
| Benzo(b)fluoranthene | 145 | 250 | 58 | 149 | 250 | 59 | 56-104 | 3 | 40 |
| Benzo(k)fluoranthene | 141 | 250 | 56 * | 148 | 250 | 59 | 58-106 | 5 | 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.

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 02/02/2007 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 02/09/2007 |

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

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 3541 | **Units:** | ug/Kg |
| **Analysis Method:** | 8270C | **Basis:** | Dry |
| | | **Level:** | Low |
| | | **Extraction Lot:** | KWG0701685 |

| | Lab Control Sample KWG0701685-3 Lab Control Spike | | | Duplicate Lab Control Sample KWG0701685-4 Duplicate Lab Control Spike | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Expected** | **%Rec** | **Result** | **Expected** | **%Rec** | **%Rec Limits** | **RPD** | **RPD Limit** |
| Benzo(a)pyrene | 147 | 250 | 59 | 150 | 250 | 60 | 56-107 | 2 | 40 |
| Indeno(1,2,3-cd)pyrene | 135 | 250 | 54 * | 140 | 250 | 56 | 55-107 | 3 | 40 |
| Dibenz(a,h)anthracene | 137 | 250 | 55 | 140 | 250 | 56 | 55-107 | 2 | 40 |
| Benzo(g,h,i)perylene | 140 | 250 | 56 | 143 | 250 | 57 | 27-121 | 3 | 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.

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 12/27/2006 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 01/25/2007 |
| | | **Time Analyzed:** | 07:20 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\MS06\DATA\012507\0125F004.D |
| **Lab Code:** | KWG0621706-5 | **Instrument ID:** | MS06 |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | **Extraction Lot:** | KWG0621706 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Lab Control Sample | KWG0621706-3 | J:\MS06\DATA\012507\0125F005.D | 01/25/07 | 07:58 |
| Duplicate Lab Control Sample | KWG0621706-4 | J:\MS06\DATA\012507\0125F006.D | 01/25/07 | 08:36 |
| B1-106MS | KWG0621706-6 | J:\MS06\DATA\012507\0125F009.D | 01/25/07 | 10:29 |
| B1-106DMS | KWG0621706-7 | J:\MS06\DATA\013107\0131F005.D | 01/31/07 | 10:13 |
| B1-106 | K0611088-003 | J:\MS06\DATA\013107\0131F006.D | 01/31/07 | 10:50 |
| B1-72 | K0611088-004 | J:\MS06\DATA\013107\0131F015.D | 01/31/07 | 16:28 |

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | Kleinfelder | **Service Request:** | K0611088 |
| **Project:** | Condit/5388614 | **Date Extracted:** | 02/02/2007 |
| **Sample Matrix:** | Sediment | **Date Analyzed:** | 02/09/2007 |
| | | **Time Analyzed:** | 11:25 |

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

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **File ID:** | J:\MS06\DATA\020907\0209F002.D |
| **Lab Code:** | KWG0701685-5 | **Instrument ID:** | MS06 |
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | **Extraction Lot:** | KWG0701685 |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Lab Control Sample | KWG0701685-3 | J:\MS06\DATA\020907\0209F003.D | 02/09/07 | 12:02 |
| Duplicate Lab Control Sample | KWG0701685-4 | J:\MS06\DATA\020907\0209F004.D | 02/09/07 | 12:39 |
| B1-85MS | KWG0701685-1 | J:\MS06\DATA\020907\0209F010.D | 02/09/07 | 16:23 |
| B1-85DMS | KWG0701685-2 | J:\MS06\DATA\020907\0209F011.D | 02/09/07 | 17:00 |
| Dup-3 | K0611088-001 | J:\MS06\DATA\020907\0209F012.D | 02/09/07 | 17:37 |
| B1-85 | K0611088-002 | J:\MS06\DATA\020907\0209F013.D | 02/09/07 | 18:14 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088

## 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:** | KWG0621706-3 | **Lab Code:** | KWG0621706-4 |
| **File ID:** | J:\MS06\DATA\012507\0125F005.D | **File ID:** | J:\MS06\DATA\012507\0125F006.D |
| **Instrument ID:** | MS06 | **Instrument ID:** | MS06 |
| **Date Extracted:** | 12/27/2006 | **Date Extracted:** | 12/27/2006 |
| **Date Analyzed:** | 01/25/2007 | **Date Analyzed:** | 01/25/2007 |
| **Time Analyzed:** | 07:58 | **Time Analyzed:** | 08:36 |

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | **Extraction Lot:** | KWG0621706 |

These Lab Control Samples apply to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | KWG0621706-5 | J:\MS06\DATA\012507\0125F004.D | 01/25/07 | 07:20 |
| B1-106MS | KWG0621706-6 | J:\MS06\DATA\012507\0125F009.D | 01/25/07 | 10:29 |
| B1-106DMS | KWG0621706-7 | J:\MS06\DATA\013107\0131F005.D | 01/31/07 | 10:13 |
| B1-106 | K0611088-003 | J:\MS06\DATA\013107\0131F006.D | 01/31/07 | 10:50 |
| B1-72 | K0611088-004 | J:\MS06\DATA\013107\0131F015.D | 01/31/07 | 16:28 |

# COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Kleinfelder
**Project:** Condit/5388614
**Sample Matrix:** Sediment

**Service Request:** K0611088

## 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:** | KWG0701685-3 | **Lab Code:** | KWG0701685-4 |
| **File ID:** | J:\MS06\DATA\020907\0209F003.D | **File ID:** | J:\MS06\DATA\020907\0209F004.D |
| **Instrument ID:** | MS06 | **Instrument ID:** | MS06 |
| **Date Extracted:** | 02/02/2007 | **Date Extracted:** | 02/02/2007 |
| **Date Analyzed:** | 02/09/2007 | **Date Analyzed:** | 02/09/2007 |
| **Time Analyzed:** | 12:02 | **Time Analyzed:** | 12:39 |

| | | | |
|---|---|---|---|
| **Extraction Method:** | EPA 3541 | **Level:** | Low |
| **Analysis Method:** | 8270C | **Extraction Lot:** | KWG0701685 |

These Lab Control Samples apply to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed | Time Analyzed |
|---|---|---|---|---|
| Method Blank | KWG0701685-5 | J:\MS06\DATA\020907\0209F002.D | 02/09/07 | 11:25 |
| B1-85MS | KWG0701685-1 | J:\MS06\DATA\020907\0209F010.D | 02/09/07 | 16:23 |
| B1-85DMS | KWG0701685-2 | J:\MS06\DATA\020907\0209F011.D | 02/09/07 | 17:00 |
| Dup-3 | K0611088-001 | J:\MS06\DATA\020907\0209F012.D | 02/09/07 | 17:37 |
| B1-85 | K0611088-002 | J:\MS06\DATA\020907\0209F013.D | 02/09/07 | 18:14 |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\left(\frac{\text{Project - QC duplicate}}{\frac{\text{Project + QC duplicate}}{2}}\right)$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| Total Solids | project | B-3-27 | 58.0 | |
| | QC | DUPE-1 | 56.9 | |
| | RPD | | 1.9 | percent |
| Total Volatile Solids | project | B-3-27 | 7.17 | |
| | QC | DUPE-1 | 8.15 | |
| | RPD | | 12.8 | percent |
| Total Organic Carbon | project | B-3-27 | 2.34 | |
| | QC | DUPE-1 | 2.59 | |
| | RPD | | 10.1 | percent |
| Ammonia | project | B-3-27 | 220 | |
| | QC | DUPE-1 | 236 | |
| | RPD | | 7.0 | percent |
| Sulfide | project | B-3-27 | 134 | |
| | QC | DUPE-1 | 68.8 | |
| | RPD | | 64.3 | percent |
| 4,4'-DDE | project | B-3-27 | 0.0035 | |
| | QC | DUPE-1 | 0.0100 | |
| | RPD | | 96.3 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\frac{\text{Project - QC duplicate}}{\left(\frac{\text{Project + QC duplicate}}{2}\right)}$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| 4,4'-DDD | project | B-3-27 | 0.0090 | |
| | QC | DUPE-1 | 0.0190 | |
| | RPD | | 71.4 | percent |
| 4,4'-DDT | project | B-3-27 | 0.0014 | |
| | QC | DUPE-1 | 0.0023 | |
| | RPD | | 48.6 | percent |
| arsenic | project | B-3-27 | 1.68 | |
| | QC | DUPE-1 | 1.72 | |
| | RPD | | 2.4 | percent |
| cadmium | project | B-3-27 | 0.112 | |
| | QC | DUPE-1 | 0.149 | |
| | RPD | | 28.4 | percent |
| chromium | project | B-3-27 | 7.80 | |
| | QC | DUPE-1 | 10.30 | |
| | RPD | | 27.6 | percent |
| copper | project | B-3-27 | 18.0 | |
| | QC | DUPE-1 | 17.0 | |
| | RPD | | 5.7 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\frac{\text{Project - QC duplicate}}{\left(\frac{\text{Project + QC duplicate}}{2}\right)}$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| lead | project | B-3-27 | 7.05 | |
| | QC | DUPE-1 | 8.56 | |
| | RPD | | 19.3 | percent |
| mercury | project | B-3-27 | 1.280 | |
| | QC | DUPE-1 | 0.915 | |
| | RPD | | 33.3 | percent |
| nickel | project | B-3-27 | 9.50 | |
| | QC | DUPE-1 | 9.75 | |
| | RPD | | 2.6 | percent |
| silver | project | B-3-27 | 0.099 | |
| | QC | DUPE-1 | 0.113 | |
| | RPD | | 13.2 | percent |
| zinc | project | B-3-27 | 26.1 | |
| | QC | DUPE-1 | 53.0 | |
| | RPD | | 68.0 | percent |
| naphthalene | project | B-3-27 | 0.004 | |
| | QC | DUPE-1 | 0.003 | |
| | RPD | | 28.6 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\left(\frac{\text{Project - QC duplicate}}{\frac{\text{Project + QC duplicate}}{2}}\right)$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| pyrene | project | B-3-27 | 0.0035 | |
| | QC | DUPE-1 | 0.0039 | |
| | RPD | | 10.8 | percent |
| di-n-butyl phthalate | project | B-3-27 | 0.0061 | |
| | QC | DUPE-1 | 0.0049 | |
| | RPD | | 21.8 | percent |
| bis(2-ethylhexyl) phthalate | project | B-3-27 | 0.015 | |
| | QC | DUPE-1 | 0.021 | |
| | RPD | | 33.3 | percent |
| phenol | project | B-3-27 | 0.016 | |
| | QC | DUPE-1 | 0.037 | |
| | RPD | | 79.2 | percent |
| 4-methylphenol | project | B-3-27 | 0.022 | |
| | QC | DUPE-1 | 0.069 | |
| | RPD | | 103.3 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\frac{\text{Project - QC duplicate}}{\left(\frac{\text{Project + QC duplicate}}{2}\right)}$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| Total Solids | project | B-2-30 | 54.7 | |
| | QC | DUPE-2 | 55.0 | |
| | RPD | | 0.5 | percent |
| Total Volatile Solids | project | B-2-30 | 7.04 | |
| | QC | DUPE-2 | 7.23 | |
| | RPD | | 2.7 | percent |
| Total Organic Carbon | project | B-2-30 | 2.06 | |
| | QC | DUPE-2 | 2.14 | |
| | RPD | | 3.8 | percent |
| Ammonia | project | B-2-30 | 154 | |
| | QC | DUPE-2 | 188 | |
| | RPD | | 19.9 | percent |
| Sulfide | project | B-2-30 | 148 | |
| | QC | DUPE-2 | 92.3 | |
| | RPD | | 46.4 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\frac{\text{Project - QC duplicate}}{\left(\frac{\text{Project + QC duplicate}}{2}\right)}$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| 4,4'-DDE | project | B-2-30 | 0.011 | |
| | QC | DUPE-2 | 0.011 | |
| | RPD | | 0.0 | percent |
| 4,4'-DDD | project | B-2-30 | 0.0039 | |
| | QC | DUPE-2 | 0.0038 | |
| | RPD | | 2.6 | percent |
| 4,4'-DDT | project | B-2-30 | 0.0025 | |
| | QC | DUPE-2 | 0.0021 | |
| | RPD | | 17.4 | percent |
| arsenic | project | B-2-30 | 1.33 | |
| | QC | DUPE-2 | 1.25 | |
| | RPD | | 6.2 | percent |
| cadmium | project | B-2-30 | 0.133 | |
| | QC | DUPE-2 | 0.132 | |
| | RPD | | 0.8 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\frac{\text{Project - QC duplicate}}{\left(\frac{\text{Project + QC duplicate}}{2}\right)}$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| chromium | project | B-2-30 | 9.85 | |
| | QC | DUPE-2 | 10.00 | |
| | RPD | | 1.5 | percent |
| copper | project | B-2-30 | 18.1 | |
| | QC | DUPE-2 | 16.8 | |
| | RPD | | 7.4 | percent |
| lead | project | B-2-30 | 4.84 | |
| | QC | DUPE-2 | 5.38 | |
| | RPD | | 10.6 | percent |
| mercury | project | B-2-30 | 1.320 | |
| | QC | DUPE-2 | 1.110 | |
| | RPD | | 17.3 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\frac{\text{Project - QC duplicate}}{\left(\frac{\text{Project + QC duplicate}}{2}\right)}$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| nickel | project | B-2-30 | 12.60 | |
| | QC | DUPE-2 | 11.80 | |
| | RPD | | 6.6 | percent |
| silver | project | B-2-30 | 0.106 | |
| | QC | DUPE-2 | 0.116 | |
| | RPD | | 9.0 | percent |
| zinc | project | B-2-30 | 77.4 | |
| | QC | DUPE-2 | 35.3 | |
| | RPD | | 74.7 | percent |
| bis(2-ethylhexyl) phthalate | project | B-2-30 | 0.035 | |
| | QC | DUPE-2 | 0.021 | |
| | RPD | | 50.0 | percent |
| benzoic acid | project | B-2-30 | 0.230 | |
| | QC | DUPE-2 | 0.200 | |
| | RPD | | 14.0 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\frac{\text{Project - QC duplicate}}{\left(\frac{\text{Project + QC duplicate}}{2}\right)}$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| Total Solids | project | B-1-85 | 59.0 | |
| | QC | Dup-3 | 56.2 | |
| | RPD | | 4.9 | percent |
| Total Volatile Solids | project | B-1-85 | 9.34 | |
| | QC | Dup-3 | 6.32 | |
| | RPD | | 38.6 | percent |
| Total Organic Carbon | project | B-1-85 | 2.57 | |
| | QC | Dup-3 | 2.82 | |
| | RPD | | 9.3 | percent |
| Ammonia | project | B-1-85 | 244 | |
| | QC | Dup-3 | 181 | |
| | RPD | | 29.6 | percent |
| Sulfide | project | B-1-85 | 22.5 | |
| | QC | Dup-3 | 95.8 | |
| | RPD | | 123.9 | percent |
| 4,4'-DDE | project | B-1-85 | 0.0065 | |
| | QC | Dup-3 | 0.0055 | |
| | RPD | | 16.7 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\left(\frac{\text{Project - QC duplicate}}{\frac{\text{Project + QC duplicate}}{2}}\right)$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| 4,4'-DDD | project | B-1-85 | 0.0028 | |
| | QC | Dup-3 | 0.0022 | |
| | RPD | | 24.0 | percent |
| 4,4'-DDT | project | B-1-85 | 0.0020 | |
| | QC | Dup-3 | 0.0020 | |
| | RPD | | 0.0 | percent |
| enic | project | B-1-85 | 1.05 | |
| | QC | Dup-3 | 1.16 | |
| | RPD | | 10.0 | percent |
| cadmium | project | B-1-85 | 0.169 | |
| | QC | Dup-3 | 0.114 | |
| | RPD | | 38.9 | percent |
| chromium | project | B-1-85 | 10.40 | |
| | QC | Dup-3 | 8.78 | |
| | RPD | | 16.9 | percent |
| copper | project | B-1-85 | 13.7 | |
| | QC | Dup-3 | 16.3 | |
| | RPD | | 17.3 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\frac{\text{Project - QC duplicate}}{\left(\frac{\text{Project + QC duplicate}}{2}\right)}$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| lead | project | B-1-85 | 6.42 | |
| | QC | Dup-3 | 4.17 | |
| | RPD | | 42.5 | percent |
| mercury | project | B-1-85 | 0.715 | |
| | QC | Dup-3 | 1.240 | |
| | RPD | | 53.7 | percent |
| nickel | project | B-1-85 | 8.59 | |
| | QC | Dup-3 | 10.20 | |
| | RPD | | 17.1 | percent |
| silver | project | B-1-85 | 0.134 | |
| | QC | Dup-3 | 0.106 | |
| | RPD | | 23.3 | percent |
| zinc | project | B-1-85 | 37.3 | |
| | QC | Dup-3 | 158.0 | |
| | RPD | | 123.6 | percent |
| naphthalene | project | B-1-85 | 0.0028 | |
| | QC | Dup-3 | 0.0026 | |
| | RPD | | 7.4 | percent |

**Condit Hydroelectric Project**
**Northwestern Lake Sediment Evaluation**

Relative Percent Difference (RPD)= $\frac{\text{Project - QC duplicate}}{\left(\frac{\text{Project + QC duplicate}}{2}\right)}$ X 100

| | | Sample | Value | |
|---|---|---|---|---|
| phenanthrene | project | B-1-85 | 0.0087 | |
| | QC | Dup-3 | 0.0029 | |
| | RPD | | 100.0 | percent |
| 2-methylnaphthalene | project | B-1-85 | 0.0021 | |
| | QC | Dup-3 | 0.0025 | |
| | RPD | | 17.4 | percent |
| di-n-butyl phthalate | project | B-1-85 | 0.0071 | |
| | QC | Dup-3 | 0.0076 | |
| | RPD | | 6.8 | percent |

# Appendix E
# Physical Parameter Laboratory Results

# PLASTICITY INDEX

PROJECT NAME : North Western Lake Sediments

SAMPLE ID. : B-1-106

TECHNICIAN : Andrew Weiher

MATERIAL DESCRIPTION : Clayey Silt w/some fine sand

SOURCE/LOCATION :

PROJECT NUMBER : 53886 / 4

DEPTH : 106'

DATE : 1/8/2007

**GROUP SYMBOL :** ML

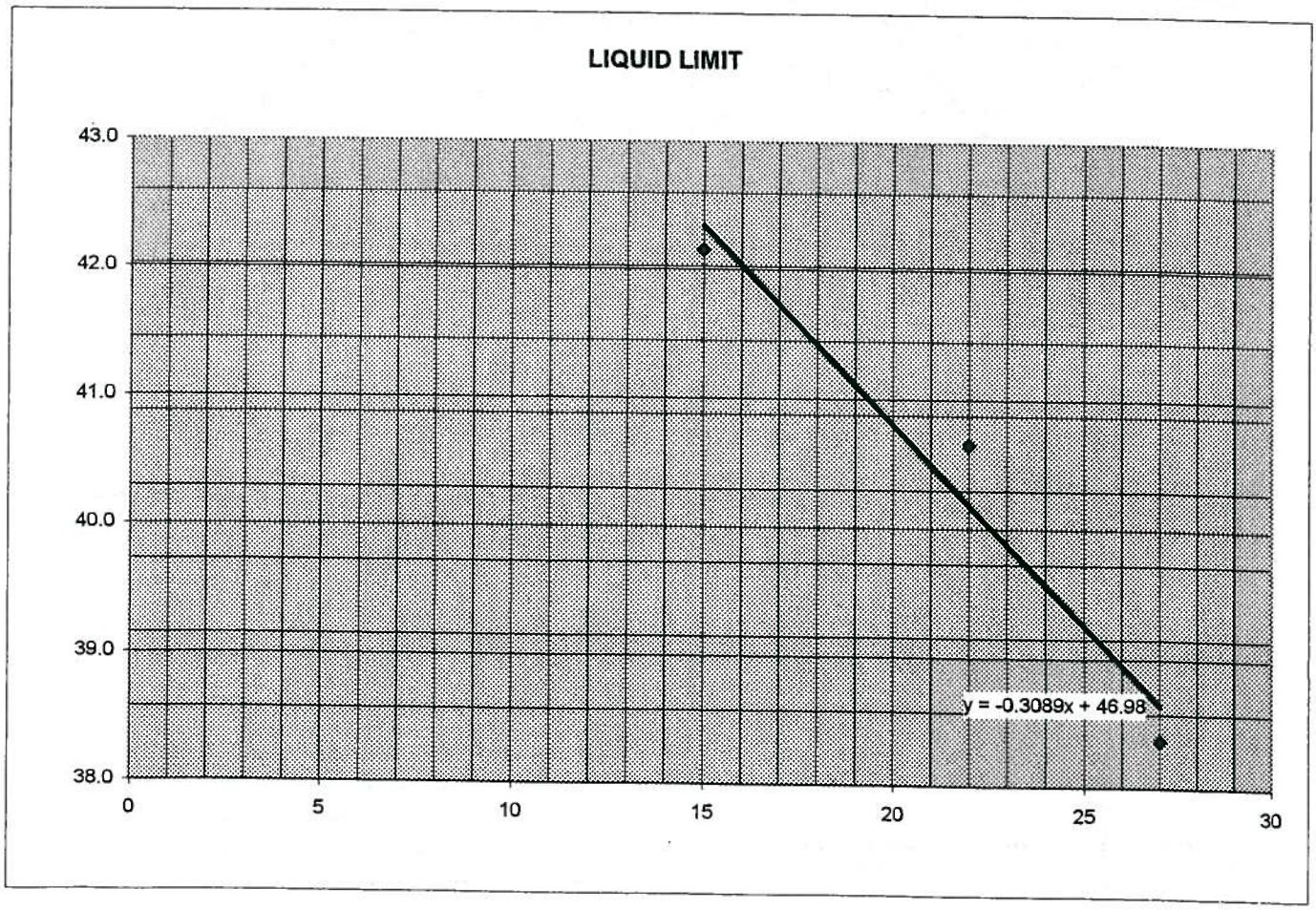
| TYPE OF TEST | LL | LL | LL |
|---|---|---|---|
| TARE NO. | 2 | 23 | 10 |
| NO. OF BLOWS | 27 | 22 | 15 |
| WT. SAMPLE WET + TARE | 44.29 | 46.51 | 46.74 |
| WT. SAMPLE DRY + TARE | 39.82 | 41.25 | 41.18 |
| WT. OF TARE | 28.17 | 28.31 | 27.99 |
| WATER CONTENT (%) | 38.4 | 40.6 | 42.2 |

| PL | PL |
|---|---|
| S | S |
| | |
| 32.81 | 32.81 |
| 31.51 | 31.51 |
| 28.15 | 28.15 |
| 38.7 | 38.7 |

slope -0.30888441

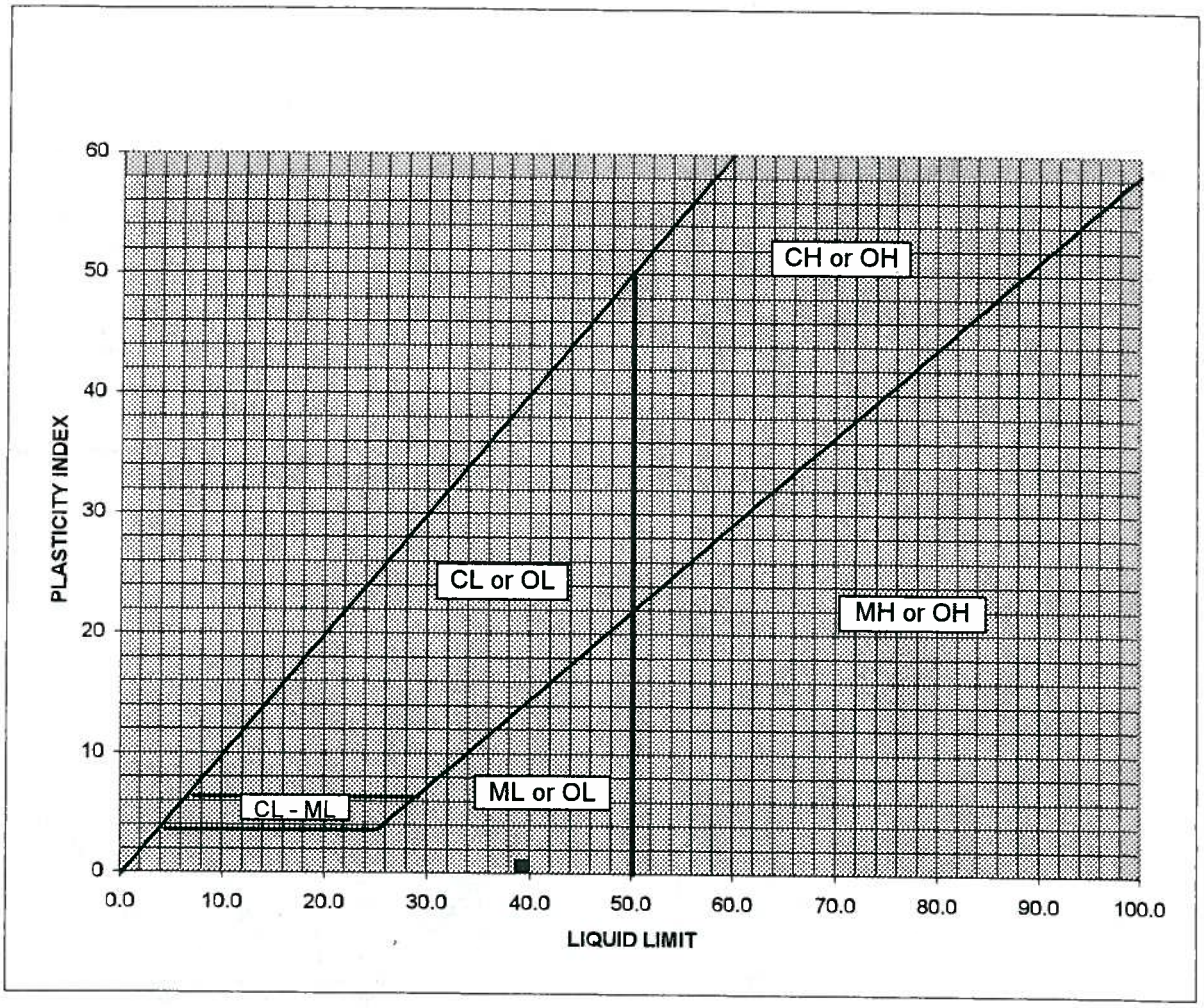
intercept 46.97999914

| | |
|---|---|
| LIQUID LIMIT | 39.3 |
| PLASTIC LIMIT | 38.7 |
| PLASTICITY INDEX | 1 |




Remarks :

# PLASTICITY INDEX of SOILS




| GROUP SYMBOL | UNIFIED SOIL CLASSIFICATION FINE GRAINED SOIL |
|---|---|
| OL | Organic silts and organic silty clays of low plasticity |
| ML | Inorganic clayey silts to very fine sands of slight plasticity |
| CL | Inorganic clays of low to medium plasticity |
| OH | Organic silts and clays of medium to high plasticity |
| MH | Inorganic silts, clayey silts, and sandy silts |
| CH | Inorganic clays of high plasticity |

PROJECT NAME : North Western Lake Sediments
PROJECT NUMBER : 53886 / 4
DATE: 1/8/2007
SAMPLE ID. : B-1-106
SAMPLE DEPTH : 106'
MATERIAL DESCRIPTION : Clayey Silt w/some fine sand
SOURCE/LOCATION: 0
UNIFIED SOIL CLASSIFICATION: **ML**

| ■ | Test Symbol On Chart |
|---|---|

| | |
|---|---|
| LIQUID LIMIT | 39 |
| PLASTIC LIMIT | 39 |
| PLASTICITY INDEX | 1 |

**Note :** Test performed in accordance with ASTM D 4318.

# PLASTICITY INDEX

PROJECT NAME : North Western Lake Sediments

SAMPLE ID. : B-2-30

TECHNICIAN : Andrew Weiher

MATERIAL DESCRIPTION : Clayey Silt w/some fine sand

SOURCE/LOCATION :

PROJECT NUMBER : 53886 / 4

DEPTH : 30'

DATE : 12/26/2006

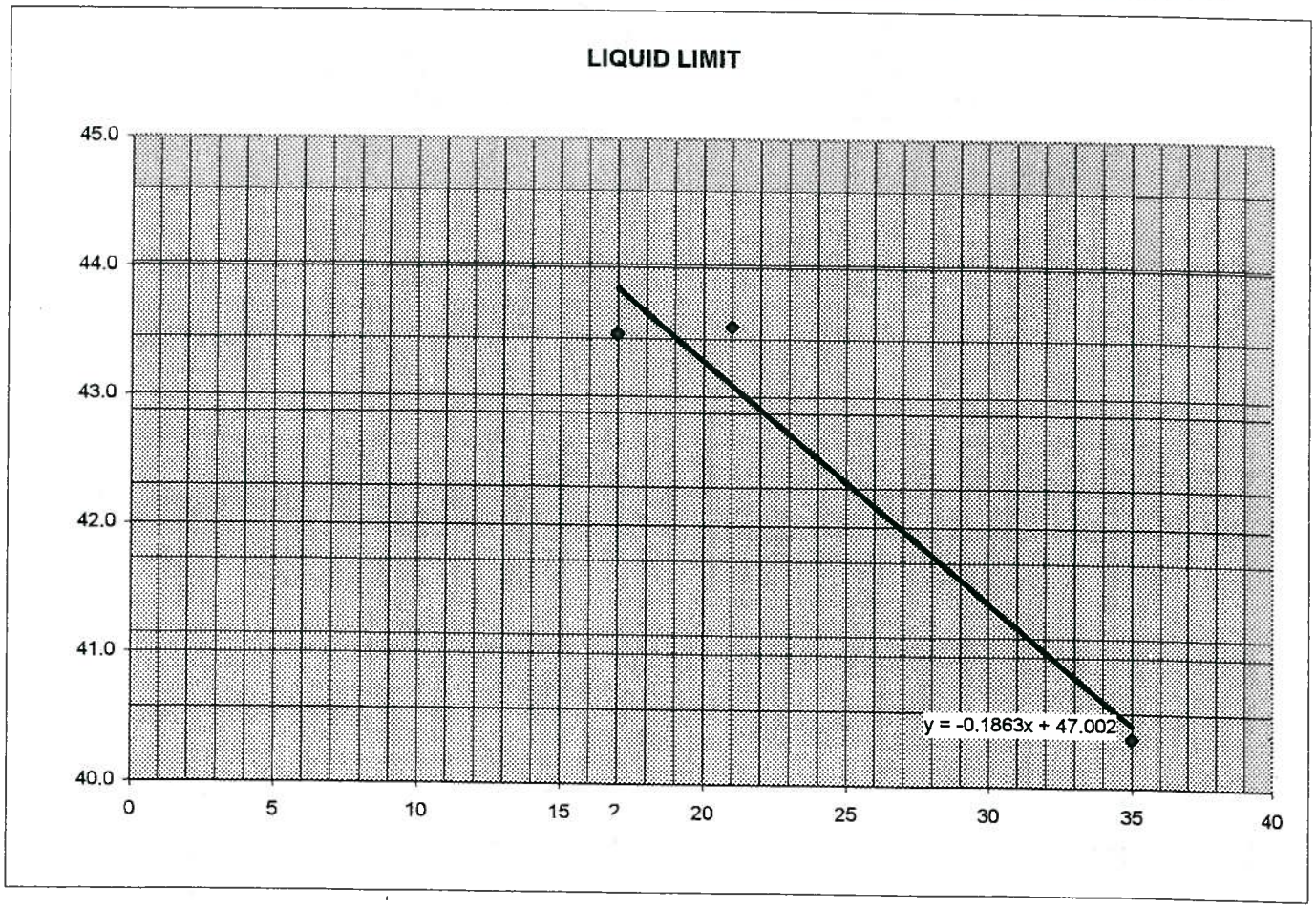
**GROUP SYMBOL :** ML

| TYPE OF TEST | LL | LL | LL |
|---|---|---|---|
| TARE NO. | 27 | T | Q |
| NO. OF BLOWS | 35 | 21 | 17 |
| WT. SAMPLE WET + TARE | 45.03 | 50.88 | 49.15 |
| WT. SAMPLE DRY + TARE | 40.16 | 43.97 | 42.81 |
| WT. OF TARE | 28.1 | 28.1 | 28.23 |
| WATER CONTENT (%) | 40.4 | 43.5 | 43.5 |

| PL | PL |
|---|---|
| DD | DD |
| | |
| 37.09 | 37.09 |
| 34.6 | 34.6 |
| 28.05 | 28.05 |
| 38.0 | 38.0 |

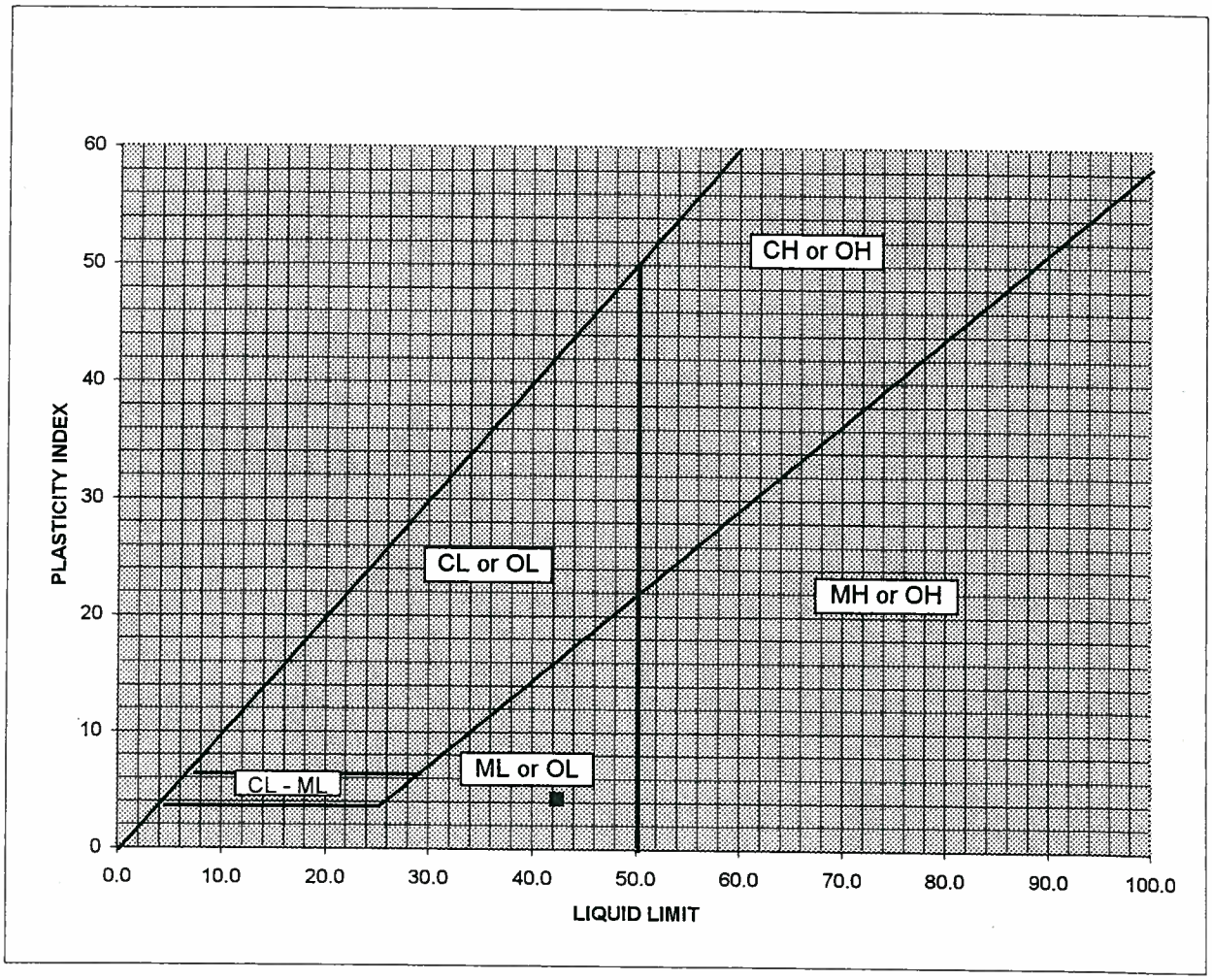
slope -0.18630604
intercept 47.00242172

| | |
|---|---|
| LIQUID LIMIT | 42.3 |
| PLASTIC LIMIT | 38.0 |
| PLASTICITY INDEX | 4 |




Remarks :

# PLASTICITY INDEX of SOILS




| GROUP SYMBOL | UNIFIED SOIL CLASSIFICATION FINE GRAINED SOIL |
|---|---|
| OL | Organic silts and organic silty clays of low plasticity |
| ML | Inorganic clayey silts to very fine sands of slight plasticity |
| CL | Inorganic clays of low to medium plasticity |
| OH | Organic silts and clays of medium to high plasticity |
| MH | Inorganic silts, clayey silts, and sandy silts |
| CH | Inorganic clays of high plasticity |

PROJECT NAME : North Western Lake Sediments
PROJECT NUMBER : 53886 / 4
DATE: 12/26/2006
SAMPLE ID. : B-2-30
SAMPLE DEPTH : 30'
MATERIAL DESCRIPTION : Clayey Silt w/some fine sand
SOURCE/LOCATION: 0
UNIFIED SOIL CLASSIFICATION: **ML**

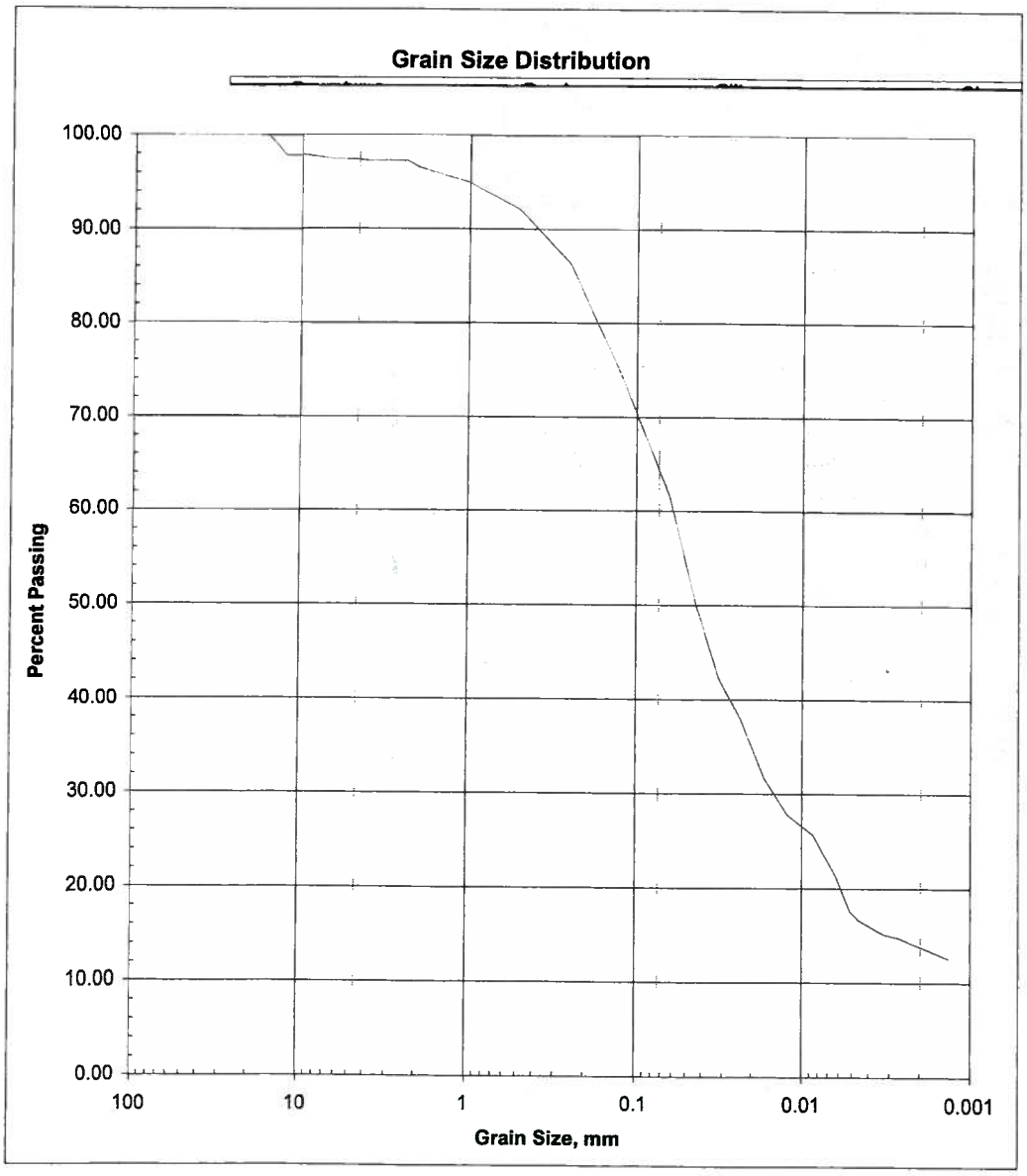
| | |
|---|---|
| ■ | Test Symbol On Chart |

| | |
|---|---|
| LIQUID LIMIT | 42 |
| PLASTIC LIMIT | 38 |
| PLASTICITY INDEX | 4 |

**Note :** Test performed in accordance with ASTM D 4318.

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | **North Western Lake Sediments** | | | Date | 1/12/2007 |
| Project Number | **53886/4** | | | Tested By | AW |
| Boring/Source | **B-3-35** | Depth (ft) | | Lab # | **1961** |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 65.04 |
| (B) Dry Weight After Wash (gm) | 18.4 |
| (C) Percent Passing #200 [(A-B)/A*100] | 71.7 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 98.9 |
| 1/2" | 12.5 | 1.4 | 2.15 | 97.85 | 97.8 |
| 3/8" | 9.5 | | 0.00 | 97.85 | 97.6 |
| 1/4" | 6.3 | 0.3 | 0.46 | 97.39 | 97.4 |
| 4 | 4.75 | | 0.00 | 97.39 | 97.3 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 0.1 | 0.2 | 97.2 | 97.2 | 97.2 |
| 8 | 2.36 | 0 | 0.0 | 97.2 | 97.2 | 96.9 |
| 10 | 2.00 | 0.46 | 0.7 | 96.5 | 96.5 | 96.5 |
| 18 | 1.00 | 1.04 | 1.6 | 94.9 | 94.9 | 94.9 |
| 35 | 0.500 | 1.82 | 2.8 | 92.1 | 92.1 | 92.1 |
| 60 | 0.250 | 3.71 | 5.7 | 86.4 | 86.4 | 86.4 |
| 120 | 0.125 | 7.54 | 11.6 | 74.8 | 74.8 | 74.8 |
| 230 | 0.063 | 8.59 | 13.2 | 61.6 | 61.6 | 61.6 |
| Pan | 0.3 | 40.06 | 61.6 | 0.0 | 0.0 | 0.0 |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks: (CL) Silty clay with some fine sand

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 4 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 64.98 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 21 | 36 | 32.7 | 49.9508258 | 36.5 | 10.4 | 0.0135 | 0.044 | 49.95083 |
| 2 | 21 | 31 | 27.7 | 42.3130849 | 31.5 | 11.2 | 0.0135 | 0.032 | 42.31308 |
| 4 | 21 | 28 | 24.7 | 37.7304403 | 28.5 | 11.7 | 0.0135 | 0.023 | 37.73044 |
| 8 | 21 | 24 | 20.7 | 31.6202475 | 24.5 | 12.4 | 0.0135 | 0.017 | 31.62025 |
| 15 | 23 | 21 | 18.2 | 27.8013771 | 21.5 | 12.9 | 0.0132 | 0.012 | 27.80138 |
| 30 | 25 | 19 | 16.8 | 25.6628096 | 19.5 | 13.2 | 0.0129 | 0.009 | 25.66281 |
| 60 | 25 | 16 | 13.8 | 21.080165 | 16.5 | 13.7 | 0.0129 | 0.006 | 21.08017 |
| 90 | 24 | 14 | 11.5 | 17.5668042 | 14.5 | 14 | 0.013 | 0.005 | 17.5668 |
| 120 | 22 | 14 | 10.9 | 16.6502753 | 14.5 | 14 | 0.0133 | 0.005 | 16.65028 |
| 240 | 22 | 13 | 9.9 | 15.1227271 | 13.5 | 14.2 | 0.0133 | 0.003 | 15.12273 |
| 360 | 21 | 13 | 9.7 | 14.8172174 | 13.5 | 14.2 | 0.0135 | 0.003 | 14.81722 |
| 1440 | 23 | 11 | 8.2 | 12.5258952 | 11.5 | 14.5 | 0.0132 | 0.001 | 12.5259 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

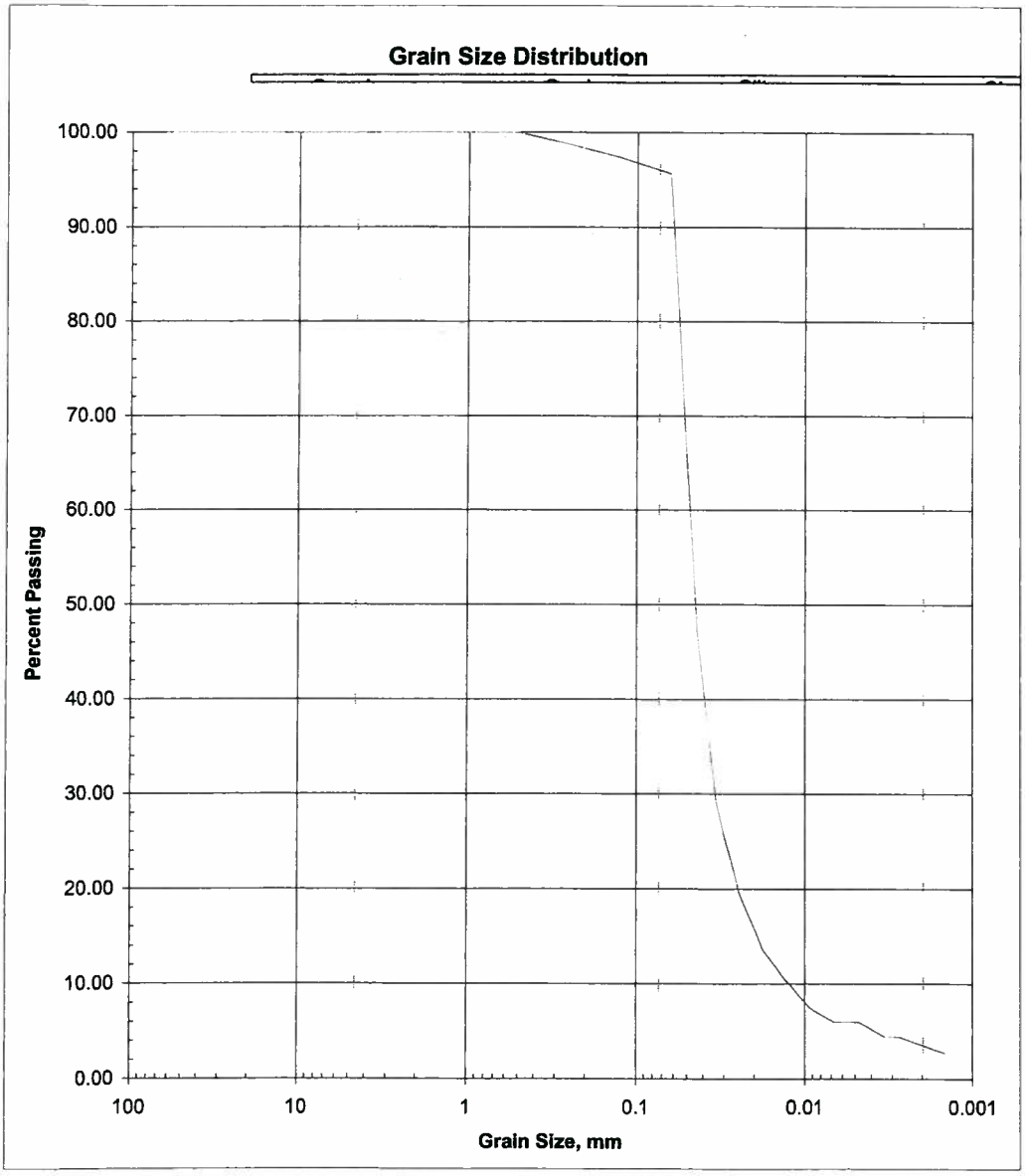
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 61.6 | 38.4 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | North Western Lake Sediments | | | Date | |
| Project Number | 53886/4 | | | Tested By | |
| Boring/Source | B-3-16 | Depth (ft) | | Lab # | 1961 |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 64.98 |
| (B) Dry Weight After Wash (gm) | 3.1 |
| (C) Percent Passing #200 [(A-B)/A*100] | 95.2 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 100.0 |
| 1/2" | 12.5 | | 0.00 | 100.00 | 100.0 |
| 3/8" | 9.5 | | 0.00 | 100.00 | 100.0 |
| 1/4" | 6.3 | | 0.00 | 100.00 | 100.0 |
| 4 | 4.75 | | 0.00 | 100.00 | 100.0 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 8 | 2.36 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 10 | 2.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 18 | 1.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 35 | 0.500 | 0 | 0.0 | 100.0 | 100.0 | 99.4 |
| 60 | 0.250 | 0.8 | 1.2 | 98.8 | 98.8 | 98.8 |
| 120 | 0.125 | 0.9 | 1.4 | 97.4 | 97.4 | 97.4 |
| 230 | 0.063 | 1.1 | 1.7 | 95.7 | 95.7 | 95.7 |
| Pan | | 0.3 | 0.5 | 95.2 | 95.2 | 95.2 |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 4 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 64.98 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 22 | 34 | 30.9 | 47.2012391 | 34.5 | 10.7 | 0.0133 | 0.044 | 47.20124 |
| 2 | 22 | 22 | 18.9 | 28.8706608 | 22.5 | 12.7 | 0.0133 | 0.034 | 28.87066 |
| 4 | 22 | 16 | 12.9 | 19.7053717 | 16.5 | 13.7 | 0.0133 | 0.025 | 19.70537 |
| 8 | 22 | 12 | 8.9 | 13.5951789 | 12.5 | 14.3 | 0.0133 | 0.018 | 13.59518 |
| 15 | 22 | 10 | 6.9 | 10.5400825 | 10.5 | 14.7 | 0.0133 | 0.013 | 10.54008 |
| 30 | 22 | 8 | 4.9 | 7.48498613 | 8.5 | 15 | 0.0133 | 0.009 | 7.484986 |
| 60 | 22 | 7 | 3.9 | 5.95743794 | 7.5 | 15.2 | 0.0133 | 0.007 | 5.957438 |
| 90 | 22 | 7 | 3.9 | 5.95743794 | 7.5 | 15.2 | 0.0133 | 0.005 | 5.957438 |
| 120 | 22 | 7 | 3.9 | 5.95743794 | 7.5 | 15.2 | 0.0133 | 0.005 | 5.957438 |
| 240 | 22 | 6 | 2.9 | 4.42988975 | 6.5 | 15.3 | 0.0133 | 0.003 | 4.42989 |
| 360 | 22 | 6 | 2.9 | 4.42988975 | 6.5 | 15.3 | 0.0133 | 0.003 | 4.42989 |
| 1440 | 21 | 5 | 1.7 | 2.59683192 | 5.5 | 15.5 | 0.0135 | 0.001 | 2.596832 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

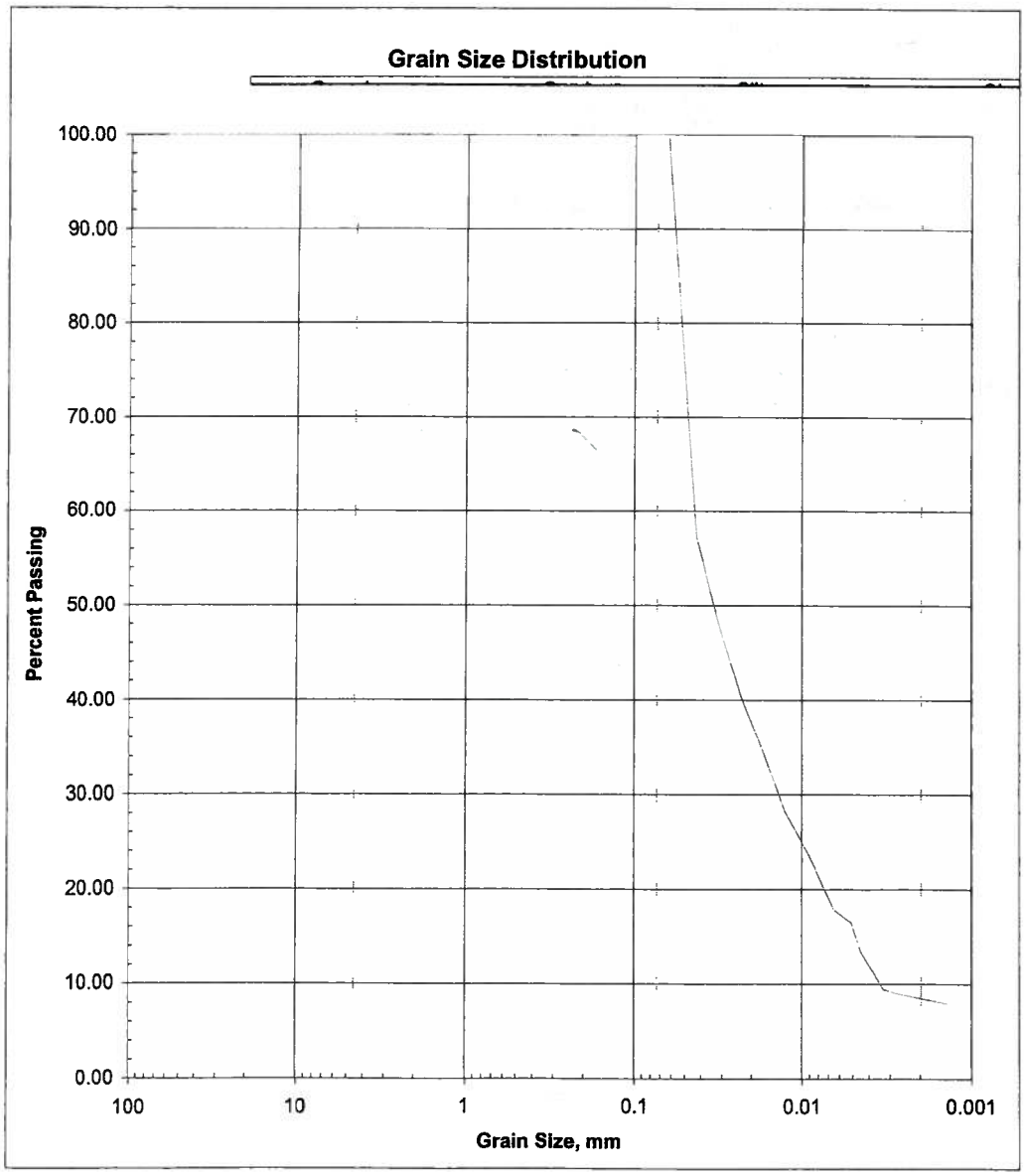
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 95.7 | 4.3 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | **North Western Lake Sediments** | | | Date | 1/12/2007 |
| Project Number | **53886/4** | | | Tested By | AW |
| Boring/Source | **B-1-72** | Depth (ft) | | Lab # | **1961** |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 65.02 |
| (B) Dry Weight After Wash (gm) | 4.1 |
| (C) Percent Passing #200 [(A-B)/A*100] | 93.7 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 100.0 |
| 1/2" | 12.5 | | 0.00 | 100.00 | 100.0 |
| 3/8" | 9.5 | | 0.00 | 100.00 | 100.0 |
| 1/4" | 6.3 | | 0.00 | 100.00 | 100.0 |
| 4 | 4.75 | | 0.00 | 100.00 | 100.0 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 8 | 2.36 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 10 | 2.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 18 | 1.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 35 | 0.500 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 60 | 0.250 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 120 | 0.125 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 230 | 0.063 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| Pan | | 0 | 0.0 | 100.0 | 100.0 | #REF! |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 4 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 65.02 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 41 | 37.5 | 57.2478169 | 41.5 | 9.6 | 0.0137 | 0.042 | 57.24782 |
| 2 | 20 | 35 | 31.5 | 48.0881662 | 35.5 | 10.5 | 0.0137 | 0.031 | 48.08817 |
| 4 | 20 | 30 | 26.5 | 40.4551239 | 30.5 | 11.4 | 0.0137 | 0.023 | 40.45512 |
| 8 | 20 | 26 | 22.5 | 34.3486901 | 26.5 | 12 | 0.0137 | 0.017 | 34.34869 |
| 15 | 20 | 22 | 18.5 | 28.2422563 | 22.5 | 12.7 | 0.0137 | 0.013 | 28.24226 |
| 30 | 20 | 19 | 15.5 | 23.662431 | 19.5 | 13.2 | 0.0137 | 0.009 | 23.66243 |
| 60 | 21 | 15 | 11.7 | 17.8613189 | 15.5 | 13.8 | 0.0135 | 0.006 | 17.86132 |
| 90 | 25 | 13 | 10.8 | 16.4873713 | 13.5 | 14.2 | 0.0129 | 0.005 | 16.48737 |
| 120 | 25 | 11 | 8.8 | 13.4341544 | 11.5 | 14.5 | 0.0129 | 0.004 | 13.43415 |
| 240 | 23 | 9 | 6.2 | 9.46497239 | 9.5 | 14.8 | 0.0132 | 0.003 | 9.464972 |
| 360 | 22 | 9 | 5.9 | 9.00698985 | 9.5 | 14.8 | 0.0133 | 0.003 | 9.00699 |
| 1440 | 23 | 8 | 5.2 | 7.93836394 | 8.5 | 15 | 0.0132 | 0.001 | 7.938364 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

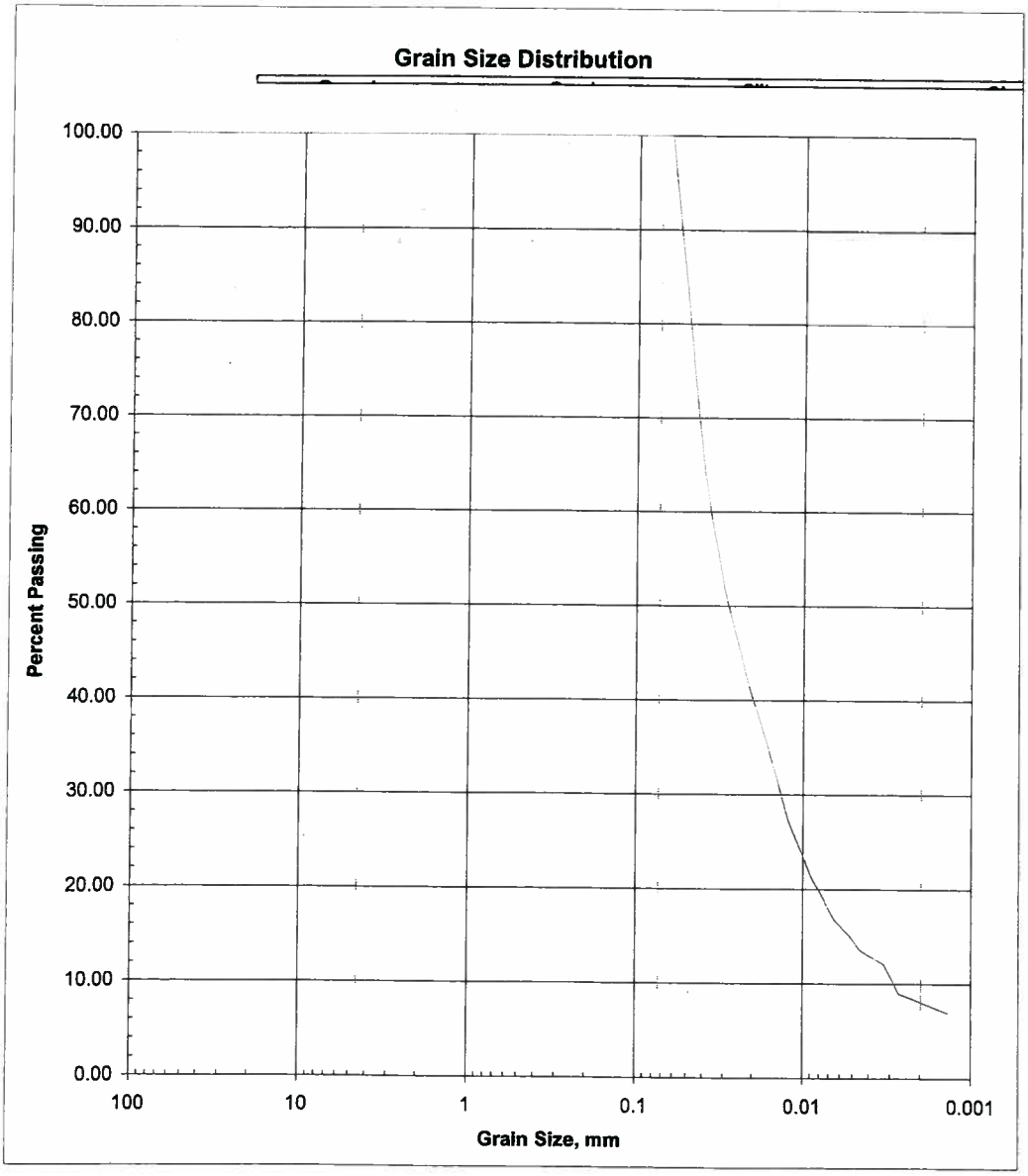
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 100.0 | 0.0 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | **North Western Lake Sediments** | | | Date | 1/11/2007 |
| Project Number | **53886/4** | | | Tested By | AW |
| Boring/Source | **B-1** | Depth (ft) | **85'** | Lab # | **1961** |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 64.79 |
| (B) Dry Weight After Wash (gm) | 7.2 |
| (C) Percent Passing #200 [(A-B)/A*100] | 88.9 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 100.0 |
| 1/2" | 12.5 | | 0.00 | 100.00 | 100.0 |
| 3/8" | 9.5 | | 0.00 | 100.00 | 100.0 |
| 1/4" | 6.3 | | 0.00 | 100.00 | 100.0 |
| 4 | 4.75 | | 0.00 | 100.00 | 100.0 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 8 | 2.36 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 10 | 2.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 18 | 1.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 35 | 0.500 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 60 | 0.250 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 120 | 0.125 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 230 | 0.063 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| Pan | | 0 | 0.0 | 100.0 | 100.0 | #REF! |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 4 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 64.79 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 22 | 45 | 41.9 | 64.191965 | 45.5 | 8.9 | 0.0133 | 0.040 | 64.19196 |
| 2 | 22 | 37 | 33.9 | 51.9357425 | 37.5 | 10.2 | 0.0133 | 0.030 | 51.93574 |
| 4 | 22 | 31 | 27.9 | 42.7435757 | 31.5 | 11.2 | 0.0133 | 0.022 | 42.74358 |
| 8 | 22 | 26 | 22.9 | 35.0834367 | 26.5 | 12 | 0.0133 | 0.016 | 35.08344 |
| 15 | 22 | 21 | 17.9 | 27.4232977 | 21.5 | 12.9 | 0.0133 | 0.012 | 27.4233 |
| 30 | 22 | 17 | 13.9 | 21.2951865 | 17.5 | 13.5 | 0.0133 | 0.009 | 21.29519 |
| 60 | 22 | 14 | 10.9 | 16.6991031 | 14.5 | 14 | 0.0133 | 0.006 | 16.6991 |
| 90 | 22 | 13 | 9.9 | 15.1670753 | 13.5 | 14.2 | 0.0133 | 0.005 | 15.16708 |
| 120 | 22 | 12 | 8.9 | 13.6350475 | 12.5 | 14.3 | 0.0133 | 0.005 | 13.63505 |
| 240 | 22 | 11 | 7.9 | 12.1030196 | 11.5 | 14.5 | 0.0133 | 0.003 | 12.10302 |
| 360 | 22 | 9 | 5.9 | 9.03896404 | 9.5 | 14.8 | 0.0133 | 0.003 | 9.038964 |
| 1440 | 24 | 7 | 4.5 | 6.89412512 | 7.5 | 15.2 | 0.013 | 0.001 | 6.894125 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

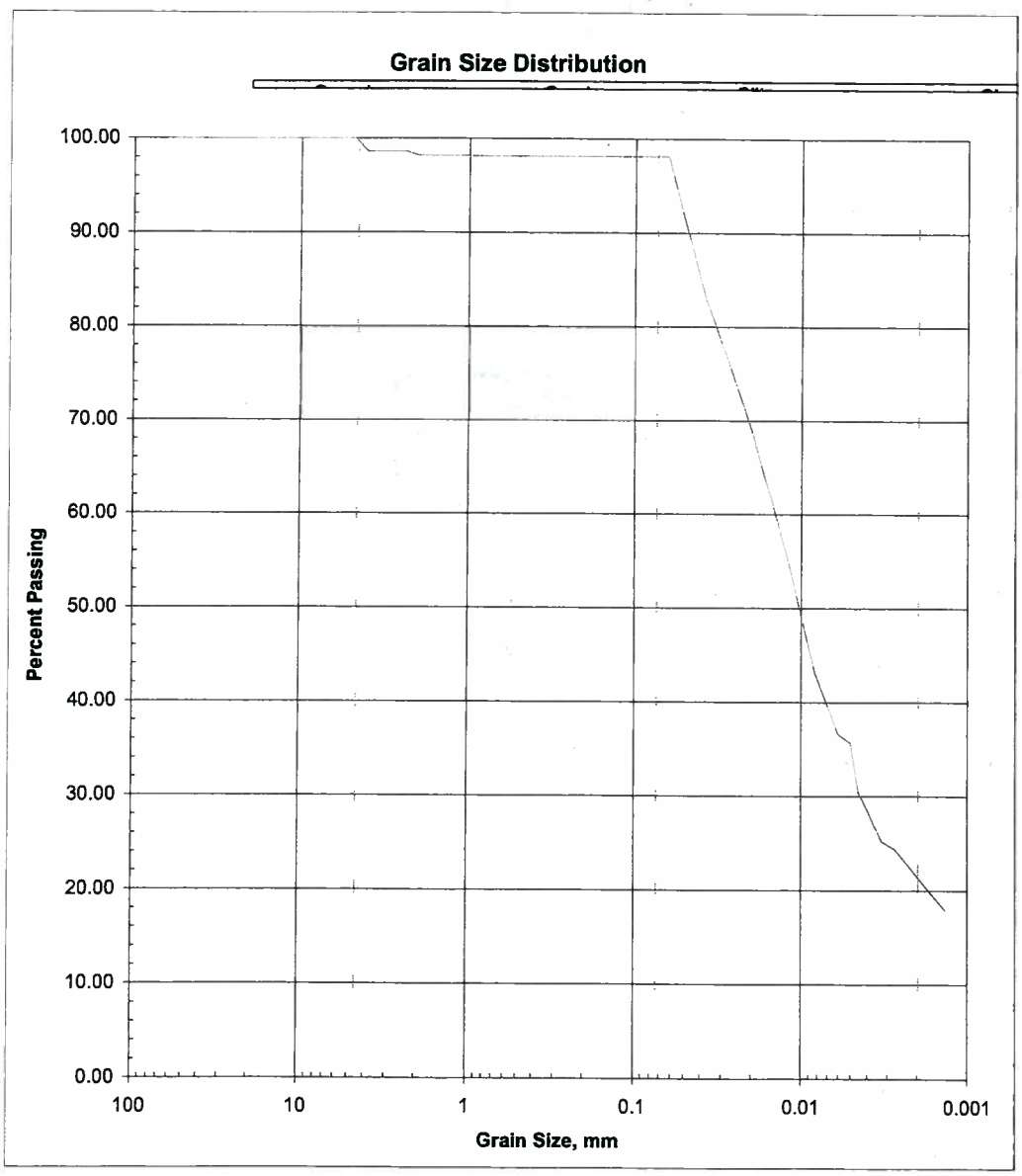
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 100.0 | 0.0 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | North Western Lake Sediments | | | Date | 1/12/2007 |
| Project Number | 53886/4 | | | Tested By | AW |
| Boring/Source | B-1 | Depth (ft) | 106' | Lab # | 1961 |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 60.94 |
| (B) Dry Weight After Wash (gm) | 3.6 |
| (C) Percent Passing #200 [(A-B)/A*100] | 94.1 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 100.0 |
| 1/2" | 12.5 | | 0.00 | 100.00 | 100.0 |
| 3/8" | 9.5 | | 0.00 | 100.00 | 100.0 |
| 1/4" | 6.3 | | 0.00 | 100.00 | 100.0 |
| 4 | 4.75 | | 0.00 | 100.00 | 99.3 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 0.85 | 1.4 | 98.6 | 98.6 | 98.6 |
| 8 | 2.36 | 0 | 0.0 | 98.6 | 98.6 | 98.4 |
| 10 | 2.00 | 0.23 | 0.4 | 98.2 | 98.2 | 98.2 |
| 18 | 1.00 | 0.03 | 0.0 | 98.2 | 98.2 | 98.2 |
| 35 | 0.500 | 0.02 | 0.0 | 98.1 | 98.1 | 98.1 |
| 60 | 0.250 | 0 | 0.0 | 98.1 | 98.1 | 98.1 |
| 120 | 0.125 | 0 | 0.0 | 98.1 | 98.1 | 98.1 |
| 230 | 0.063 | 0 | 0.0 | 98.1 | 98.1 | 98.1 |
| Pan | | 0 | 0.0 | 98.1 | 98.1 | #REF! |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 60.94 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25 | 49 | 50.8 | 82.7438814 | 49.5 | 8.3 | 0.0129 | 0.037 | 82.74388 |
| 2 | 25 | 45 | 46.8 | 76.2286152 | 45.5 | 8.9 | 0.0129 | 0.027 | 76.22862 |
| 4 | 24 | 41 | 42.5 | 69.224704 | 41.5 | 9.6 | 0.013 | 0.020 | 69.2247 |
| 8 | 24 | 36 | 37.5 | 61.0806211 | 36.5 | 10.4 | 0.013 | 0.015 | 61.08062 |
| 15 | 24 | 31 | 32.5 | 52.9365383 | 31.5 | 11.2 | 0.013 | 0.011 | 52.93654 |
| 30 | 24 | 25 | 26.5 | 43.1636389 | 25.5 | 12.2 | 0.013 | 0.008 | 43.16364 |
| 60 | 24 | 21 | 22.5 | 36.6483727 | 21.5 | 12.9 | 0.013 | 0.006 | 36.64837 |
| 90 | 22 | 21 | 21.9 | 35.6710827 | 21.5 | 12.9 | 0.0133 | 0.005 | 35.67108 |
| 120 | 21 | 18 | 18.7 | 30.4588697 | 18.5 | 13.3 | 0.0135 | 0.004 | 30.45887 |
| 240 | 20 | 15 | 15.5 | 25.2466567 | 15.5 | 13.8 | 0.0137 | 0.003 | 25.24666 |
| 360 | 18 | 15 | 15 | 24.4322485 | 15.5 | 13.8 | 0.014 | 0.003 | 24.43225 |
| 1440 | 22 | 10 | 10.9 | 17.7541005 | 10.5 | 14.7 | 0.0133 | 0.001 | 17.7541 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

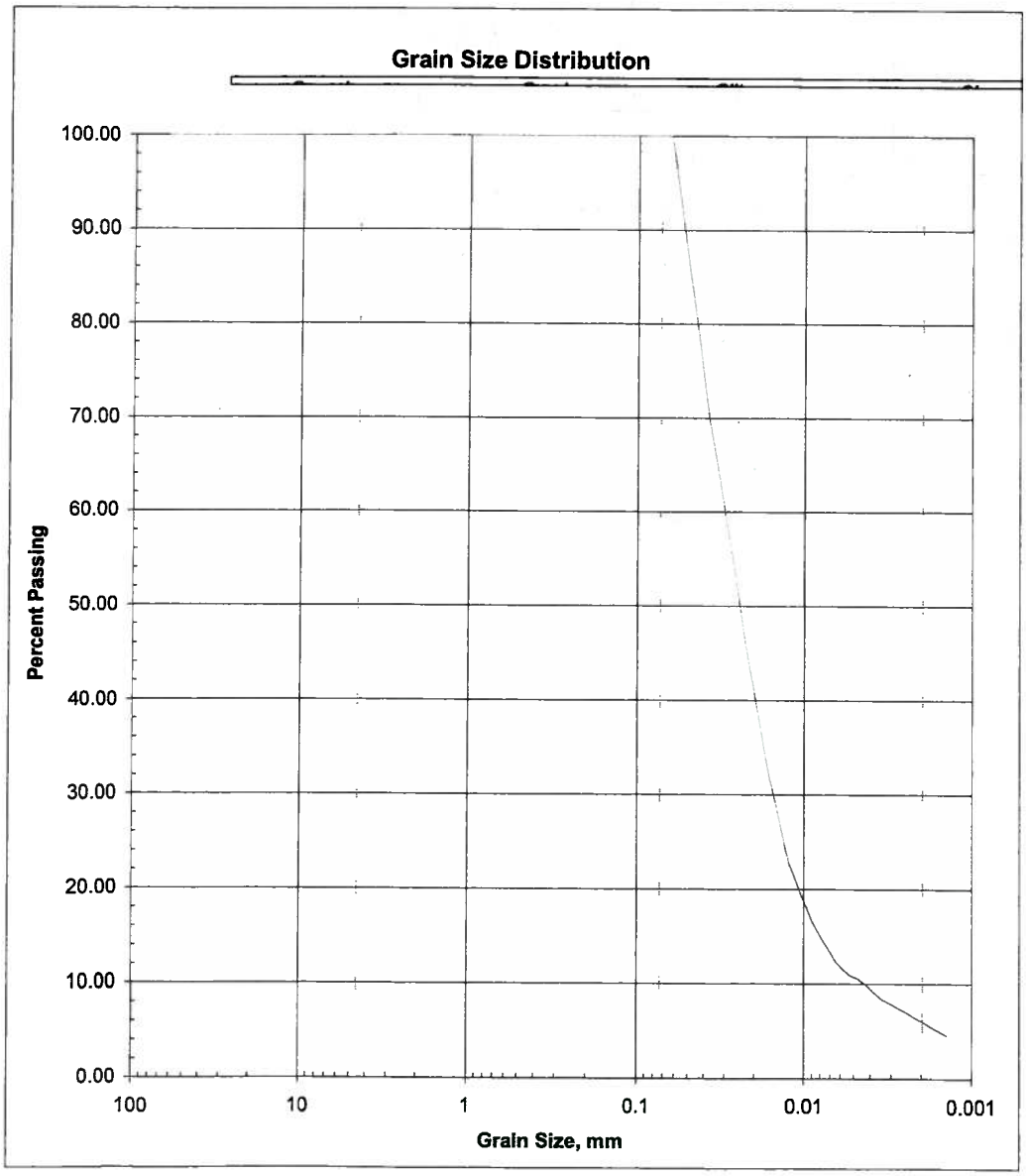
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 98.1 | 1.9 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | **North Western Lake Sediments** | | | Date | 1/12/2007 |
| Project Number | **53886/4** | | | Tested By | AW |
| Boring/Source | **B-2** | Depth (ft) | **20'** | Lab # | **1961** |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 64.99 |
| (B) Dry Weight After Wash (gm) | 0.8 |
| (C) Percent Passing #200 [(A-B)/A*100] | 98.8 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 100.0 |
| 1/2" | 12.5 | | 0.00 | 100.00 | 100.0 |
| 3/8" | 9.5 | | 0.00 | 100.00 | 100.0 |
| 1/4" | 6.3 | | 0.00 | 100.00 | 100.0 |
| 4 | 4.75 | | 0.00 | 100.00 | 100.0 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 8 | 2.36 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 10 | 2.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 18 | 1.00 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 35 | 0.500 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 60 | 0.250 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 120 | 0.125 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| 230 | 0.063 | 0 | 0.0 | 100.0 | 100.0 | 100.0 |
| Pan | | 0 | 0.0 | 100.0 | 100.0 | #REF! |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 4 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 64.99 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 25 | 48 | 45.8 | 69.9509421 | 48.5 | 8.4 | 0.0129 | 0.037 | 69.95094 |
| 2 | 25 | 40 | 37.8 | 57.7324369 | 40.5 | 9.7 | 0.0129 | 0.028 | 57.73244 |
| 4 | 25 | 31 | 28.8 | 43.9866186 | 31.5 | 11.2 | 0.0129 | 0.022 | 43.98662 |
| 8 | 25 | 23 | 20.8 | 31.7681134 | 23.5 | 12.5 | 0.0129 | 0.016 | 31.76811 |
| 15 | 25 | 17 | 14.8 | 22.6042346 | 17.5 | 13.5 | 0.0129 | 0.012 | 22.60423 |
| 30 | 25 | 13 | 10.8 | 16.494982 | 13.5 | 14.2 | 0.0129 | 0.009 | 16.49498 |
| 60 | 23 | 11 | 8.2 | 12.5239678 | 11.5 | 14.5 | 0.0132 | 0.006 | 12.52397 |
| 90 | 23 | 10 | 7.2 | 10.9966547 | 10.5 | 14.7 | 0.0132 | 0.005 | 10.99665 |
| 120 | 22 | 10 | 6.9 | 10.5384607 | 10.5 | 14.7 | 0.0133 | 0.005 | 10.53846 |
| 240 | 20 | 9 | 5.5 | 8.40022231 | 9.5 | 14.8 | 0.0137 | 0.003 | 8.400222 |
| 360 | 18 | 9 | 5 | 7.63656573 | 9.5 | 14.8 | 0.014 | 0.003 | 7.636566 |
| 1440 | 22 | 6 | 2.9 | 4.42920812 | 6.5 | 15.3 | 0.0133 | 0.001 | 4.429208 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

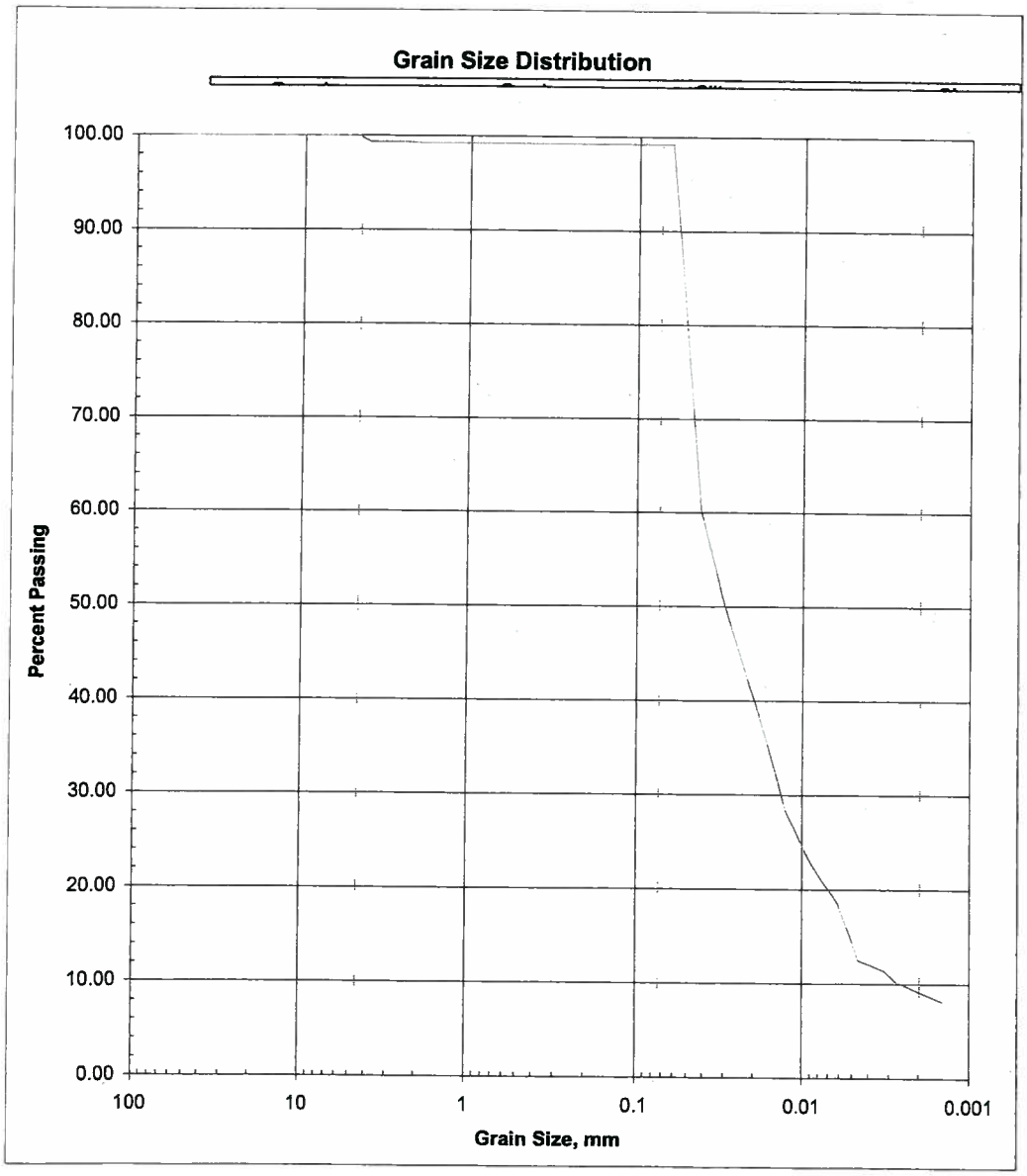
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 100.0 | 0.0 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | North Western Lake Sediments | | | Date | 1/12/2007 |
| Project Number | 53886/4 | | | Tested By | AW |
| Boring/Source | B-3 | Depth (ft) | 27' | Lab # | 1961 |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 65.04 |
| (B) Dry Weight After Wash (gm) | 7.8 |
| (C) Percent Passing #200 [(A-B)/A*100] | 88.0 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 100.0 |
| 1/2" | 12.5 | | 0.00 | 100.00 | 100.0 |
| 3/8" | 9.5 | | 0.00 | 100.00 | 100.0 |
| 1/4" | 6.3 | | 0.00 | 100.00 | 100.0 |
| 4 | 4.75 | | 0.00 | 100.00 | 99.7 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 0.43 | 0.7 | 99.3 | 99.3 | 99.3 |
| 8 | 2.36 | 0 | 0.0 | 99.3 | 99.3 | 99.3 |
| 10 | 2.00 | 0.06 | 0.1 | 99.2 | 99.2 | 99.2 |
| 18 | 1.00 | 0.02 | 0.0 | 99.2 | 99.2 | 99.2 |
| 35 | 0.500 | 0 | 0.0 | 99.2 | 99.2 | 99.2 |
| 60 | 0.250 | 0 | 0.0 | 99.2 | 99.2 | 99.2 |
| 120 | 0.125 | 0 | 0.0 | 99.2 | 99.2 | 99.2 |
| 230 | 0.063 | 0 | 0.0 | 99.2 | 99.2 | 99.2 |
| Pan | | | 0.0 | 99.2 | 99.2 | #REF! |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 4 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 99.98 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 65.04 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 43 | 39.5 | 60.282491 | 43.5 | 9.2 | 0.0137 | 0.042 | 60.27043 |
| 2 | 20 | 37 | 33.5 | 51.1256569 | 37.5 | 10.2 | 0.0137 | 0.031 | 51.11543 |
| 4 | 20 | 32 | 28.5 | 43.4949619 | 32.5 | 11.1 | 0.0137 | 0.023 | 43.48626 |
| 8 | 20 | 27 | 23.5 | 35.8642668 | 27.5 | 11.9 | 0.0137 | 0.017 | 35.85709 |
| 15 | 20 | 22 | 18.5 | 28.2335717 | 22.5 | 12.7 | 0.0137 | 0.013 | 28.22793 |
| 30 | 22 | 18 | 14.9 | 22.7394713 | 18.5 | 13.3 | 0.0133 | 0.009 | 22.73492 |
| 60 | 26 | 14 | 12.15 | 18.542589 | 14.5 | 14 | 0.0127 | 0.006 | 18.53888 |
| 90 | 25 | 12 | 9.8 | 14.9561623 | 12.5 | 14.3 | 0.0129 | 0.005 | 14.95317 |
| 120 | 23 | 11 | 8.2 | 12.5143399 | 11.5 | 14.5 | 0.0132 | 0.005 | 12.51184 |
| 240 | 24 | 10 | 7.5 | 11.4460426 | 10.5 | 14.7 | 0.013 | 0.003 | 11.44375 |
| 360 | 21 | 10 | 6.7 | 10.2251314 | 10.5 | 14.7 | 0.0135 | 0.003 | 10.22309 |
| 1440 | 23 | 8 | 5.2 | 7.93592287 | 8.5 | 15 | 0.0132 | 0.001 | 7.934336 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

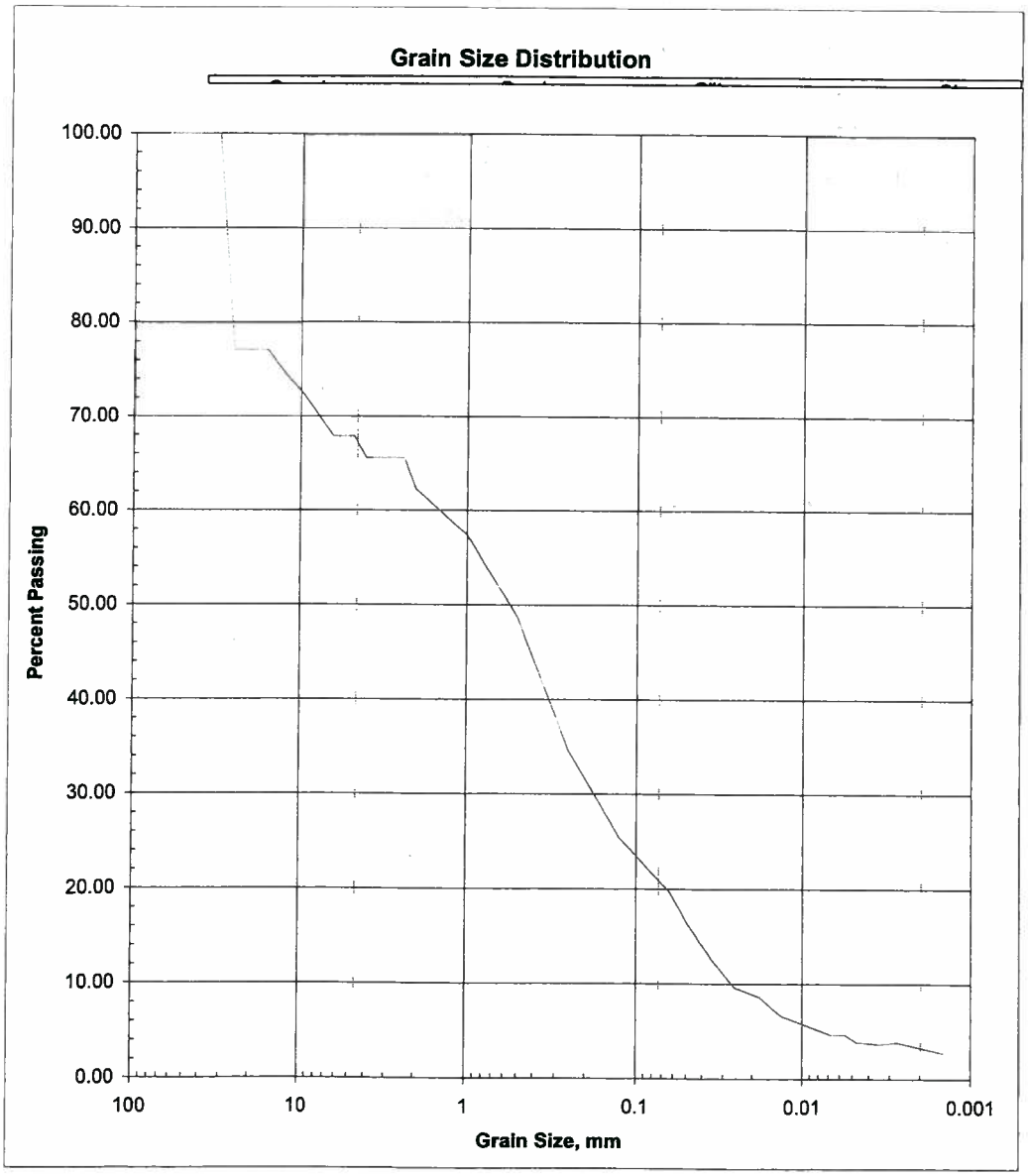
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 99.2 | 0.8 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | North Western Lake Sediments | | | Date | 1/11/2007 |
| Project Number | 53886/4 | | | Tested By | AW |
| Boring/Source | B-4 | Depth (ft) | 24' | Lab # | 1961 |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 99.99 |
| (B) Dry Weight After Wash (gm) | 72.2 |
| (C) Percent Passing #200 [(A-B)/A*100] | 27.8 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 88.5 |
| 1" | 25.4 | 22.9 | 22.90 | 77.10 | 77.1 |
| 3/4" | 19 | | 0.00 | 77.10 | 77.1 |
| 5/8" | 15.9 | | 0.00 | 77.10 | 75.8 |
| 1/2" | 12.5 | 2.5 | 2.50 | 74.60 | 74.6 |
| 3/8" | 9.5 | 2.3 | 2.30 | 72.30 | 72.3 |
| 1/4" | 6.3 | 4.4 | 4.40 | 67.90 | 67.9 |
| 4 | 4.75 | | 0.00 | 67.90 | 66.7 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 2.3 | 2.3 | 65.6 | 65.6 | 65.6 |
| 8 | 2.36 | | 0.0 | 65.6 | 65.6 | 63.9 |
| 10 | 2.00 | 3.3 | 3.3 | 62.3 | 62.3 | 62.3 |
| 18 | 1.00 | 4.8 | 4.8 | 57.5 | 57.5 | 57.5 |
| 35 | 0.500 | 8.8 | 8.8 | 48.7 | 48.7 | 48.7 |
| 60 | 0.250 | 14.1 | 14.1 | 34.6 | 34.6 | 34.6 |
| 120 | 0.125 | 9.2 | 9.2 | 25.4 | 25.4 | 25.4 |
| 230 | 0.063 | 5.7 | 5.7 | 19.7 | 19.7 | 19.7 |
| Pan | | 19.7 | 19.7 | 0.0 | 0.0 | 0.0 |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 4 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 99.99 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 20 | 16.5 | 16.3795514 | 20.5 | 13 | 0.0137 | 0.049 | 16.37955 |
| 2 | 21 | 16 | 12.7 | 12.6072911 | 16.5 | 13.7 | 0.0135 | 0.035 | 12.60729 |
| 4 | 21 | 13 | 9.7 | 9.62919081 | 13.5 | 14.2 | 0.0135 | 0.025 | 9.629191 |
| 8 | 21 | 12 | 8.7 | 8.63649073 | 12.5 | 14.3 | 0.0135 | 0.018 | 8.636491 |
| 15 | 21 | 10 | 6.7 | 6.65109056 | 10.5 | 14.7 | 0.0135 | 0.013 | 6.651091 |
| 30 | 21 | 9 | 5.7 | 5.65839048 | 9.5 | 14.8 | 0.0135 | 0.009 | 5.65839 |
| 60 | 21 | 8 | 4.7 | 4.66569039 | 8.5 | 15 | 0.0135 | 0.007 | 4.66569 |
| 90 | 21 | 8 | 4.7 | 4.66569039 | 8.5 | 15 | 0.0135 | 0.006 | 4.66569 |
| 120 | 22 | 7 | 3.9 | 3.87153033 | 7.5 | 15.2 | 0.0133 | 0.005 | 3.87153 |
| 240 | 21 | 7 | 3.7 | 3.67299031 | 7.5 | 15.2 | 0.0135 | 0.003 | 3.67299 |
| 360 | 22 | 7 | 3.9 | 3.87153033 | 7.5 | 15.2 | 0.0133 | 0.003 | 3.87153 |
| 1440 | 21 | 6 | 2.7 | 2.68029023 | 6.5 | 15.3 | 0.0135 | 0.001 | 2.68029 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

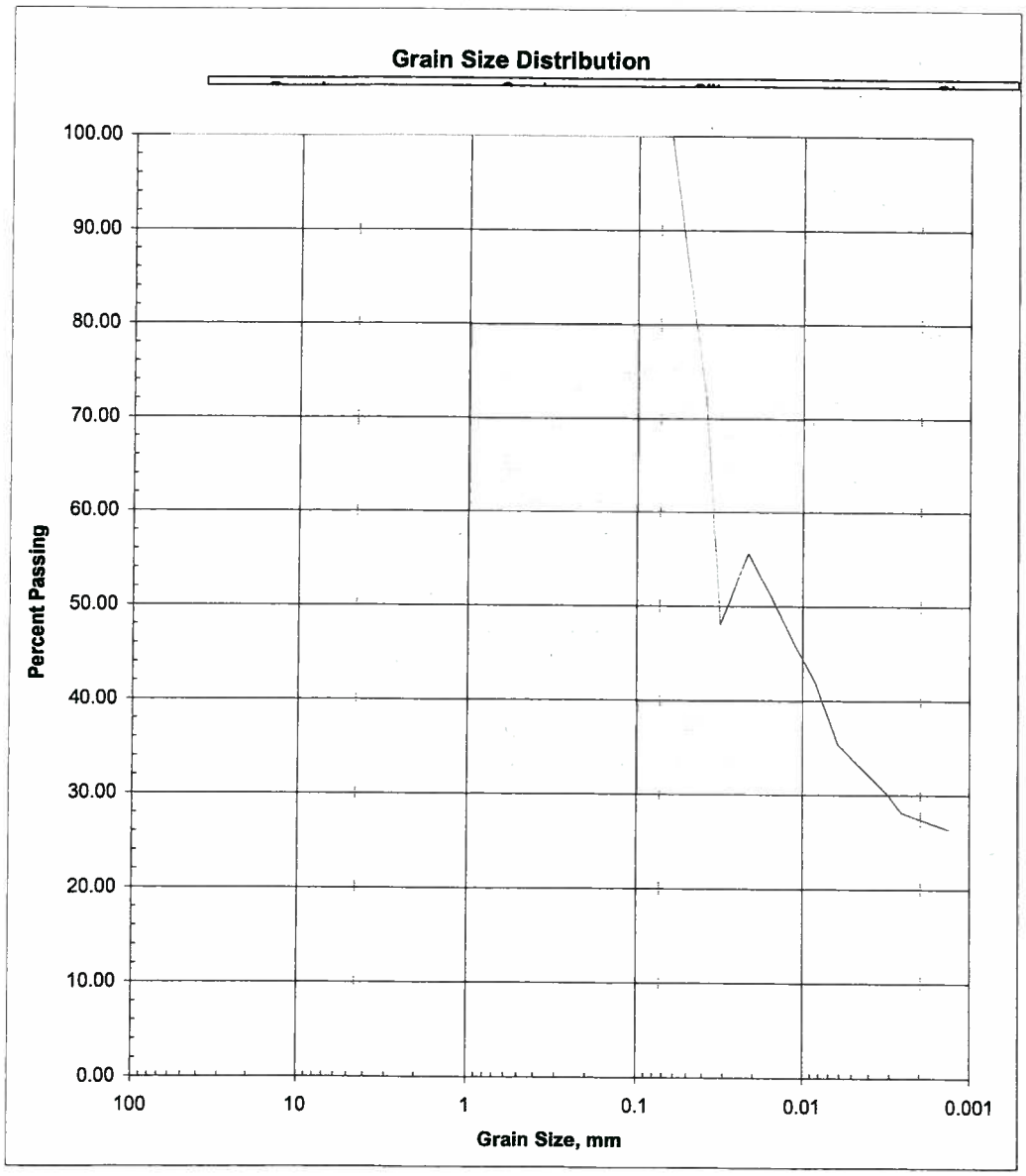
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 19.7 | 80.3 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | North Western Lake Sediments | | | Date | 1/10/2007 |
| Project Number | 53886/4 | | | Tested By | AW |
| Boring/Source | B-2 | Depth (ft) | 40' | Lab # | 1961 |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 64.9 |
| (B) Dry Weight After Wash (gm) | 8.3 |
| (C) Percent Passing #200 [(A-B)/A*100] | 87.2 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 100.0 |
| 1/2" | 12.5 | | 0.00 | 100.00 | 100.0 |
| 3/8" | 9.5 | | 0.00 | 100.00 | 100.0 |
| 1/4" | 6.3 | | 0.00 | 100.00 | 100.0 |
| 4 | 4.75 | | 0.00 | 100.00 | 100.0 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | | 0.0 | 100.0 | 100.0 | 100.0 |
| 8 | 2.36 | | 0.0 | 100.0 | 100.0 | 100.0 |
| 10 | 2.00 | | 0.0 | 100.0 | 100.0 | 100.0 |
| 18 | 1.00 | | 0.0 | 100.0 | 100.0 | 100.0 |
| 35 | 0.500 | | 0.0 | 100.0 | 100.0 | 100.0 |
| 60 | 0.250 | | 0.0 | 100.0 | 100.0 | 100.0 |
| 120 | 0.125 | | 0.0 | 100.0 | 100.0 | 100.0 |
| 230 | 0.063 | | 0.0 | 100.0 | 100.0 | 100.0 |
| Pan | | | 0.0 | 100.0 | 100.0 | #REF! |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 64.9 | Meniscus Correction (CorrM) | 4 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 22 | 43 | 47.4 | 72.4950363 | 47 | 8.6 | 0.0133 | 0.039 | 72.49504 |
| 2 | 22 | 27 | 31.4 | 48.024138 | 31 | 11.2 | 0.0133 | 0.031 | 48.02414 |
| 4 | 22 | 32 | 36.4 | 55.6712937 | 36 | 10.4 | 0.0133 | 0.021 | 55.67129 |
| 8 | 22 | 29 | 33.4 | 51.0830003 | 33 | 10.9 | 0.0133 | 0.016 | 51.083 |
| 15 | 22 | 26 | 30.4 | 46.4947068 | 30 | 11.4 | 0.0133 | 0.012 | 46.49471 |
| 30 | 22 | 23 | 27.4 | 41.9064134 | 27 | 11.9 | 0.0133 | 0.008 | 41.90641 |
| 60 | 21 | 19 | 23.2 | 35.4828026 | 23 | 12.5 | 0.0135 | 0.006 | 35.4828 |
| 90 | 21 | 18 | 22.2 | 33.9533714 | 22 | 12.7 | 0.0135 | 0.005 | 33.95337 |
| 120 | 22 | 17 | 21.4 | 32.7298265 | 21 | 12.9 | 0.0133 | 0.004 | 32.72983 |
| 240 | 23 | 15 | 19.7 | 30.1297936 | 19 | 13.2 | 0.0132 | 0.003 | 30.12979 |
| 360 | 22 | 14 | 18.4 | 28.1415331 | 18 | 13.3 | 0.0133 | 0.003 | 28.14153 |
| 1440 | 21 | 13 | 17.2 | 26.3062157 | 17 | 13.5 | 0.0135 | 0.001 | 26.30622 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

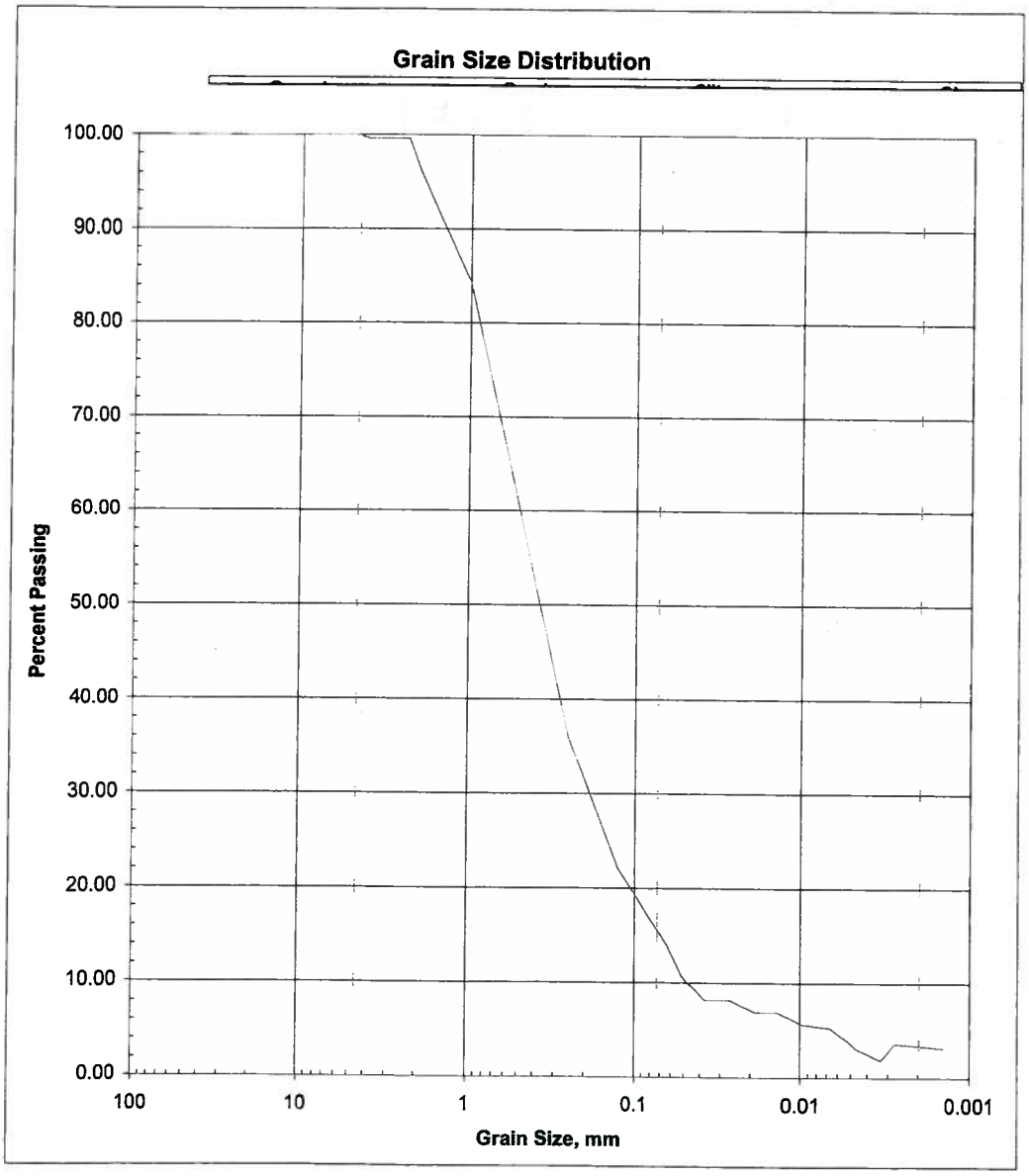
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 100.0 | 0.0 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | North Western Lake Sediments | | | Date | 1/12/2007 |
| Project Number | 53886/4 | | | Tested By | AW |
| Boring/Source | B-4 | Depth (ft) | 35' | Lab # | 1961 |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 78.86 |
| (B) Dry Weight After Wash (gm) | 64.6 |
| (C) Percent Passing #200 [(A-B)/A*100] | 18.1 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 100.0 |
| 1/2" | 12.5 | | 0.00 | 100.00 | 100.0 |
| 3/8" | 9.5 | | 0.00 | 100.00 | 100.0 |
| 1/4" | 6.3 | | 0.00 | 100.00 | 100.0 |
| 4 | 4.75 | | 0.00 | 100.00 | 99.8 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 0.32 | 0.4 | 99.6 | 99.6 | 99.6 |
| 8 | 2.36 | | 0.0 | 99.6 | 99.6 | 97.8 |
| 10 | 2.00 | 2.76 | 3.5 | 96.1 | 96.1 | 96.1 |
| 18 | 1.00 | 9.31 | 11.8 | 84.3 | 84.3 | 84.3 |
| 35 | 0.500 | 18.85 | 23.9 | 60.4 | 60.4 | 60.4 |
| 60 | 0.250 | 19.16 | 24.3 | 36.1 | 36.1 | 36.1 |
| 120 | 0.125 | 11.04 | 14.0 | 22.1 | 22.1 | 22.1 |
| 230 | 0.063 | 6.5 | 8.2 | 13.8 | 13.8 | 13.8 |
| Pan | | 10.96 | 13.9 | -0.1 | -0.1 | -0.1 |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 4 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 78.86 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 12 | 8.5 | 10.6988421 | 12.5 | 14.3 | 0.0137 | 0.052 | 10.69884 |
| 2 | 20 | 10 | 6.5 | 8.18146753 | 10.5 | 14.7 | 0.0137 | 0.037 | 8.181468 |
| 4 | 20 | 10 | 6.5 | 8.18146753 | 10.5 | 14.7 | 0.0137 | 0.026 | 8.181468 |
| 8 | 20 | 9 | 5.5 | 6.92278021 | 9.5 | 14.8 | 0.0137 | 0.019 | 6.92278 |
| 15 | 20 | 9 | 5.5 | 6.92278021 | 9.5 | 14.8 | 0.0137 | 0.014 | 6.92278 |
| 30 | 20 | 8 | 4.5 | 5.6640929 | 8.5 | 15 | 0.0137 | 0.010 | 5.664093 |
| 60 | 23 | 7 | 4.2 | 5.28648671 | 7.5 | 15.2 | 0.0132 | 0.007 | 5.286487 |
| 90 | 26 | 5 | 3.15 | 3.96486503 | 5.5 | 15.5 | 0.0127 | 0.005 | 3.964865 |
| 120 | 24 | 5 | 2.5 | 3.14671828 | 5.5 | 15.5 | 0.013 | 0.005 | 3.146718 |
| 240 | 24 | 4 | 1.5 | 1.88803097 | 4.5 | 15.6 | 0.013 | 0.003 | 1.888031 |
| 360 | 22 | 6 | 2.9 | 3.6501932 | 6.5 | 15.3 | 0.0133 | 0.003 | 3.650193 |
| 1440 | 24 | 5 | 2.5 | 3.14671828 | 5.5 | 15.5 | 0.013 | 0.001 | 3.146718 |
| | | | | | | | | | |
| | | | | | | | | | |

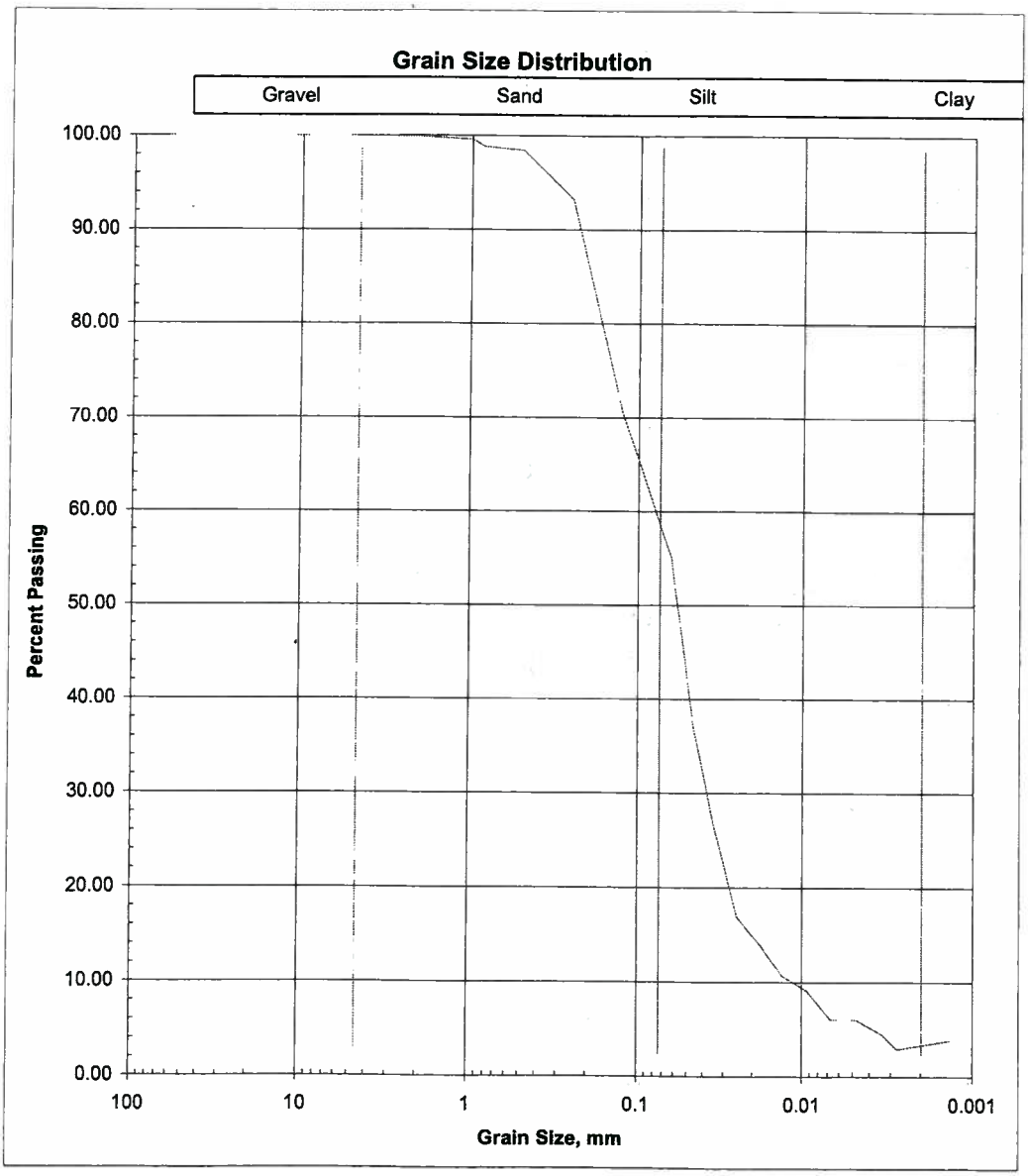
**ODOT TOPSOIL**

| | | | |
|---|---|---|---|
| Particle Dia. Above .002 | _____ | %finer | _____ |
| Particle Dia. below .002 | _____ | %finer | _____ |

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 13.8 | 86.2 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | North Western Lake Sediments | | | Date | 1/11/2007 |
| Project Number | 53886/4 | | | Tested By | AW |
| Boring/Source | B-4 | Depth (ft) | 15' | Lab # | 1961 |
| Material Description | | | | | |



| Sieve #200 Wash | |
|---|---|
| (A) Dry Weight Before Wash (gm) | 63.91 |
| (B) Dry Weight After Wash (gm) | 26 |
| (C) Percent Passing #200 [(A-B)/A*100] | 59.3 |

| Coarse Sieves | | (D) Individual | | | Assumed |
|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (E) % Retained | (F) % Passing | Distribution |
| | (mm) | (gm) | [D/A*100] | [E-F] | |
| 2 1/2" | 63 | | 0.00 | 100.00 | 100.0 |
| 2" | 50 | | 0.00 | 100.00 | 100.0 |
| 1 1/2" | 37.5 | | 0.00 | 100.00 | 100.0 |
| 1 1/4" | 31.5 | | 0.00 | 100.00 | 100.0 |
| 1" | 25.4 | | 0.00 | 100.00 | 100.0 |
| 3/4" | 19 | | 0.00 | 100.00 | 100.0 |
| 5/8" | 15.9 | | 0.00 | 100.00 | 100.0 |
| 1/2" | 12.5 | | 0.00 | 100.00 | 100.0 |
| 3/8" | 9.5 | | 0.00 | 100.00 | 100.0 |
| 1/4" | 6.3 | | 0.00 | 100.00 | 100.0 |
| 4 | 4.75 | | 0.00 | 100.00 | 100.0 |

| | |
|---|---|
| (F) Split Material Dry Weight Total (gm) | |
| Dry Material Weight After #200 Wash (gm) | |

| Fine Sieves | | (H) Individual | | | Cumulative | Assumed |
|---|---|---|---|---|---|---|
| Number | Grain Size | Weight Retained | (I) % Retained | (J) % Passing | % Passing | Distribution |
| | (mm) | (gm) | [H/G] | [I-J] | [J*E] | |
| 5 | 4.00 | 0.029 | 0.0 | 100.0 | 100.0 | 100.0 |
| 10 | 2.00 | 0.029 | 0.0 | 99.9 | 99.9 | 99.9 |
| 18 | 1.00 | 0.176 | 0.3 | 99.6 | 99.6 | 99.6 |
| 20 | 0.85 | 0.498 | 0.8 | 98.9 | 98.9 | 98.9 |
| 35 | 0.500 | 0.235 | 0.4 | 98.5 | 98.5 | 98.5 |
| 60 | 0.250 | 3.343 | 5.2 | 93.3 | 93.3 | 93.3 |
| 120 | 0.125 | 14.46 | 22.6 | 70.6 | 70.6 | 70.6 |
| 230 | 0.063 | 9.943 | 15.6 | 55.1 | 55.1 | 55.1 |
| Pan | | 35.254 | 55.2 | -0.1 | -0.1 | -0.1 |

| | Sand Line | Silt Line | Clay Line |
|---|---|---|---|
| 0 | 4.75 | 0.075 | 0.002 |
| 100 | 4.75 | 0.075 | 0.002 |

Remarks:

Reviewed By:

Notes;
-Data is required in all yellow/shaded cells. Do not place data in any other cells.
-Only fill in data which is available, graph will be punctuated automatically.
-The #200 sieve is the break point between sieve and hydrometer analysis.
-Sample can be washed at begin of test or at the split. Spreadsheet does not allow wash at beginning and then a

## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 4 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 63.91 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 22 | 27 | 23.9 | 37.1196361 | 27.5 | 11.9 | 0.0133 | 0.046 | 37.11964 |
| 2 | 22 | 20 | 16.9 | 26.2477762 | 20.5 | 13 | 0.0133 | 0.034 | 26.24778 |
| 4 | 22 | 14 | 10.9 | 16.9290391 | 14.5 | 14 | 0.0133 | 0.025 | 16.92904 |
| 8 | 22 | 12 | 8.9 | 13.8227934 | 12.5 | 14.3 | 0.0133 | 0.018 | 13.82279 |
| 15 | 22 | 10 | 6.9 | 10.7165477 | 10.5 | 14.7 | 0.0133 | 0.013 | 10.71655 |
| 30 | 22 | 9 | 5.9 | 9.16342482 | 9.5 | 14.8 | 0.0133 | 0.009 | 9.163425 |
| 60 | 22 | 7 | 3.9 | 6.05717912 | 7.5 | 15.2 | 0.0133 | 0.007 | 6.057179 |
| 90 | 22 | 7 | 3.9 | 6.05717912 | 7.5 | 15.2 | 0.0133 | 0.005 | 6.057179 |
| 120 | 22 | 7 | 3.9 | 6.05717912 | 7.5 | 15.2 | 0.0133 | 0.005 | 6.057179 |
| 240 | 22 | 6 | 2.9 | 4.50405627 | 6.5 | 15.3 | 0.0133 | 0.003 | 4.504056 |
| 360 | 22 | 5 | 1.9 | 2.95093342 | 5.5 | 15.5 | 0.0133 | 0.003 | 2.950933 |
| 1440 | 24 | 5 | 2.5 | 3.88280713 | 5.5 | 15.5 | 0.013 | 0.001 | 3.882807 |
| | | | | | | | | | |
| | | | | | | | | | |

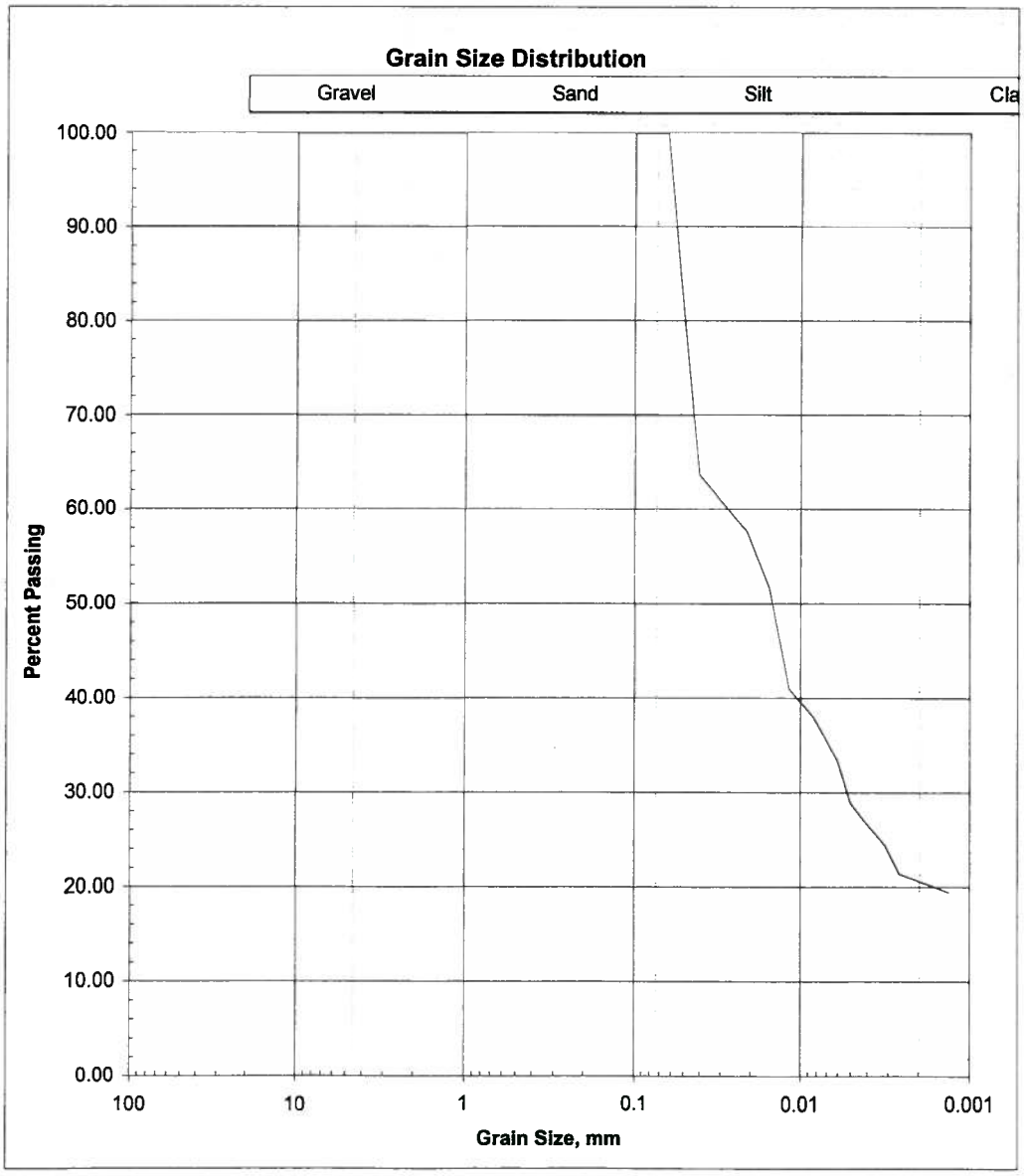
**ODOT TOPSOIL**

| | | | |
|---|---|---|---|
| Particle Dia. Above .002 | _____ | %finer | _____ |
| Particle Dia. below .002 | _____ | %finer | _____ |

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 55.1 | 44.9 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | **North Western Lake Sediments** | | | Date | 1/12/2007 |
| Project Number | **53886/4** | | | Tested By | AW |
| Boring/Source | **B5-01507 A** | Depth (ft) | | Lab # | **1995** |
| Material Description | | | | | |



## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 1 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 65.74 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 23 | 42 | 42.2 | 63.717302 | 42.5 | 9.4 | 0.0132 | 0.040 | 63.7173 |
| 2 | 23 | 40 | 40.2 | 60.6975247 | 40.5 | 9.7 | 0.0132 | 0.029 | 60.69752 |
| 4 | 23 | 38 | 38.2 | 57.6777473 | 38.5 | 10.1 | 0.0132 | 0.021 | 57.67775 |
| 8 | 23 | 34 | 34.2 | 51.6381926 | 34.5 | 10.7 | 0.0132 | 0.015 | 51.63819 |
| 15 | 23 | 27 | 27.2 | 41.0689719 | 27.5 | 11.9 | 0.0132 | 0.012 | 41.06897 |
| 30 | 23 | 25 | 25.2 | 38.0491946 | 25.5 | 12.2 | 0.0132 | 0.008 | 38.04919 |
| 60 | 23 | 22 | 22.2 | 33.5195286 | 22.5 | 12.7 | 0.0132 | 0.006 | 33.51953 |
| 90 | 23 | 19 | 19.2 | 28.9898625 | 19.5 | 13.2 | 0.0132 | 0.005 | 28.98986 |
| 120 | 23 | 18 | 18.2 | 27.4799739 | 18.5 | 13.3 | 0.0132 | 0.004 | 27.47997 |
| 240 | 23 | 16 | 16.2 | 24.4601965 | 16.5 | 13.7 | 0.0132 | 0.003 | 24.4602 |
| 360 | 23 | 14 | 14.2 | 21.4404192 | 14.5 | 14 | 0.0132 | 0.003 | 21.44042 |
| 1440 | 22 | 13 | 12.9 | 19.4775639 | 13.5 | 14.2 | 0.0133 | 0.001 | 19.47756 |
| | | | | | | | | | |
| | | | | | | | | | |

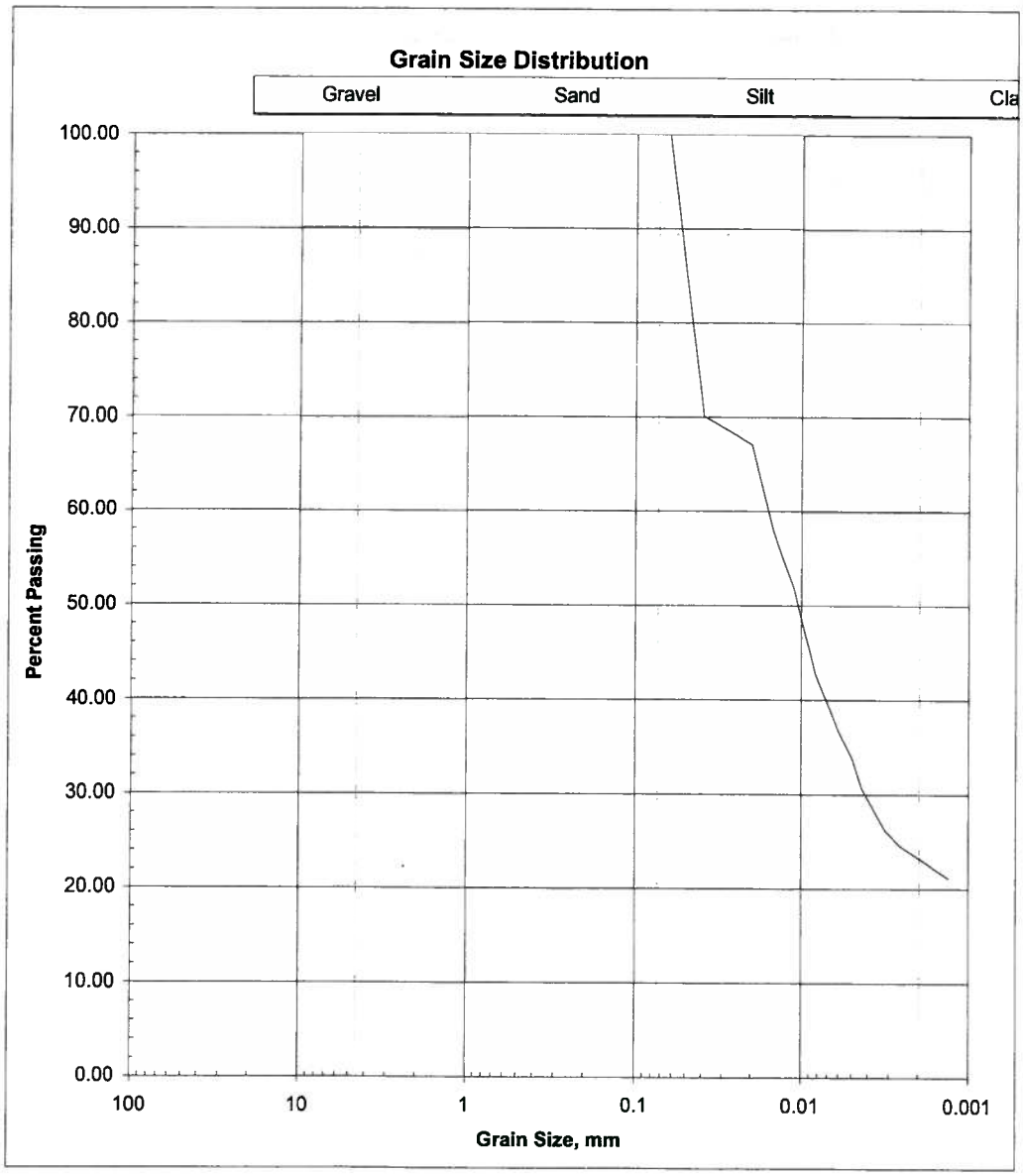
**ODOT TOPSOIL**

| | | | |
|---|---|---|---|
| Particle Dia. Above .002 | _____ | %finer | _____ |
| Particle Dia. below .002 | _____ | %finer | _____ |

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 100.0 | 0.0 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | **North Western Lake Sediments** | | | Date | 2/6/2007 |
| Project Number | **53886/4** | | | Tested By | AW |
| Boring/Source | **B5-01507 B** | Depth (ft) | | Lab # | **1995** |
| Material Description | | | | | |



## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 1 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 65.4 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 23 | 46 | 46.2 | 70.119507 | 46.5 | 8.8 | 0.0132 | 0.039 | 70.11951 |
| 2 | 23 | 45 | 45.2 | 68.6017688 | 45.5 | 8.9 | 0.0132 | 0.028 | 68.60177 |
| 4 | 23 | 44 | 44.2 | 67.0840305 | 44.5 | 9.1 | 0.0132 | 0.020 | 67.08403 |
| 8 | 23 | 38 | 38.2 | 57.9776011 | 38.5 | 10.1 | 0.0132 | 0.015 | 57.9776 |
| 15 | 23 | 34 | 34.2 | 51.9066481 | 34.5 | 10.7 | 0.0132 | 0.011 | 51.90665 |
| 30 | 23 | 28 | 28.2 | 42.8002186 | 28.5 | 11.7 | 0.0132 | 0.008 | 42.80022 |
| 60 | 23 | 24 | 24.2 | 36.7292656 | 24.5 | 12.4 | 0.0132 | 0.006 | 36.72927 |
| 90 | 23 | 22 | 22.2 | 33.6937891 | 22.5 | 12.7 | 0.0132 | 0.005 | 33.69379 |
| 120 | 23 | 20 | 20.2 | 30.6583126 | 20.5 | 13 | 0.0132 | 0.004 | 30.65831 |
| 240 | 23 | 17 | 17.2 | 26.1050979 | 17.5 | 13.5 | 0.0132 | 0.003 | 26.1051 |
| 360 | 23 | 16 | 16.2 | 24.5873596 | 16.5 | 13.7 | 0.0132 | 0.003 | 24.58736 |
| 1440 | 22 | 14 | 13.9 | 21.0965616 | 14.5 | 14 | 0.0133 | 0.001 | 21.09656 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

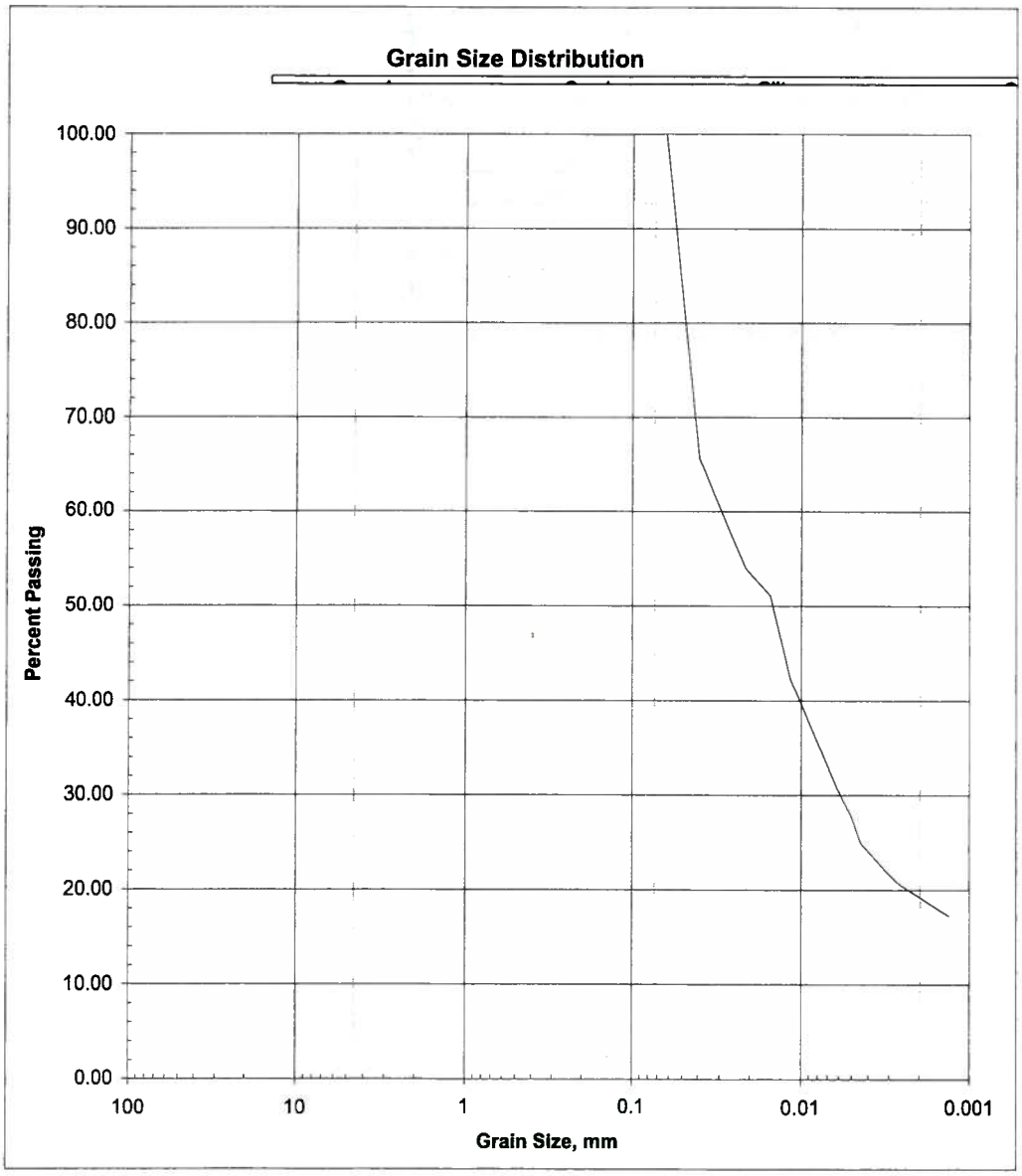
Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 100.0 | 0.0 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | **North Western Lake Sediments** | | | Date | 2/6/2007 |
| Project Number | **53886/4** | | | Tested By | AW |
| Boring/Source | **B5-01507 C** | Depth (ft) | | Lab # | **1995** |
| Material Description | | | | | |



## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 1 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 68.38 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 23 | 45 | 45.2 | 65.6121041 | 45.5 | 8.9 | 0.0132 | 0.039 | 65.6121 |
| 2 | 23 | 41 | 41.2 | 59.8057232 | 41.5 | 9.6 | 0.0132 | 0.029 | 59.80572 |
| 4 | 23 | 37 | 37.2 | 53.9993423 | 37.5 | 10.2 | 0.0132 | 0.021 | 53.99934 |
| 8 | 23 | 35 | 35.2 | 51.0961519 | 35.5 | 10.5 | 0.0132 | 0.015 | 51.09615 |
| 15 | 23 | 29 | 29.2 | 42.3865805 | 29.5 | 11.5 | 0.0132 | 0.012 | 42.38658 |
| 30 | 23 | 25 | 25.2 | 36.5801996 | 25.5 | 12.2 | 0.0132 | 0.008 | 36.5802 |
| 60 | 23 | 21 | 21.2 | 30.7738187 | 21.5 | 12.9 | 0.0132 | 0.006 | 30.77382 |
| 90 | 23 | 19 | 19.2 | 27.8706283 | 19.5 | 13.2 | 0.0132 | 0.005 | 27.87063 |
| 120 | 23 | 17 | 17.2 | 24.9674378 | 17.5 | 13.5 | 0.0132 | 0.004 | 24.96744 |
| 240 | 23 | 15 | 15.2 | 22.0642474 | 15.5 | 13.8 | 0.0132 | 0.003 | 22.06425 |
| 360 | 23 | 14 | 14.2 | 20.6126522 | 14.5 | 14 | 0.0132 | 0.003 | 20.61265 |
| 1440 | 22 | 12 | 11.9 | 17.2739832 | 12.5 | 14.3 | 0.0133 | 0.001 | 17.27398 |
| | | | | | | | | | |
| | | | | | | | | | |

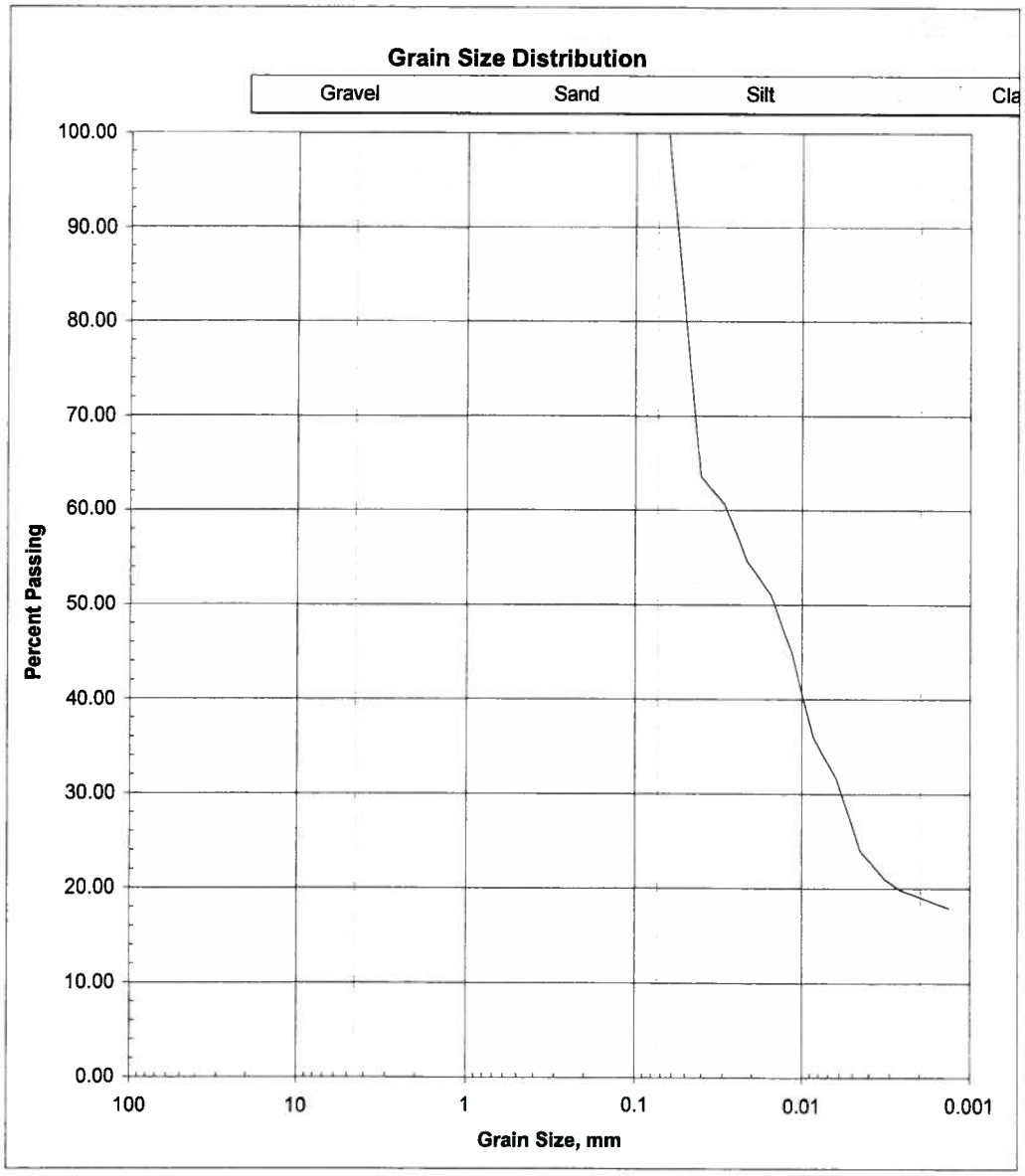
**ODOT TOPSOIL**

| | | | |
|---|---|---|---|
| Particle Dia. Above .002 | _____ | %finer | _____ |
| Particle Dia. below .002 | _____ | %finer | _____ |

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 100.0 | 0.0 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | **North Western Lake Sediments** | | | Date | 2/6/2007 |
| Project Number | **53886/4** | | | Tested By | AW |
| Boring/Source | **B5-01507 D** | Depth (ft) | | Lab # | **1995** |
| Material Description | | | | | |



## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 1 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 65.81 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 23 | 42 | 42.2 | 63.649528 | 42.5 | 9.4 | 0.0132 | 0.040 | 63.64953 |
| 2 | 23 | 40 | 40.2 | 60.6329626 | 40.5 | 9.7 | 0.0132 | 0.029 | 60.63296 |
| 4 | 23 | 36 | 36.2 | 54.599832 | 36.5 | 10.4 | 0.0132 | 0.021 | 54.59983 |
| 8 | 22 | 34 | 33.9 | 51.1307819 | 34.5 | 10.7 | 0.0133 | 0.015 | 51.13078 |
| 15 | 22 | 30 | 29.9 | 45.0976513 | 30.5 | 11.4 | 0.0133 | 0.012 | 45.09765 |
| 30 | 22 | 24 | 23.9 | 36.0479554 | 24.5 | 12.4 | 0.0133 | 0.009 | 36.04796 |
| 60 | 22 | 21 | 20.9 | 31.5231074 | 21.5 | 12.9 | 0.0133 | 0.006 | 31.52311 |
| 90 | 22 | 18 | 17.9 | 26.9982595 | 18.5 | 13.3 | 0.0133 | 0.005 | 26.99826 |
| 120 | 22 | 16 | 15.9 | 23.9816942 | 16.5 | 13.7 | 0.0133 | 0.004 | 23.98169 |
| 240 | 22 | 14 | 13.9 | 20.9651289 | 14.5 | 14 | 0.0133 | 0.003 | 20.96513 |
| 360 | 23 | 13 | 13.2 | 19.909331 | 13.5 | 14.2 | 0.0132 | 0.003 | 19.90933 |
| 1440 | 22 | 12 | 11.9 | 17.9485636 | 12.5 | 14.3 | 0.0133 | 0.001 | 17.94856 |
| | | | | | | | | | |
| | | | | | | | | | |

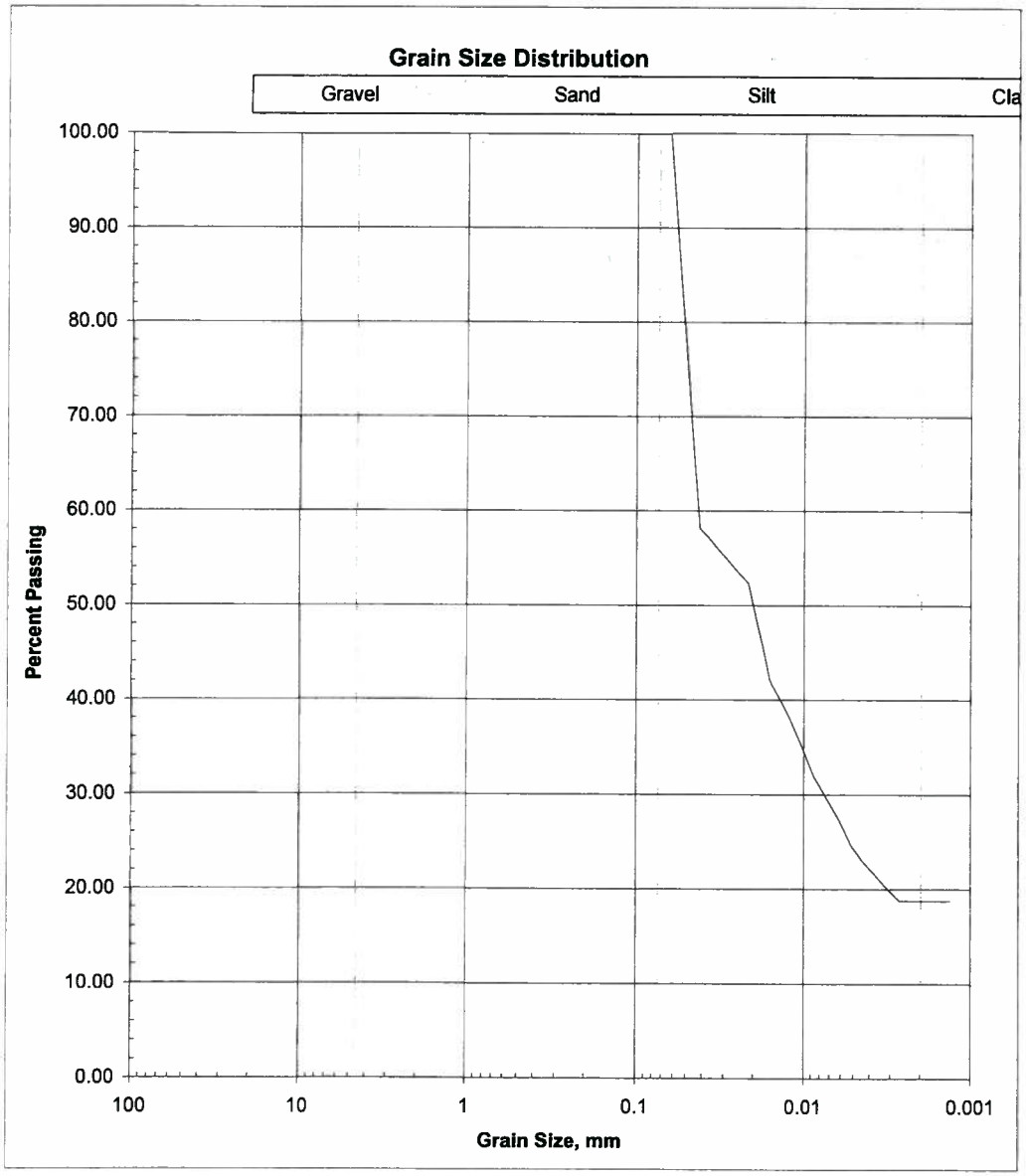
**ODOT TOPSOIL**

| | | | |
|---|---|---|---|
| Particle Dia. Above .002 | _____ | %finer | _____ |
| Particle Dia. below .002 | _____ | %finer | _____ |

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 100.0 | 0.0 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

## GRAIN SIZE ANALYSIS: ASTM D 421 and ASTM D 422

| | | | | | |
|---|---|---|---|---|---|
| Project Name | North Western Lake Sediments | | | Date | 2/6/2007 |
| Project Number | 53886/4 | | | Tested By | AW |
| Boring/Source | B5-01507 E | Depth (ft) | | Lab # | 1995 |
| Material Description | | | | | |



## Hydrometer Analysis

| | | | |
|---|---|---|---|
| Zero Correction | 1 | Dispersing Agent | NaPO3 |
| Specific Gravity, Gs | 2.683 | a = [(1.65Gs)/(2.65(Gs-1)) | 0.992601 |
| % Passing #10 Sieve (Sv10) | 100 | Start Time | |
| Tested Mass of Soil, Ms (gm) | 67.98 | Meniscus Correction (CorrM) | 0.5 |

| Elapsed Time (min) | Temp. (Celsius) | Actual Reading Ra | Corr. Reading Rc | % Finer (F%) [Rc*a/Ms] | Meniscus Corr. R | L | K | Particle Diameter (mm) | Adjusted % Finer [Sv10*F%] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 22 | 40 | 39.9 | 58.2594476 | 40.5 | 9.7 | 0.0133 | 0.041 | 58.25945 |
| 2 | 22 | 38 | 37.9 | 55.3391745 | 38.5 | 10.1 | 0.0133 | 0.030 | 55.33917 |
| 4 | 22 | 36 | 35.9 | 52.4189015 | 36.5 | 10.4 | 0.0133 | 0.021 | 52.4189 |
| 8 | 22 | 29 | 28.9 | 42.1979458 | 29.5 | 11.5 | 0.0133 | 0.016 | 42.19795 |
| 15 | 22 | 26 | 25.9 | 37.8175362 | 26.5 | 12 | 0.0133 | 0.012 | 37.81754 |
| 30 | 22 | 22 | 21.9 | 31.97699 | 22.5 | 12.7 | 0.0133 | 0.009 | 31.97699 |
| 60 | 22 | 19 | 18.9 | 27.5965804 | 19.5 | 13.2 | 0.0133 | 0.006 | 27.59658 |
| 90 | 22 | 17 | 16.9 | 24.6763074 | 17.5 | 13.5 | 0.0133 | 0.005 | 24.67631 |
| 120 | 22 | 16 | 15.9 | 23.2161708 | 16.5 | 13.7 | 0.0133 | 0.004 | 23.21617 |
| 240 | 22 | 14 | 13.9 | 20.2958978 | 14.5 | 14 | 0.0133 | 0.003 | 20.2959 |
| 360 | 22 | 13 | 12.9 | 18.8357613 | 13.5 | 14.2 | 0.0133 | 0.003 | 18.83576 |
| 1440 | 22 | 13 | 12.9 | 18.8357613 | 13.5 | 14.2 | 0.0133 | 0.001 | 18.83576 |
| | | | | | | | | | |
| | | | | | | | | | |

**ODOT TOPSOIL**

Particle Dia. Above .002 _____ %finer _____

Particle Dia. below .002 _____ %finer _____

| | % passing | %retained | spec. |
|---|---|---|---|
| 4.75mm | 100 | 0 | |
| .075mm | 100.0 | 0.0 | 5 - 70 |
| .002mm | #NUM! | #NUM! | 20 - 80 |
| -.002mm | | #NUM! | 5 - 30 |

# Appendix F
# Northwestern Aquatic Sciences Report

# REPORT

of

# TEST NO. 762-1 & 2

**Site investigation of Northwestern Lake Sediment Characterization**
**Condit Dam Removal Project (FERC No.2342)**
**White Salmon, Washington**
**Kleinfelder Project No. 58336 / 4**

**Submitted to**

**Squier | Kleinfelder**
**15050 SW Koll Parkway, Suite L**
**Beaverton, Oregon 97006**

**Submitted by**

**NORTHWESTERN AQUATIC SCIENCES**
**3814 YAQUINA BAY ROAD**
**P.O. BOX 1437**
**NEWPORT, OR 97365**

**February 28, 2007**

## EXECUTIVE SUMMARY OF SEDIMENT BIOASSAYS

Two freshwater sediment bioassays, a 10-day *Hyalella azteca* survival test and a 10-day *Chironomus dilutus* (formerly *C. tentans*) growth and survival test, were conducted for Squier Kleinfelder as part of the Northwestern Lake Sediment Characterization Condit Dam Removal Project (FERC No.2342), White Salmon, Washington, Kleinfelder Project No. 58336 / 4. One composite test sediment was compared to a reference sediment to assess sediment toxicity and to interpret organism response under the one-hit/two-hit rules described in "Dredged Material Evaluation Framework, Lower Columbia River Management Area -Nov. 1998 (U.S. Army Corps of Engineers, Northwestern Division, Portland District and Seattle District; U.S. Environmental Protection Agency, Region 10, Washington Department of Natural Resources, Washington Department of Ecology, and Oregon Department of Environmental Ecology)." The test sediments and reference sediments tested are listed in Table 1.

### TEST, REFERENCE, AND CONTROL SEDIMENT INFORMATION

The test and reference sediments were provided to Northwestern Aquatic Sciences by Squier Kleinfelder personnel. The negative control sediment was collected by NAS personnel from an area adjacent to the Highway 101 bridge at Beaver Creek, approximately 8 miles south of Newport, Oregon. All sediments were stored at 4°C in the dark until used. Sample identification and collection information is as follows:

**Table 1. Sample identification and collection dates.**

| Sample description | Kleinfelder Sample Identification | NAS Sample Identification | Collection Date | Receipt Date |
|---|---|---|---|---|
| Beaver Creek Control | Control | 0946G | 1-25-07 | 1-25-07 |
| Reference sediment* | B5-011507 | 0941G | 1-15-07 | 1-17-07 |
| Test sediment | NW Lakes | 0942G | 12/14/06-12/18/06 | 1-17-07 |

*Reference used for data interpretation.

### BIOASSAY INTERPRETATION CRITERIA

Biological test interpretation as presented in the "Evaluation Framework" relies upon two levels of observed response in the test organism. These are known as "one-hit" and "two-hit" criteria failures. The bioassay-specific guidelines for each of these response categories are listed below. In general, a one-hit failure is a marked response in comparison to the level of response from a reference in any one biological test. A two-hit failure exhibits a lower intensity response that must be present in two or more biological tests.

#### One-Hit Criteria

When any one of the biological tests shows a test sediment response that exceeds the bioassay-specific response guidelines (presented below), and that response is "statistically different" from the reference, the test sediment is judged to have failed the bioassay. A "statistically different" response is defined in the "Evaluation Framework" as having a response that is greater than 20% difference from that of the control, and is statistically different (alpha=0.05) from that of the reference sediment.

In accordance with the "Evaluation Framework", the bioassay-specific response guidelines for evaluating the "one hit criteria" are as follows:

**Amphipod Bioassay.** Mean test mortality is greater than 15 percent over the mean reference response, and statistically different from the reference (alpha = 0.05).

**Midge Bioassay.** Mean mortality in the test sediment is 20 percent over the reference mortality and statistically different from reference (alpha = 0.05). For the growth test, a mean biomass that is less than 60 percent of the reference sediment response and statistically different from reference (alpha = 0.05).

#### Two-Hit Criteria

When any two of the biological tests show test sediment responses that are less than the bioassay specific guidelines noted above for a one-hit failure, but are significantly different statistically from the reference sediment, the test sediment is judged to have failed bioassay testing (unsuitable for aquatic disposal).

## RESULTS OF AMPHIPOD, *HYALELLA AZTECA* 10-DAY SURVIVAL TEST (762-1)

All water quality observations were within the protocol specified ranges (Table 1, Section A). The test met all other applicable acceptability criteria including positive control performance (Section A).

The control and reference sediments exhibited mean mortalities of 0.0% and 1.3%, respectively (Table 2). Mortality of the test sediment was 0%. The test sediment mortality did not meet the criteria for failure under the one hit rule.

## RESULTS OF MIDGE, *CHIRONOMUS DILUTUS*, 10-DAY SURVIVAL AND GROWTH TEST (762-2)

All water quality observations were within the protocol specified ranges (Table 1, Section B). The test met all other applicable acceptability criteria including positive control performance (Section B).

The mortality in the control and the reference sediments in the *Chironomid* test was 21.3% and 17.5%, respectively. (Table 2). Mortality for the NW Lakes test sediment was 18.8%. The control average individual ash-free weight was 0.62 mg. The average individual ash-free weight for the reference and test sediments was 0.39 mg and 0.42 mg, respectively. The test sediment did not meet the criteria for failure under the one hit rule for either mortality or biomass.

## SUMMARY OF SEDIMENT BIOASSAY RESULTS

For a test sample to fail the "Evaluation Framework" Interpretive Criteria, the sample must be shown to exceed the "single-hit" criteria or that of the "two-hit" criteria to determine whether the sample passed or failed bioassay testing. The NW Lakes test sediment (NAS# 0942G) did not meet the criteria for test failure under the one hit rule for either test species and was not considered a failure under the "two-hit" rule (Table 2).

## STUDY APPROVAL

Lynda K. Nemeth 2/28/07
Laboratory Director Date

Gerald Crissari 3-1-07
Project Manager Date

**Table 2. Data summary and interpretation.**

| Sample Description | *Hyalella* % Mortality (Mean ± SD) | Failure under the one-hit rule? | Midge % Mortality (Mean ± SD) | Failure under the one-hit rule? | Average ind. ash-free wt/midge[1] (mg) | Failure under the one-hit rule? | Failure under the two-hit rule? | Overall Result |
|---|---|---|---|---|---|---|---|---|
| Control (NAS# 0946G) | 1.3 ± 3.5 | --- | 21.3 ± 6.4 | --- | 0.62 ± 0.06 | --- | --- | --- |
| B5-011507 (NAS# 0941G)[2] | 0.0 ± 0.0 | --- | 17.5 ± 10.4 | --- | 0.39 ± 0.05 | --- | --- | --- |
| NW Lakes (NAS# 0942G) | 0.0 ± 0.0 | No | 18.8 ± 18.1 | No | 0.42 ± 0.09 | No | No | Pass |

[1] Pupae were not included in the sample to estimate dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)
[2]Reference sediment used for data interpretation.
*Statistically significantly different from the reference

# SECTION A

## Amphipod (*Hyalella azteca*) sediment bioassay 762-1 data report

# TOXICITY TEST REPORT

## TEST IDENTIFICATION

Test No.: 762-1

Title: Toxicity of freshwater sediments using a 10-day amphipod, *Hyalella azteca*, sediment bioassay as part of the Northwestern Lake Sediment Characterization Condit Dam Removal Project (FERC No.2342), White Salmon, Washington, Kleinfelder Project No. 58336 / 4.

Protocol No.: NAS-XXX-HA4b, April 7, 1998 (Revision 1, 10-27-03). Based on ASTM 2001 (Standard test methods for measuring the toxicity of sediment-associated contaminants with fresh water invertebrates, E1706-00), Am. Soc. Test. Mat. Phila., PA, and EPA Method 100.1 (Methods for measuring the toxicity and bioaccumulation of sediment-associated contaminants with freshwater invertebrates, EPA/600/R-99/064).

## STUDY MANAGEMENT

Study Sponsor: Squier | Kleinfelder, 15050 SW Koll Parkway, Suite L, Beaverton, OR 97006-6028
Sponsor's Study Monitor: Mr. David King
Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365
Test Location: Newport laboratory
Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, B.A., M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicologist; M.S. Redmond, M.S., Aq. Toxicologist; G.A. Buhler, B.S., Aq. Toxicologist; Tech.; S.J. Gage, B.A., Sr. Tech.; G. Hutchinson, B.S., Tech.
Study Schedule:
Test Beginning: 2-2-07, 1030 hrs.
Test Ending: 2-12-07, 0930 hrs.
Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.
Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).
Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

## TEST MATERIAL

Test Sediments: Freshwater test sediments collected as part the Northwestern Lake Sediment Characterization Condit Dam Removal Project (FERC No.2342), White Salmon, Washington, Kleinfelder Project No. 58336 / 4. Details are as follows:

| | | |
|---|---|---|
| NAS Sample No. | 0941G | 0942G |
| Description | B5-011507 | NW Lakes |
| Collection Date | 1/15/07 | 12/14/06-12/18/06 |
| Receipt Date | 1/17/07 | 1/17/07 |

Reference Sediment: The reference sediment used for comparative analysis was B5-011507 (0941G).
Control Sediment: The negative control sediment (NAS#0946G) was collected on 1-25-07 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test, reference, and control sediments were stored at 4°C in the dark in sealed containers until used.

## TEST WATER

Source: Dechlorinated municipal tap water, which is also used as culture water.
Dates of Preparation: 1-31-07

Water Quality:
pH: 6.7
conductivity: 140 µmhos/cm
hardness: 34 mg/L as $CaCO_3$
alkalinity: 30 mg/L as $CaCO_3$.
total chlorine: <0.02 mg/L
Pretreatment: Aerated ≥24 hr.

## TEST ORGANISMS

Species: *Hyalella azteca,* amphipod.
Age/Size: 7-8 days old
Source: Chesapeake Cultures, Hayes, VA; received 1-31-07
Acclimation: Holding conditions prior to testing averaged: Temperature, 19.9 ± 1.2 °C; dissolved oxygen, 10.8 ± 3.6 mg/L; pH, 7.6 ± 0.2; conductivity, 313 ± 40 µmhos/cm; hardness, 117 ± 39 mg/L as $CaCO_3$; and alkalinity, 160 ± 36 mg/L as $CaCO_3$. Photoperiod, 16:8, L:D. Half of the water was replaced daily with dechlorinated municipal tap water during holding. Animals were fed YTC daily during holding.

## TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol (Appendix I) for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals are fed 1.0 ml of YTC suspension per beaker daily.
Effects Criterion: Survival after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Hardness and alkalinity were measured with titrimetric methods. Ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

## DATA ANALYSIS METHODS

Survival and mortality were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
percent mortality = 100 x (number dead/initial number tested)

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000. The value for mortality for each test sediment was statistically compared to the reference sediment. Where appropriate, an arcsine square root transformation was performed on proportional mortality data before analysis. Following determination of normality and homogeneity of variances, a one-tailed Student T-test, Mann-Whitney or Approximate T test was conducted at the 0.05 level of significance. The statistical software used was BioStat (Beta v.4.1 (EXCEL)) bioassay software developed by the U.S. Army Corps of Engineers, Seattle District.

## PROTOCOL DEVIATIONS

None

## REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix III.

Test No.: 999-2236
Reference Toxicant and Source: Potassium Chloride (KCl), Fisher Lot #045768.
Test Date: 2-2-07.
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 0.38 g/L. This result is within the laboratory's control chart warning limits (0.26 – 0.53 g/L).

## TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix II. The means and standard deviations of percent mortality of *Hyalella* exposed for 10 days to sediments are summarized in Table 2. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix II.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water was less than 0.1 mg/L in all day 0 and day 10 observations.

The test met the acceptability criteria specified in the *Dredged Material Evaluation Framework, Lower Columbia River Management Area* -Nov. 1998 with 0.0 % mean control mortality (≤20% required) and 1.3 % reference sediment survival (≤30% required). The reference toxicant (positive control) EC50 result was within the laboratory's control chart limits (0.38 μg/L; control chart mean ± 2 S.D. = 0.40 ± 0.14).

Data interpretation was conducted as described in *Dredged Material Evaluation Framework, Lower Columbia River Management Area* -Nov. 1998 (U.S. Army Corps of Engineers, Seattle District; U.S. Environmental Protection Agency, Region 10, Washington Department of Natural Resources, Washington Department of Ecology, and Oregon Department of Environmental Ecology). For a test sediment to fail under the single hit rule, the mean test mortality must be greater than 15 percentage points over the reference sediment response and "statistically different" from the reference sediment. A "statistically different" response is defined in the "Evaluation Framework" as having a mortality response that is greater than 20% difference from that of the control, and is statistically different ($\alpha = 0.05$) from that of the reference sediment. Following these guidelines, the NW Lakes test sediment mortality did not result in a failure under the one-hit rule.

**STUDY APPROVAL**

Gerald Crissani 3-1-07
Project Manager/Study Director Date

Linda K. Nemeth 2/28/07
Quality Assurance Unit Date

Linda K. Nemeth 2/28/07
Laboratory Director Date

Table 1. Summary of water quality conditions during tests of the amphipod, *Hyalella azteca*, exposed to freshwater sediments.

| Water Quality Parameter | Mean ± S.D. | Minimum | Maximum | N |
|---|---|---|---|---|
| Temperature (°C) | 22.5 ± 0.2 | 22.2 | 22.8 | 33 |
| Dissolved oxygen (mg/L) | 6.9 ± 0.4 | 5.9 | 7.6 | 33 |
| Conductivity (µmhos/cm) | 151 ± 12 | 135 | 170 | 6 |
| pH | 6.1 ± 0.2 | 6.0 | 6.5 | 6 |
| Hardness (mg/L as $CaCO_3$) | 34 ± 0 | 34 | 34 | 6 |
| Alkalinity (mg/L as $CaCO_3$) | 35 ± 5 | 30 | 40 | 6 |
| Total ammonia (mg/L) | --- | <0.1 | <0.1 | 6 |

Table 2. Mortality results of *Hyalella* 10-day toxicity test and data interpretation using guidelines from the "Dredged Material Evaluation Framework, Lower Columbia River Management Area," November 1998. For a test sediment to fail under the single hit rule, the mean test mortality must be >15% over the reference sediment response, and "statistically different" ($\alpha = 0.05$) from the reference sediment. A "statistically different" response is defined in the "Evaluation Framework" as having a response that is greater than 20% difference from that of the control, and is statistically different ($\alpha = 0.05$) from that of the reference sediment.

| Sample description | Percent mortality (Mean ± SD) | Statistically significantly different than that of the reference? | Difference from negative control sediment | Difference from reference sediment | Failure under 1-hit rule? |
|---|---|---|---|---|---|
| Control (NAS# 0946G) | 0.0 ± 0.0 | --- | --- | --- | --- |
| B5-011507 (NAS# 0941G) * | 1.3 ± 3.5 | --- | --- | --- | --- |
| NW Lakes (NAS# 0942G) | 0.0 ± 0.0 | No | 0.0 | -1.3 | No |

*Reference sediment

# APPENDIX I

# PROTOCOL

# TEST PROTOCOL

## FRESHWATER AMPHIPOD, *HYALELLA AZTECA*, 10-DAY SEDIMENT TOXICITY TEST

## 1. INTRODUCTION

1.1 Purpose of Study: The purpose of this study is to characterize the toxicity of freshwater sediments based on survival and, optionally, growth using the amphipod, *Hyalella azteca*.

1.2 Referenced Method: This protocol is based on EPA Method 100.1 (EPA/600/R-99/064) and ASTM Method E 1706-00 (ASTM 2001).

1.3 Summary of Method: A summary of test conditions for the amphipod 10-day sediment toxicity test is tabulated below. The 10-day sediment toxicity test with *Hyalella azteca* is conducted at 23 ± 1°C with a 16L:8D photoperiod at an illuminance of about 100 to 1000 lux. Test chambers are 300-mL high-form lipless beakers containing 100 mL of sediment and 175 mL of overlying water. Ten 7-14 day old amphipods (1 to 2 day range in age) are used in each replicate. The number of replicates/treatment depends on the objective of the test. Eight replicates are recommended for routine testing. Amphipods in each test chamber are fed 1.0 mL of a YCT food daily. Each chamber receives two volume additions per day of overlying water. Overlying water can be culture water, well water, surface water, site water, or reconstituted water. Test endpoints include survival and/or growth.

## 2. STUDY MANAGEMENT

2.1 Sponsor's Name and Address:

_____
_____
_____
_____

2.2 Sponsor's Study Monitor:

_____

2.3 Name of Testing Laboratory:
Northwestern Aquatic Sciences
3814 Yaquina Bay Road, P.O. Box 1437
Newport, OR 97365.

2.4 Test Location: _____

2.5 Laboratory's Personnel to be Assigned to the Study:
Study Director: _____
Quality Assurance Unit: _____
Aquatic Toxicologist: _____
Aquatic Toxicologist: _____

2.6 Proposed Testing Schedule: Tests are to begin within 14 days of sample collection unless otherwise specified. Reference toxicant test to be run concurrently.

2.7 Good Laboratory Practices: The test is conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

## 3. TEST MATERIAL

The test materials are freshwater sediments. The control, reference, and test sediments are placed in solvent cleaned 1 L glass jars fitted with PTFE-lined screw caps. At the laboratory the samples are stored at 4°C in the dark. The original sealed containers may be stored for up to 14 days prior to testing. If jars are not not full when received or if sediment is removed for testing, headspaces should be filled with nitrogen to retard deterioration. A negative control sediment is collected from a clean site. In addition, a reference sediment, a clean sediment with physical characteristics similar to the test sediments, may be employed as a comparison station.

## 4. TEST WATER

Test water (overlying water) at NAS is normally moderately hard synthetic water at a hardness of 80-100 mg/L as $CaCO_3$ and alkalinity of 60-70 mg/L as $CaCO_3$. Dilution water is prepared from Milli-Q reagent grade water and reagent grade chemicals. Test water may also be well water, surface water or site water, depending on the study design.

## 5. TEST ORGANISMS

5.1 Species: amphipod, *Hyalella azteca.*

5.2 Source: Cultured at NAS or purchased from a reputable commercial supplier.

5.3 Age: 7-14 days old at start of test; with 1 to 2 day range in age.

5.4 Acclimation and Pretest Observation: Test organisms must be cultured and tested at 23°C . Ideally they should be cultured in the same water that will be the test water. However, acclimation to test water is not required. Isolated young should be held similarly to mass cultures for at least two days (eliminate the feeding instructions) before starting the test to eliminate animals injured during handling

## 6. DESCRIPTION OF TEST SYSTEM

6.1 Test Chambers and Environmental Control: Test chambers used in the toxicity test are 300-mL high-form lipless glass beakers. Test chambers are maintained at constant temperature by partial immersion in a temperature-controlled water bath or by placement in a temperature-controlled room. Aeration is not employed unless dissolved oxygen drops below 2.5 mg/L. The test is conducted under an illuminance of 100 to 1000 lx with a 16L:8D photoperiod.

6.2 Cleaning: All laboratory glassware, including test chambers, is cleaned as described in EPA/600/4-90/027F. New glassware and test systems are soaked 15 minutes in tap water and scrubbed with detergent (or cleaned in automatic dishwasher); rinsed twice with tap water; carefully rinsed once with fresh, dilute (10%, V:V) hydrochloric or nitric acid to remove scale, metals, and bases; rinsed twice with deionized water; rinsed once with acetone to remove organic compounds (using a fume hood or canopy); and rinsed three times with deionized water. Test systems and chambers are rinsed again with dilution water just before use.

## 7. EXPERIMENTAL DESIGN AND TEST PROCEDURES

7.1 Experimental Design: The test involves exposure of amphipods to test, control, and reference sediments. The sediments are placed on the bottom of the test containers and are overlain with test water. The test exposure is for 10 days. The renewal of overlying water consists of two volume additions per day, either continuous or

intermittent. Each treatment consists of eight replicate test containers, each containing 10 organisms. Test chamber positions are completely randomized. Test organisms are randomly distributed to the test chambers. Blind testing is normally used.

7.2 Setup of Test Containers: Sediments are homogenized and placed in test chambers on the day before addition of test organisms. Sediment (100 ml) is placed into each of eight replicate beakers. After addition of the sediment, 175 ml of test water is gently added to each beaker in a manner to prevent resuspension. The overlying water is replaced twice daily. The test begins when amphipods are introduced to the test chambers. Initial water quality measurements are taken prior to the addition of test organisms.

7.3 Effect Criterion: The effect criterion used in the amphipod bioassay is mortality, defined as the lack of movement of body or appendages on response to tactile stimulation. The optional sublethal effect criterion is growth which is determined by using dry weight measurements or body length measurements.

7.4 Test Conditions: No aeration is employed unless dissoved oxygen falls below 2.5 mg/L. The test temperature employed is 23 ± 1°C. A 16:8, L:D photoperiod is used. Illumination is supplied by daylight fluorescent lamps at 100 to 1000 lux. The overlying water is replaced twice daily.

7.5 Beginning the Test: On the day the test begins, amphipods are impartially counted into small containers of test water (10/container). The test is begun by rinsing test organisms into the equilibrated test containers. If the optional growth endpoint is to be used. Twenty organisms are archived for length determination or 80 organisms for dry weight.

7.6 Feeding: Amphipods are fed 1.0 mL of YCT daily per test chamber. A feeding may be skipped if there is a build up of excess food. However, all beakers must be treated similarly.

7.7 Test Duration, Type and Frequency of Observations, and Methods: The duration of the acute toxicity test is 10 days. The type and frequency of observations to be made are summarized as follows:

| TYPE OF OBSERVATION | TIMES OF OBSERVATION |
|---|---|
| *BIOLOGICAL DATA* | |
| Survival, growth | Day 10 |
| *PHYSICAL AND CHEMICAL DATA* | |
| Hardness, alkalinity, ammonia-N, conductivity, pH, dissolved oxygen, and temperature | Beginning and end of test in overlying water of one replicate beaker from each treatment. |
| Dissolved oxygen, temperature | Daily in overlying water of one replicate beaker from each treatment. |

Dissolved oxygen is measured using a polarographic oxygen probe calibrated according to the manufacturer's recommendations. The pH is measured using a pH probe and a properly calibrated meter with scale divisions of 0.1 pH units. Temperature is measured with a calibrated mercury thermometer or telethermometer. Conductivity is measured with a conductivity meter. Hardness and alkalinity are measured using titrometric methods. Ammonia-nitrogen is measured using the salicylate colerimetric method (Clin. Chim. Acta 14:403, 1996).

Overlying water should be sampled just before water renewal from about 1 to 2 cm above the sediment surface using a pipet. It may be necessay to pool water samples from individual replicates. The pipet should be checked to make sure no organisms are removed during sampling of overlying water.

7.8 Growth Measurement: Growth is measured as average dry weight of animals in a test replicate at the end of the test on day 10 or average total length of preserved animals. Pooled animals from each test replicate are rinsed with deionized water and placed into tared aluminum weigh pans. The pans are dried at 60-90°C to constant weight. The dried amphipods are placed into a dessicator and weighed as soon as possible to the nearest 0.01 mg (desirable

to use 0.001 mg). The total weight of the dried amphipods in each pan is divided by the number of amphipods weighed to obtain an average dry weight per surviving amphipod per replicate.

If the length growth endpoint is to be used, either in place of or along with the weight endpoint, amphipods from each replicate are pooled and preserved in vials. Later, the preserved amphipods from one vial are carefully stretched out on a glass microscope slide and quickly measured using a dissecting microscope fitted with a calibrated ocular micrometer. Then, if weight is to be determined, the animals are quickly transferred to tared aluminum foil cups. Fine-tipped forceps or fine brushes are required for these handling operations.

If both measurements are to be used, total length measurements are taken first, then the animals are transferred to tared aluminum foil cups for weighing.

## 8. CRITERIA OF TEST ACCEPTANCE

The test results are acceptable if the minimum survival of organisms in the control treatment at the end of the test is at least 80%. For the growth endpoint, the test results are acceptable if there is measureable growth of test organisms in the control sediment.

## 9. DATA ANALYSIS

The endpoints of the toxicity test are survival and growth (optional). Survival is obtained as a direct count of living organisms in each test container at the end of the test. Average amphipod dry weight, also measured at the end of the test, may be used to compare growth between treatment sediments and the control or reference sediment. Body length may be used instead of dry weight. Ordinarily the following data analysis is performed. Due to special requirements, alternative methods may be used. The means and standard deviations are calculated for each treatment level. Identification of toxic sediments is established by statistical comparison of test endpoints between test and control or reference sediments. Between treatment comparisons may be made using a Student's t-test or Wilcoxon's Two-Sample test, where each treatment is compared to the control or the reference sediment. An arcsine-square root transformation of proportional data, and tests for normality and heterogeneity of variances, are performed prior to statistical comparisons.

## 10. REPORTING

The final report of the test results must include all of the following standard information at a minimum: name and identification of the test; the investigator and laboratory; date and time of test beginning and end; information on the test material; information on the source and quality of the overlying/test water; detailed information about the test organisms including acclimation conditions; a description of the experimental design and test chambers and other test conditions including feeding, if any, and water quality; definition of the effect criteria and other observations; responses, if any, in the control treatment; tabulation and statistical analysis of measured responses and a summary table of endpoints; a description of the statistical methods used; any unusual information about the test or deviations from procedures; reference toxicant testing information.

## 11. STUDY DESIGN ALTERATION

Amendments made to the protocol must be approved by the sponsor and study director and should include a description of the change, the reason for the change, the date the change took effect and the dated signatures of the study director and sponsor. Any deviations in the protocol must be described and recorded in the study raw data.

## 12. REFERENCE TOXICANT

The reference toxicant test is a standard multi-concentration toxicity test using a specified chemical toxicant to evaluate the performance of test organisms used in the study. Reference toxicant tests are 96-hour, water only exposures, not 10-day sediment exposures. The reference toxicant test is run concurrently. Performance is evaluated by comparing the results of the reference toxicant test with historical results (e.g., control charts) obtained at the laboratory.

## 13. REFERENCED GUIDELINES

ASTM. 2001. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., Philadelphia, PA.

U.S. EPA. 2000. Section 11, Test Method 100.1, *Hyalella azteca* 10-d Survival and Growth Test for Sediments, pp. 47-54 In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

Weber, C.I. (Ed.) 1993. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (Fourth Edition). EPA/600/4-90/027F.

## 14. APPROVALS

_____ for _____
Name Date

_____ for **Northwestern Aquatic Sciences**
Name Date

**Appendix A**
**Test Conditions Summary**

| | |
|---|---|
| 1. Test type | whole sediment toxicity test with renewal of overlying water |
| 2. Test duration | 10 days |
| 3. Temperature | 23 ± 1°C |
| 4. Light quality | daylight flourescent light |
| 5. Illuminance | 100 - 1000 lux |
| 6. Photoperiod | 16L:8D |
| 7. Test chamber size | 300-mL high-form lipless beakers, (Pyrex® 1040 or equivalent) |
| 8. Sediment volume | 100 mL |
| 9. Overlying water volume | 175 mL |
| 10. Renewal overlying water | 2 volume additions/day (continuous or intermittent) |
| 11. Age of test organisms | 7-14 days old at test initiation (1 to 2 day range in age) |
| 12. Organisms per test chamber | 10 |
| 13. Replicates per treatment | 8 recommended for routine testing (depends on design) |
| 14. Organisms per treatment | 80 |
| 15. Feeding regime | YCT food, fed 1.0 mL daily/chamber |
| 16. Cleaning | if screens are used, clean as needed |
| 17. Aeration | None, unless DO falls below 2.5 mg/L |
| 18. Overlying (test) water | Culture water, well water, surface water, site water or reconstituted water |
| 19. Water quality | Hardness, alkalinity, conductivity, pH, ammonia-N beginning and end; temperature and dissolved oxygen daily |
| 20. Endpoints | Survival (optional, growth by dry weight or length) |
| 21. Test acceptability criteria | Minimum control survival of 80% |
| 22. Sample holding | 14 days at 4°C in the dark |
| 23. Sample volume required | 1L (800 mL per sediment) |
| 24. Reference toxicant | Concurrent testing required |

# APPENDIX II

# RAW DATA

# TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator REVIEWED PAGES 1-20 GJI

**STUDY MANAGEMENT**

Client: Squier | Kleinfelder, 15050 SW Koll Parkway, Suite L, Beaverton, OR 97006

Client's Study Monitor: Mr. David King

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth

1. Greg Hutchinson GH
2. GA Buhler VAD
3. Susan Gage [illegible]
4.
5.
6.
7.
8.

Study Schedule:

Test Beginning: 2-2-07 1030 Test Ending: 2-12-07 0930

**TEST MATERIAL**

General description (see sample logbook/chain-of-custody for details):

| | | | | | |
|---|---|---|---|---|---|
| NAS Sample No.: | 0946G | 0941G | 0942G | | |
| Description: | Control | B5-011507 | NW Lakes | | |
| Collection Date: | 1/25/07 | 1/15/07 | 12/14/06-12/18/06 | | |
| Receipt Date: | 1/25/07 | 1/17/0~~6~~7 | 1/17/0~~6~~7 | | |
| : | | 2-14-07 (3) GJI | | | |
| NAS Sample No.: | | | | | |
| Description: | | | | | |
| Collection Date: | | | | | |
| Receipt Date: | | | | | |
| : | | | | | |
| NAS Sample No.: | | | | | |
| Description: | | | | | |
| Collection Date: | | | | | |
| Receipt Date: | | | | | |
| : | | | | | |
| NAS Sample No.: | | | | | |
| Description: | | | | | |
| Collection Date: | | | | | |
| Receipt Date: | | | | | |
| : | | | | | |
| NAS Sample No.: | | | | | |
| Description: | | | | | |
| Collection Date: | | | | | |
| Receipt Date: | | | | | |
| : | | | | | |

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

| Sample No. | Description |
|---|---|
| 0946G | BLACK FINE MUD |
| 0941G | LIGHT BROWN FINE MUD w/ GRASS ROOTS + PLANT DEBRIS |
| 0942G | DARK BROWN FINE MUD w/ SOME SAND AND PLANT DEBRIS |

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator

**TEST WATER**

Source: Dechlorinated municipal tap water

Date of Collection: 1-31-07

pH 6.7

Cond (umhos/cm2) 140

Hardness (mg/La0 34

Alkalinity (mg/L) 30

Total Chlorine (mg/L) <0.02

Treatments: Dechlorinated, aerated

**TEST ORGANISMS**

Species: *Hyalella azteca* Age: 7-8 DAYS

Source: Chesapeake Cultures, Hayes, VA Date received: 1-31-07

Acclimation Data:

| Date | Temp. (deg.C) | DO (mg/L) | pH | Cond. umhos/cm | Hardness (mg/L) | Alkalinity (mg/L) | Feeding amount | Feeding description | Water changes |
|---|---|---|---|---|---|---|---|---|---|
| 1-31-07 | 18.9 | >15.0 | 7.8 | 355 | 154 | 200 | 10 mL | YTC | ½ WATER REPLACED |
| 2-1-07 | 19.7 | 8.9 | 7.6 | 310 | 120 | 150 | 10 mL | YTC | ½ WATER REPLACED |
| 2-2-07 | 21.2 | 8.5 | 7.5 | 275 | 77 | 130 | — | — | — |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Mean | 19.9 | 10.8 | 7.6 | 313 | 117 | 160 | | | |
| S.D. | 1.2 | 3.6 | 0.2 | 40 | 39 | 36 | | | |
| (N) | 3 | 3 | 3 | 3 | 3 | 3 | | | |

Photoperiod during acclimation: 16:8, L:D

**TEST PROCEDURES AND CONDITIONS**

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Beaker placement: Total randomization

Feeding: everyday beginning with day zero

Photoperiod: 16:8, L:D

Test temperature (°C): 23 ± 1

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 01/25/07

Sieved through 0.5 -mm screen

Storage: darkness at 4°C, in sealed containers NAS# 0946G

**MISCELLANEOUS NOTES**

Light intensity:

| Date | Location | Measurement | Initials |
|---|---|---|---|
| 2-2-07 | BEAKER 17 | 89 FT CANDLES | GJ |

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator _____

Test conducted in (circle one): room 1 room 2 trailer water bath other: ROOM # 3

Randomization chart: TOP SHELF

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5 | 10 | 15 | 20 | | | | | | |
| 4 | 9 | 14 | 19 | 24 | | | | | |
| 3 | 8 | 13 | 18 | 23 | | | | | |
| 2 | 7 | 12 | 17 | 22 | | | | | |
| 1 | 6 | 11 | 16 | 21 | | | | | |

Randomization chart:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Randomization chart:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Randomization chart:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 0 (2 / 2 /07) AJ/GH

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond.* µmhos/cm | pH* | Hardness* (mg/L) | Alkalinity* (mg/L) | NH3* (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.5 | 7.6 | 135 | 6.1 | 34 | 30 | <0.1 | Each beaker fed 1.0 ml |
| 12 | 22.3 | 6.8 | 170 | 6.5 | 34 | 30 | <0.1 | YTC suspension |
| 22 | 22.2 | 7.2 | 145 | 6.0 | 34 | 30 | <0.1 | Initials: GH |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1640 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |

*Water quality measurements to be taken.

Day 1 (2 /3 /07) GJ

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. µmhos/cm | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.8 | 7.2 | | | | | | Each beaker fed 1.0 ml |
| 12 | 22.7 | 7.3 | | | | | | YTC suspension |
| 22 | 22.6 | 7.2 | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1700 |
| | | | | | | | | Initials: AJ |
| | | | | | | | | |

*Water quality measurements to be taken.

Test No. 762-1 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 2 (2/4/07) GJL

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.7 | 7.1 | | | | | | Each beaker fed 1.0 ml |
| 12 | 22.6 | 7.2 | | | | | | YTC suspension |
| 22 | 22.5 | 7.2 | | | | | | Initials: GJL |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0645 |
| | | | | | | | | Initials: GJL |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1705 |
| | | | | | | | | Initials: sf |
| | | | | | | | | |

*Water quality measurements to be taken.

Day 3 (2/5/07) [illegible]

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.3 | 7.4 | | | | | | Each beaker fed 1.0 ml |
| 12 | 22.4 | 7.4 | | | | | | YTC suspension |
| 22 | 22.3 | 7.4 | | | | | | Initials: GJL |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: cb |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1825 |
| | | | | | | | | Initials: sf |
| | | | | | | | | |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 4 (2/6/07) WS/AJ

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.6 | 6.7 | | | | | | Each beaker fed 1.0 ml |
| 12 | 22.5 | 6.0 | | | | | | YTC suspension |
| 22 | 22.5 | 6.6 | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0630 |
| | | | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1720 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |

*Water quality measurements to be taken.

Day 5 (2/7/07) WS/AJ

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.5 | 6.3 | | | | | | Each beaker fed 1.0 ml |
| 12 | 22.5 | 5.9 | | | | | | YTC suspension |
| 22 | 22.4 | 6.2 | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0615 |
| | | | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1635 |
| | | | | | | | | Initials: GH |
| | | | | | | | | |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 6 (2/8/07) WS/AJ

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.8 | 6.6 | | | | | | Each beaker fed 1.0 ml |
| 12 | 22.7 | 6.0 | | | | | | YTC suspension |
| 22 | 22.7 | 6.4 | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0615 |
| | | | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1645 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |

*Water quality measurements to be taken.

Day 7 (2/9/07) GJ/AJ/GH

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.6 | 7.1 | | | | | | Each beaker fed 1.0 ml |
| 12 | 22.7 | 7.0 | | | | | | YTC suspension |
| 22 | 22.6 | 7.0 | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1635 |
| | | | | | | | | Initials: GH |
| | | | | | | | | |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 8 (2/10/07 WS

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.5 | 7.2 | | | | | | Each beaker fed 1.0 ml |
| 12 | 22.4 | 7.1 | | | | | | YTC suspension |
| 22 | 22.4 | 7.1 | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0520 |
| | | | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1550 |
| | | | | | | | | Initials: AJ |

*Water quality measurements to be taken.

Day 9 (2/11/07) WS

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.4 | 7.1 | | | | | | Each beaker fed 1.0 ml |
| 12 | 22.4 | 7.0 | | | | | | YTC suspension |
| 22 | 22.4 | 7.2 | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1730 |
| | | | | | | | | Initials: AJ |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 10 (2 /12 /07) GJL

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond.* (µmhos/cm) | pH* | Hardness* (mg/L) | Alkalinity* (mg/L) | NH3* (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 7 | 22.7 | 7.1 | 150 | 6.0 | 34 | 40 | <0.1 | Each beaker fed 1.0 ml |
| 12 | 22.7 | 7.2 | 155 | 6.1 | 34 | 40 | <0.1 | YTC suspension |
| 22 | 22.6 | 7.2 | 150 | 6.1 | 34 | 40 | <0.1 | Initials: — |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: GJL |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: |
| | | | | | | | | Initials: |
| | | | | | | | | |

*Water quality measurements to be taken.

Day ( / / )

| Beaker No. | Temp. (deg.C) | DO (ppm) | Cond. (µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Each beaker fed 1.0 ml |
| | | | | | | | | YTC suspension |
| | | | | | | | | Initials: |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: |
| | | | | | | | | Initials: |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: |
| | | | | | | | | Initials: |
| | | | | | | | | |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-HA4b

HYALELLA AZTECA 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-1 Client Squier Kleinfelder Investigator _____

DAY 10 TEST TERMINATION SHEET

| Beaker No. | Number of survivors | Initials |
|---|---|---|
| 1 | 10 | GAB |
| 2 | 10 | GAB |
| 3 | 10 | GAB |
| 4 | 10 | GAB |
| 5 | 10 | GAB |
| 6 | 10 | GAB |
| 7 | 10 | GAB |
| 8 | 10 | GAB |
| 9 | 10 | GAB |
| 10 | 10 | GAB |
| 11 | 10 | GAB |
| 12 | 10 | GAB |
| 13 | 10 | GAB |
| 14 | 10 | GAB |
| 15 | 10 | GAB |
| 16 | 10 | GAB |
| 17 | 9 | GAB |
| 18 | 10 | GAB |
| 19 | 10 | GAB |
| 20 | 10 | GAB |
| 21 | 10 | GAB |
| 22 | 10 | GAB |
| 23 | 10 | GAB |
| 24 | 10 | GAB |
| 25 | | |
| 26 | | |
| 27 | | |
| 28 | | |
| 29 | | |
| 30 | | |
| 31 | | |
| 32 | | |
| 33 | | |
| 34 | | |
| 35 | | |
| 36 | | |
| 37 | | |
| 38 | | |
| 39 | | |
| 40 | | |
| 41 | | |
| 42 | | |
| 43 | | |
| 44 | | |
| 45 | | |

| Beaker No. | Number of survivors | Initials |
|---|---|---|
| 46 | | |
| 47 | | |
| 48 | | |
| 49 | | |
| 50 | | |
| 51 | | |
| 52 | | |
| 53 | | |
| 54 | | |
| 55 | | |
| 56 | | |
| 57 | | |
| 58 | | |
| 59 | | |
| 60 | | |
| 61 | | |
| 62 | | |
| 63 | | |
| 64 | | |
| 65 | | |
| 66 | | |
| 67 | | |
| 68 | | |
| 69 | | |
| 70 | | |
| 71 | | |
| 72 | | |
| 73 | | |
| 74 | | |
| 75 | | |
| 76 | | |
| 77 | | |
| 78 | | |
| 79 | | |
| 80 | | |
| 81 | | |
| 82 | | |
| 83 | | |
| 84 | | |
| 85 | | |
| 86 | | |
| 87 | | |
| 88 | | |
| 89 | | |
| 90 | | |

# Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS

Shipment Information

Species Hyalella azteca

Date 1/30/07

Age ~4-5 days ~1.5 mm

P.O. No. verbal

Quantity 450+

Invoice No. 5654

Temperature 23.5°C Salinity — pH 7.95

Notes RECEIVED 1-31-07 GJ

Biologist [signature]

*Please inspect shipment and report any problem immediately*

Test Number: P762-1

Freshwater Sediment Test
10-day Hyalella azteca

| BKR | NAS SMPL | CLIENT DESCRIP | REPL | |
|---|---|---|---|---|
| 6 | 0946G | Control | 1 | |
| 20 | 0946G | Control | 2 | |
| 5 | 0946G | Control | 3 | |
| 14 | 0946G | Control | 4 | |
| 18 | 0946G | Control | 5 | |
| 8 | 0946G | Control | 6 | |
| 16 | 0946G | Control | 7 | |
| 12 | 0946G | Control | 8 | wq replicate |
| 4 | 0941G | B5-011507 | 1 | |
| 1 | 0941G | B5-011507 | 2 | |
| 19 | 0941G | B5-011507 | 3 | |
| 21 | 0941G | B5-011507 | 4 | |
| 11 | 0941G | B5-011507 | 5 | |
| 17 | 0941G | B5-011507 | 6 | |
| 2 | 0941G | B5-011507 | 7 | |
| 7 | 0941G | B5-011507 | 8 | wq replicate |
| 3 | 0942G | NW Lakes | 1 | |
| 13 | 0942G | NW Lakes | 2 | |
| 10 | 0942G | NW Lakes | 3 | |
| 23 | 0942G | NW Lakes | 4 | |
| 15 | 0942G | NW Lakes | 5 | |
| 9 | 0942G | NW Lakes | 6 | |
| 24 | 0942G | NW Lakes | 7 | |
| 22 | 0942G | NW Lakes | 8 | wq replicate |

# TEST DATA ANALYSIS RECORDS

Test Number: P762-1

Freshwater Sediment Test
10-day Hyalella azteca

## Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

| INDEX | BKR | NAS SMPL | CLIENT DESCRIP | REPL | | INIT | SURV | MORT | PSURV | PMORT | | | SURV | MORT | PSURV | PMORT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 0946G | Control | 1 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 2 | 20 | 0946G | Control | 2 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 3 | 5 | 0946G | Control | 3 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 4 | 14 | 0946G | Control | 4 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 5 | 18 | 0946G | Control | 5 | | 10 | 10 | 0 | 100.0 | 0.0 | | Mean | 10.0 | 0.0 | 100.0 | 0.0 |
| 6 | 8 | 0946G | Control | 6 | | 10 | 10 | 0 | 100.0 | 0.0 | | SD | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | 16 | 0946G | Control | 7 | | 10 | 10 | 0 | 100.0 | 0.0 | | n | 8 | 8 | 8 | 8 |
| 8 | 12 | 0946G | Control | 8 | wq replicate | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 9 | 4 | 0941G | B5-011507 | 1 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 10 | 1 | 0941G | B5-011507 | 2 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 11 | 19 | 0941G | B5-011507 | 3 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 12 | 21 | 0941G | B5-011507 | 4 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 13 | 11 | 0941G | B5-011507 | 5 | | 10 | 10 | 0 | 100.0 | 0.0 | | Mean | 9.9 | 0.1 | 98.8 | 1.3 |
| 14 | 17 | 0941G | B5-011507 | 6 | | 10 | 9 | 1 | 90.0 | 10.0 | | SD | 0.4 | 0.4 | 3.5 | 3.5 |
| 15 | 2 | 0941G | B5-011507 | 7 | | 10 | 10 | 0 | 100.0 | 0.0 | | n | 8 | 8 | 8 | 8 |
| 16 | 7 | 0941G | B5-011507 | 8 | wq replicate | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 17 | 3 | 0942G | NW Lakes | 1 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 18 | 13 | 0942G | NW Lakes | 2 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 19 | 10 | 0942G | NW Lakes | 3 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 20 | 23 | 0942G | NW Lakes | 4 | | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |
| 21 | 15 | 0942G | NW Lakes | 5 | | 10 | 10 | 0 | 100.0 | 0.0 | | Mean | 10.0 | 0.0 | 100.0 | 0.0 |
| 22 | 9 | 0942G | NW Lakes | 6 | | 10 | 10 | 0 | 100.0 | 0.0 | | SD | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | 24 | 0942G | NW Lakes | 7 | | 10 | 10 | 0 | 100.0 | 0.0 | | n | 8 | 8 | 8 | 8 |
| 24 | 22 | 0942G | NW Lakes | 8 | wq replicate | 10 | 10 | 0 | 100.0 | 0.0 | | | | | | |

Project Name: P762-1 Hyalella 10-day; % Mortality

| | |
|---|---|
| Sample: | x1 |
| Samp ID: | NW Lakes |
| Alias: | NAS# 0942G - X1 |
| Replicates: | 8 |
| Mean: | 0 |
| SD: | 0 |
| Tr Mean: | -0.118 |
| Trans SD: | 0 |

| | |
|---|---|
| Ref Samp: | x2 |
| Ref ID: | B5-011507 |
| Alias: | NAS# 0941G - X2 |
| Replicates: | 8 |
| Mean: | 1.25 |
| SD: | 3.536 |
| Tr Mean: | 0.118 |
| Trans SD: | 0.666 |

| Shapiro-Wilk Results: | | Levene's Results: | | Test Results: | |
|---|---|---|---|---|---|
| Residual Mean: | | Test Residual Mean: | 0 | Statistic: | Approximate t |
| Residual SD: | | Test Residual SD: | 0 | Balanced Design: | Yes |
| SS: | | Ref. Residual Mean: | 0.412 | Transformation: | Rankits |
| K: | | Ref. Residual SD: | 0.5 | | |
| b: | | Deg. of Freedom: | 14 | | |
| | | | | Experimental Hypothesis | |
| Alpha Level: | N/A | Alpha Level: | 0.1 | Null: | x1 <= x2 |
| Calculated Value: | N/A | Calculated Value: | 2.3333 | Alternate: | x1 > x2 |
| Critical Value: | N/A | Critical Value: | >= 1.761 | | |
| Normally Distributed: | N/A | Variances Homogeneous: | No | Degrees of Freedom: | 7 |
| | | | | Experimental Alpha Level: | 0.05 |
| Override Option: | Not Invoked | | | Calculated Value: | -1 |
| | | | | Critical Value: | >= 1.895 |
| | | | | Accept Null Hypothesis: | Yes |
| | | | | Power: | |
| | | | | Min. Difference for Power: | |

| Replicate Number | Test Data | Trans. Test Data | Reference Data | Trans. Reference Data | Levene's Test Residuals | Levene's Reference Residuals | Mann-Whitney Ranks | Rankits | Shipiro-Wilk Residuals |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | -0.118 | 0 | -0.118 | 0 | 0.235 | | 0 | |
| 2 | 0 | -0.118 | 0 | -0.118 | 0 | 0.235 | | 0 | |
| 3 | 0 | -0.118 | 0 | -0.118 | 0 | 0.235 | | 0 | |
| 4 | 0 | -0.118 | 0 | -0.118 | 0 | 0.235 | | 0 | |
| 5 | 0 | -0.118 | 0 | -0.118 | 0 | 0.235 | | 0 | |
| 6 | 0 | -0.118 | 10 | 1.766 | 0 | 1.648 | | 0 | |
| 7 | 0 | -0.118 | 0 | -0.118 | 0 | 0.235 | | 0 | |
| 8 | 0 | -0.118 | 0 | -0.118 | 0 | 0.235 | | 0 | |
| 9 | | | | | | | | 0 | |
| 10 | | | | | | | | 0 | |
| 11 | | | | | | | | 0 | |
| 12 | | | | | | | | 0 | |
| 13 | | | | | | | | 0 | |
| 14 | | | | | | | | 0 | |
| 15 | | | | | | | | 0 | |
| 16 | | | | | | | | 10 | |

THE % MORTALITY OF NW LAKES (NAS # 0942G) WAS NOT SIGNIFICANTLY GREATER THAN THAT OF THE REFERENCE (B5-011507) AT $\alpha = 0.05$.

-GJ

Test Number: P762-1

Freshwater Sediment Test
10-day Hyalella azteca

## Water Quality Data

| | NAS | CLIENT | | | Overlying water | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BKR | SMPL | DESCRIP | REPL | DAY | TEMP | DO | COND | pH | NH3 | HARD | ALK |
| 7 | 0941G | B5-011507 | 8 | 0 | 22.5 | 7.6 | 135 | 6.1 | <0.1 | 34 | 30 |
| 12 | 0946G | Control | 8 | 0 | 22.3 | 6.8 | 170 | 6.5 | <0.1 | 34 | 30 |
| 22 | 0942G | NW Lakes | 8 | 0 | 22.2 | 7.2 | 145 | 6.0 | <0.1 | 34 | 30 |
| 7 | 0941G | B5-011507 | 8 | 1 | 22.8 | 7.2 | | | | | |
| 12 | 0946G | Control | 8 | 1 | 22.7 | 7.3 | | | | | |
| 22 | 0942G | NW Lakes | 8 | 1 | 22.6 | 7.2 | | | | | |
| 7 | 0941G | B5-011507 | 8 | 2 | 22.7 | 7.1 | | | | | |
| 12 | 0946G | Control | 8 | 2 | 22.6 | 7.2 | | | | | |
| 22 | 0942G | NW Lakes | 8 | 2 | 22.5 | 7.2 | | | | | |
| 7 | 0941G | B5-011507 | 8 | 3 | 22.3 | 7.4 | | | | | |
| 12 | 0946G | Control | 8 | 3 | 22.4 | 7.4 | | | | | |
| 22 | 0942G | NW Lakes | 8 | 3 | 22.3 | 7.4 | | | | | |
| 7 | 0941G | B5-011507 | 8 | 4 | 22.6 | 6.7 | | | | | |
| 12 | 0946G | Control | 8 | 4 | 22.5 | 6.0 | | | | | |
| 22 | 0942G | NW Lakes | 8 | 4 | 22.5 | 6.6 | | | | | |
| 7 | 0941G | B5-011507 | 8 | 5 | 22.5 | 6.3 | | | | | |
| 12 | 0946G | Control | 8 | 5 | 22.5 | 5.9 | | | | | |
| 22 | 0942G | NW Lakes | 8 | 5 | 22.4 | 6.2 | | | | | |
| 7 | 0941G | B5-011507 | 8 | 6 | 22.8 | 6.6 | | | | | |
| 12 | 0946G | Control | 8 | 6 | 22.7 | 6.0 | | | | | |
| 22 | 0942G | NW Lakes | 8 | 6 | 22.7 | 6.4 | | | | | |
| 7 | 0941G | B5-011507 | 8 | 7 | 22.6 | 7.1 | | | | | |
| 12 | 0946G | Control | 8 | 7 | 22.7 | 7.0 | | | | | |
| 22 | 0942G | NW Lakes | 8 | 7 | 22.6 | 7.0 | | | | | |
| 7 | 0941G | B5-011507 | 8 | 8 | 22.5 | 7.2 | | | | | |
| 12 | 0946G | Control | 8 | 8 | 22.4 | 7.1 | | | | | |
| 22 | 0942G | NW Lakes | 8 | 8 | 22.4 | 7.1 | | | | | |
| 7 | 0941G | B5-011507 | 8 | 9 | 22.4 | 7.1 | | | | | |
| 12 | 0946G | Control | 8 | 9 | 22.4 | 7.0 | | | | | |
| 22 | 0942G | NW Lakes | 8 | 9 | 22.4 | 7.2 | | | | | |
| 7 | 0941G | B5-011507 | 8 | 10 | 22.7 | 7.1 | 150 | 6.0 | <0.1 | 34 | 40 |
| 12 | 0946G | Control | 8 | 10 | 22.7 | 7.2 | 155 | 6.1 | <0.1 | 34 | 40 |
| 22 | 0942G | NW Lakes | 8 | 10 | 22.6 | 7.2 | 150 | 6.1 | <0.1 | 34 | 40 |
| | | | | | | | | | | | |
| | | | | **Mean** | 22.5 | 6.9 | 151 | 6.1 | --- | 34 | 35 |
| | | | | **SD** | 0.2 | 0.4 | 12 | 0.2 | --- | 0 | 5 |
| | | | | **n** | 33 | 33 | 6 | 6 | 6 | 6 | 6 |
| | | | | **Min** | 22.2 | 5.9 | 135 | 6.0 | <0.1 | 34 | 30 |
| | | | | **Max** | 22.8 | 7.6 | 170 | 6.5 | <0.1 | 34 | 40 |

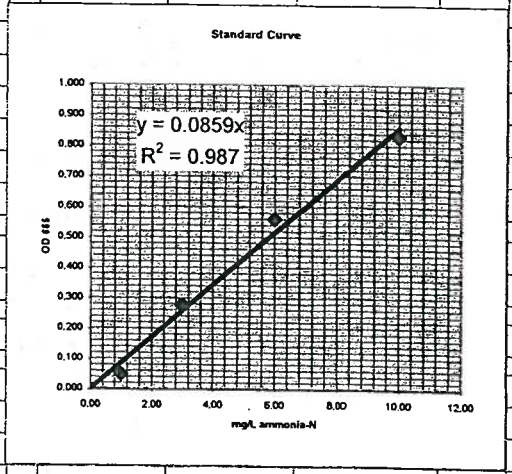
# AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

# Total Ammonia-N in Sediment Pore Water: Computation Worksheet

## Salicylate Method (SOP #5492)

**Result**

| | Sample description | Dilution factor | $OD_{655}$ | $NH_3$-N (mg/L) | pH | Salinity (ppt) |
|---|---|---|---|---|---|---|
| | Blank | ----- | ----- | ----- | | |
| | 1.0 mg/L $NH_3$-N Std. | ----- | 0.050 | 1.00 | | |
| | 3.0 mg/L $NH_3$-N Std. | ----- | 0.277 | 3.00 | | |
| | 6.0 mg/L $NH_3$-N Std. | ----- | 0.560 | 6.00 | | |
| | 10.0 mg/L $NH_3$-N Std. | ----- | 0.830 | 10.00 | | |
| | 3.0 mg/L spike | ----- | 0.247 | 2.86 | | |
| | 3.0 mg/L spike dupl. | ----- | 0.233 | 2.70 | | |
| | 5.0 mg/L 2nd source | | 0.340 | 3.94 | | |
| 1. | Day 0 (2-2-07) | | | | | |
| 2. | 7 | 1 | 0.000 | ND | | |
| 3. | 12 | 1 | 0.000 | ND | | |
| 4. | 22 | 1 | 0.007 | ND | | |
| 5. | Day 10 (2-12-07) | | | | | |
| 6. | 7 | 1 | 0.000 | ND | | |
| 7. | 12 | 1 | 0.000 | ND | | |
| 8. | 22 | 1 | 0.000 | ND | | |




| | |
|---|---|
| Reporting limit (mg/L) = | 0.1 |
| Recovery (%) = | 92.7 |
| Precision (RPD) = | 5.83 |
| 2nd source (%) = | 78.8 |
| Sample volume (ml): | 0.50 |
| Dilution factor | 1 |

**Sample Set Description:**

Proj. No.: 762-1
Test Day: 0 & 10
Species: *Hyalella*

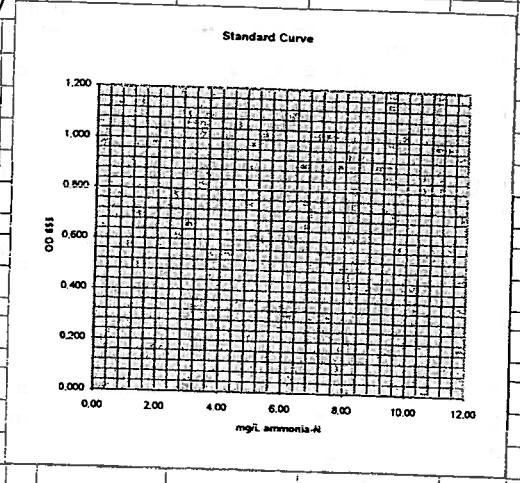
Overlying water

| | |
|---|---|
| Analyst: | GJI |
| Date analysed: | 2/21/07 |

# Total Ammonia-N in Sediment Pore Water: Computation Worksheet
## Salicylate Method (SOP #5492)

**Result**

| | Sample description | Dilution factor | OD655 | $NH_3$-N (mg/L) | pH | Salinity (ppt) |
|---|---|---|---|---|---|---|
| | Blank | ----- | ----- | ----- | | |
| | 1.0 mg/L $NH_3$-N Std. | ----- | 0.050 | 1.00 | | |
| | 3.0 mg/L $NH_3$-N Std. | ----- | 0.277 | 3.00 | | |
| | 6.0 mg/L $NH_3$-N Std. | ----- | 0.560 | 6.00 | | |
| | 10.0 mg/L $NH_3$-N Std. | ----- | 0.830 | 10.00 | | |
| | 3.0 mg/L spike | ----- | 0.247 | | | |
| | 3.0 mg/L spike dupl. | ----- | 0.233 | | | |
| | 5.0 mg/L 2nd source | | 0.340 | | | |
| 1. | Day 0 (2-2-07) | | | | | |
| 2. | 7 | 1 | 0.000 | | | |
| 3. | 12 | 1 | 0.000 | | | |
| 4. | 22 | 1 | 0.007 | | | |
| 5. | Day 10 (2-12-07) | | | | | |
| 6. | 7 | 1 | 0.000 | | | |
| 7. | 12 | 1 | 0.000 | | | |
| 8. | 22 | 1 | 0.000 | | | |
| 9. | | | | | | |
| 10. | | | | | | |
| 11. | | | | | | |
| 12. | | | | | | |
| 13. | | | | | | |
| 14. | | | | | | |
| 15. | | | | | | |
| 16. | | | | | | |
| 17. | | | | | | |
| 18. | | | | | | |
| 19. | | | | | | |
| 20. | | | | | | |
| 21. | | | | | | |
| 22. | | | | | | |
| 23. | | | | | | |
| 24. | | | | | | |
| 25. | | | | | | |
| 26. | | | | | | |
| 27. | | | | | | |
| 28. | | | | | | |
| 29. | | | | | | |
| 30. | | | | | | |
| 31. | | | | | | |
| 32. | | | | | | |
| 33 | | | | | | |
| 34 | | | | | | |
| 35 | | | | | | |
| 36 | | | | | | |




| | |
|---|---|
| Reporting limit (mg/L) = | 0.1 |
| Recovery (%) = | #VALUE! |
| Precision (RPD) = | #VALUE! |
| 2nd source (%) = | #VALUE! |
| Sample volume (ml): | 0.50 |
| Dilution factor | 1 |

**Sample Set Description:**

Proj. No.: 762-1
Test Day: 0 & 10
Species: *Hyalella*

Overlying water

Analyst: GJI
Date analysed: 2/21/07

# CHAIN-OF-CUSTODY RECORDS

KLEINFELDER

| PROJECT NO. | PROJECT NAME | RECEIVING LAB: |
|---|---|---|
| 53886 | Condit Dam | Northwest Aquatic Services |
| L.P. NO. (P.O. NO.) | SAMPLERS: (Signature/Number) BPP [signature] SS Scott Shaul | INSTRUCTIONS/REMARKS |

| | DATE MM/DD/YY | SAMPLE I.D. TIME HH-MM-SS | SAMPLE I.D. | MATRIX | NO. OF CONTAINERS | TYPE OF CONTAINERS | ANALYSIS: BioAssay | Chironomus | Hyalella | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1/15/07 | 1400 | B5-011507 | Sediment | 6 | 32oz | X | X | X | | | | | | | | | | REFERENCE 0941G |
| 2 | 12-14-06 ~~12-15-06~~ TO | 0900 1325 * | NORTHWESTERN CAKES | SEDIMENT | 13 | 8oz | X | X | X | | | | | | | | | | LAB COMPOSITE 0942G |
| 3 | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | |
| 6 | | * PHONE CALL WITH DAVID KING | | | | | | | | | | | | | | | | | |
| 7 | | ON 1-18-07 | -GJ | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | |

| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
|---|---|---|
| [signature] | 011607 1200 | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
| | | |
| Relinquished by: (Signature) | Date/Time | Received for Laboratory by: (Signature) |
| | 1-17-07 1130 | [signature] |

Instructions/Remarks:

INSIDE COOLER TEMPERATURE UPON RECEIPT AT LAB: 1.5°C

Send Results To:

KLEINFELDER
15050 S.W. KOLL PARKWAY
SUITE L
BEAVERTON, OR 97006
(503) 644-9447

Attn:

M-60 White – Sampler Canary – Return Copy To Shipper Pink – Lab Copy

# CHAIN OF CUSTODY

NO 1606

## UPS Internet Shipping: View/Print Label

1. **Print the label(s):** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

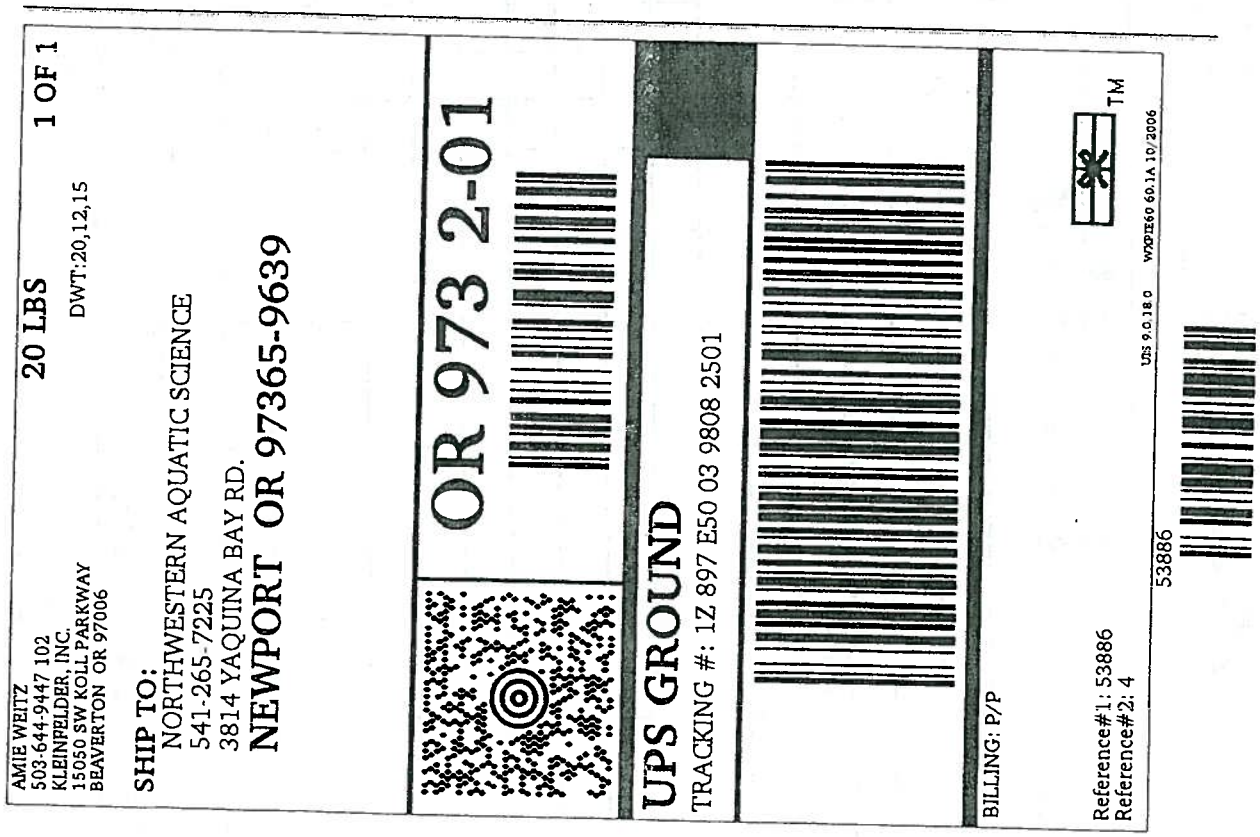
2. **Fold the printed label at the dotted line.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**

   **Customers without a Daily Pickup**
   - Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   - Hand the package to any UPS driver in your area.
   - Take your package to a location of The UPS Store®, UPS Drop Box, UPS Customer Center or Authorized Shipping Outlet near you. Items sent via UPS Return Services (including Ground Returns) are accepted at any UPS Drop Box.
   - To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

   **Customers with a Daily Pickup**
   - Your driver will pickup your shipment(s) as usual.

FOLD HERE



# APPENDIX III

# RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-2236 Client: QC Test Investigator REVIEWED PAGES 1-7 -GJI

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species *Hyalella azteca*

**STUDY MANAGEMENT**

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth

1. Susan Gaff SG 2. Greg Hutchinson GH

3. _____ 4. _____

Test Beginning: 2-2-07 1130 Test Ending: 2-6-07 1115

**TEST MATERIAL**

Description: Potassium Chloride Crystals - Lot No.: FISHER 045768

| | | | | |
|---|---|---|---|---|
| NAS Sample No. | | | | |
| Date of Collection: | | | | |
| Date of Receipt: | | | | |
| Temperature (deg C): | | | | |
| Dissolved oxygen (mg/L): | | | | |
| pH: | | | | |
| Conductivity (umhos/cm): | | | | |
| Hardness (mg/L): | | | | |
| Alkalinity (mg/L): | | | | |
| Salinity (ppt): | | | | |
| Total chlorine (mg/L): | | | | |
| Total ammonia-N (mg/L): | | | | |
| _____: | | | | |

**DILUTION WATER**

Description: Moderately hard synthetic water

Date of Preparation/Collection: ~~1-31-07~~ 1-30-07 ② GJI 2-27-07

Water Quality: Cond. (umhos/cm): ~~140~~ 295 Salinity (ppt) – pH ~~6.7~~ 7.3

Hardness (mg/L as $CaCO_3$): ~~34~~ 86 Alkalinity (mg/L as $CaCO_3$): ~~30~~ 70

Treatments: Aerated ≥ 24 hrs, TOTAL CHLORINE ≤ 0.02 mg/L

**TEST LOCATION**

Test conducted in (circle one): room 1 room 2 trailer water bath other: ROOM #3

**Randomization chart:**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| REPL B | 0.25 | ∅ | 1 | 0.063 | 0.5 | 0.125 | | | | |
| REPL A | 0.125 | 1 | 0.25 | 0.5 | ∅ | 0.063 | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated



Revised 12-5-01

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-2236 Client QC Test Investigator _____

## TEST ORGANISMS

Species: *Hyalella azteca* Age: 7-8 DAYS Size: –

Source: Chesapeake Cultures, Hayes, VA Date received: 1-31-07

Acclimation Data:

| Date | Temp. (deg.C) | DO (mg/L) | pH | Cond. umhos/cm | Hardness (mg/L) | Alkalinity (mg/L) | Feeding Amount | Feeding description | Water changes |
|---|---|---|---|---|---|---|---|---|---|
| 1-31-07 | 18.9 | >15.0 | 7.8 | 355 | 154 | 200 | 10 mL | YTC | ½ WATER REPLACED, RECE |
| 2-1-07 | 19.7 | 8.9 | 7.6 | 310 | 120 | 150 | 10 mL | YTC | ½ WATER REPLACED |
| 2-2-07 | 21.2 | 8.5 | 7.5 | 275 | 77 | 130 | – | – | – |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Mean | 19.9 | 10.8 | 7.6 | 313 | 117 | 160 | | | |
| S.D. | 1.2 | 3.6 | 0.2 | 40 | 39 | 36 | | | |
| (N) | 3 | 3 | 3 | 3 | 3 | 3 | | | |

Photoperiod during acclimation: 16:8, L:D

## TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 1, 0.5, 0.25, 0.125, 0.063 0 g/L

Test chamber: 250 ml glass beakers Test volume: 100 ml

Replicates/treatment: 2 Organisms/treatment: 20 (10/rep)

Test water changes: None Aeration during test: None

Feeding: 0.5 ml YTC suspension per beaker on days 0 and 2

Duration: 24-hr, 48-hr, 96-hr Test temperature (deg.C): 23 ± 1 or 20 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

## MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 0.5g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 1.0 g/L.

| Test concentration (g/L) | KCl working stock (ml/200ml) | Dilution water |
|---|---|---|
| 1 | 200 | Brought up to final volume of 200 ml with dilution water and distributed evenly between two replicates |
| 0.5 | 100 | |
| 0.25 | 50 | |
| 0.125 | 25 | |
| 0.063 | 12.5 | |
| 0 | 0 | |

2-2-07 GJ

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-2236 Client QC Test

DAILY RECORD SHEET

Day 0 ( 2/2 07) AJ

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Survivors A | Survivors B |
|---|---|---|---|---|---|---|---|---|
| 1. 1 | 23.2 | 8.2 | 1845 | 7.7 | 68 | 70 | 10 | 10 |
| 2. 0.5 | 23.3 | 8.2 | 1080 | 7.6 | | | 10 | 10 |
| 3. 0.25 | 23.3 | 8.2 | 695 | 7.6 | | | 10 | 10 |
| 4. 0.125 | 23.2 | 8.2 | 500 | 7.6 | | | 10 | 10 |
| 5. 0.063 | 23.7 | 8.2 | 375 | 7.5 | | | 10 | 10 |
| 6. 0 | 23.4 | 8.2 | 280 | 7.5 | 77 | 70 | 10 | 10 |

All animals fed 0.5 ml YTC suspension. Initials: AJ

Day 1 ( 2/3 /07) GJ

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Survivors A | Survivors B |
|---|---|---|---|---|---|---|---|---|
| 1. 1 | 23.4 | 8.0 | 1830 | 7.4 | | | 4(6D) | 6(4D) |
| 2. 0.5 | 23.4 | 7.9 | 1090 | 7.4 | | | 10 | 10 |
| 3. 0.25 | 23.4 | 7.9 | 715 | 7.3 | | | 10 | 10 |
| 4. 0.125 | 23.1 | 8.1 | 530 | 7.3 | | | 10 | 10 |
| 5. 0.063 | 23.3 | 8.0 | 410 | 7.2 | | | 10 | 10 |
| 6. 0 | 23.0 | 8.1 | 320 | 7.3 | | | 10 | 10 |

Day 2 ( 2/4 /07) GJ

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Survivors A | Survivors B |
|---|---|---|---|---|---|---|---|---|
| 1. 1 | 23.7 | 7.9 | 1810 | 7.5 | | | ∅(4D) | ∅(6D) |
| 2. 0.5 | 23.7 | 7.8 | 1140 | 7.4 | | | 4(6D) | 6(4D) |
| 3. 0.25 | 23.6 | 7.9 | 760 | 7.3 | | | 10 | 10 |
| 4. 0.125 | 23.4 | 8.1 | 540 | 7.2 | | | 10 | 10 |
| 5. 0.063 | 23.5 | 7.9 | 440 | 7.1 | | | 10 | 10 |
| 6. 0 | 23.5 | 8.1 | 350 | 7.2 | | | 10 | 10 |

All animals fed 0.5 ml YTC suspension. Initials: GJ

Day 3 ( 2/5 /07) GJ

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Survivors A | Survivors B |
|---|---|---|---|---|---|---|---|---|
| 1. 1 | – | – | – | – | | | ∅ | ∅ |
| 2. 0.5 | 23.6 | 7.5 | 1250 | 7.5 | | | 1(3D) | 2(4D) |
| 3. 0.25 | 23.7 | 7.5 | 745 | 7.3 | | | 9(1M) | 10 |
| 4. 0.125 | 23.1 | 7.6 | 600 | 7.2 | | | 10 | 10 |
| 5. 0.063 | 23.6 | 7.6 | 460 | 7.2 | | | 10 | 10 |
| 6. 0 | 23.0 | 7.6 | 390 | 7.2 | | | 10 | 9(1M) |

Day 4 ( 2/6 /07) AJ

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Survivors A | Survivors B |
|---|---|---|---|---|---|---|---|---|
| 1. 1 | – | – | – | – | – | – | ∅ | ∅ |
| 2. 0.5 | 23.6 | 8.0 | 1320 | 7.4 | | | 1 | 1(1D) |
| 3. 0.25 | 23.7 | 7.9 | 795 | 7.4 | | | 9 | 10 |
| 4. 0.125 | 23.4 | 8.0 | 645 | 7.4 | | | 10 | 10 |
| 5. 0.063 | 23.6 | 8.0 | 475 | 7.3 | | | 10 | 10 |
| 6. 0 | 23.6 | 8.0 | 380 | 7.3 | 86 | 90 | 10 | 9 |
| Mean | 23.4 | 8.0 | | 7.4 | 77 | 77 | | |
| SD | 0.2 | 0.2 | | 0.2 | 9 | 12 | | |
| n | 28 | 28 | | 28 | 3 | 3 | | |



Revised 12-5-01

# Chesapeake Cultures

P.O. Box 507 Hayes, VA 23072 (804) 693-4046 (804)694-4704 fax
www.c-cultures.com
e-mail growfish@c-cultures.com

NAS

Shipment Information

Species Hyalella azteca

Date 1/30/07

Age ~4-5 days ~1.5 mm

P.O. No. verbal

Quantity 450+

Invoice No. 5654

Temperature 23.5°C Salinity — pH 7.95

Notes RECEIVED 1-31-07 GJ1

Biologist [signature]

*Please inspect shipment and report any problem immediately*

## Acute 96-hr Toxicity Test-96 Hr Survival

| | | | | | |
|---|---|---|---|---|---|
| Start Date: | 2/2/2007 11:30 | Test ID: | 999-2236 | Sample ID: | REF-Ref Toxicant |
| End Date: | 2/6/2007 11:15 | Lab ID: | ORNAS-Northwestern Aquati | Sample Type: | KCL-Potassium chloride |
| Sample Date: | | Protocol: | EPAA 91-EPA Acute | Test Species: | HA-Hyalella azteca |
| Comments: | | | | | |

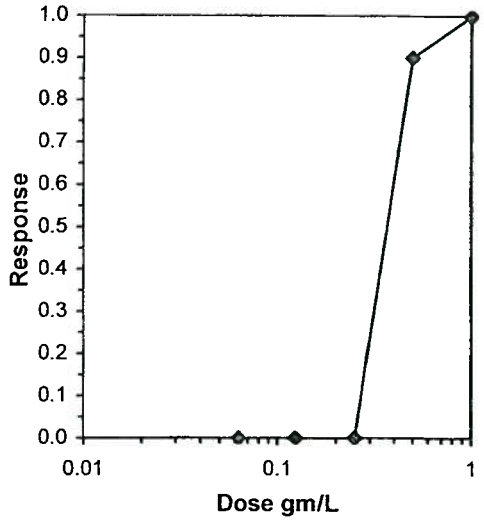
| Conc-gm/L | 1 | 2 |
|---|---|---|
| D-Control | 1.0000 | 1.0000 |
| 0.063 | 1.0000 | 1.0000 |
| 0.125 | 1.0000 | 1.0000 |
| 0.25 | 1.0000 | 1.0000 |
| 0.5 | 0.1000 | 0.1000 |
| 1 | 0.0000 | 0.0000 |

| | | | Transform: Arcsin Square Root | | | | | Number | Total |
|---|---|---|---|---|---|---|---|---|---|
| Conc-gm/L | Mean | N-Mean | Mean | Min | Max | CV% | N | Resp | Number |
| D-Control | 1.0000 | 1.0000 | 1.4077 | 1.4033 | 1.4120 | 0.435 | 2 | 0 | 19 |
| 0.063 | 1.0000 | 1.0000 | 1.4120 | 1.4120 | 1.4120 | 0.000 | 2 | 0 | 20 |
| 0.125 | 1.0000 | 1.0000 | 1.4120 | 1.4120 | 1.4120 | 0.000 | 2 | 0 | 20 |
| 0.25 | 1.0000 | 1.0000 | 1.4077 | 1.4033 | 1.4120 | 0.435 | 2 | 0 | 19 |
| 0.5 | 0.1000 | 0.1000 | 0.3218 | 0.3218 | 0.3218 | 0.000 | 2 | 18 | 20 |
| 1 | 0.0000 | 0.0000 | 0.1588 | 0.1588 | 0.1588 | 0.000 | 2 | 20 | 20 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|---|---|---|---|---|
| Normality of the data set cannot be confirmed | | | | |
| Equality of variance cannot be confirmed | | | | |

Trimmed Spearman-Karber

| Trim Level | EC50 | 95% CL | |
|---|---|---|---|
| 0.0% | 0.3789 | 0.3453 | 0.4159 |
| 5.0% | 0.3706 | 0.3385 | 0.4057 |
| 10.0% | 0.3674 | 0.3469 | 0.3891 |
| 20.0% | 0.3674 | 0.3469 | 0.3891 |
| Auto-0.0% | 0.3789 | 0.3453 | 0.4159 |



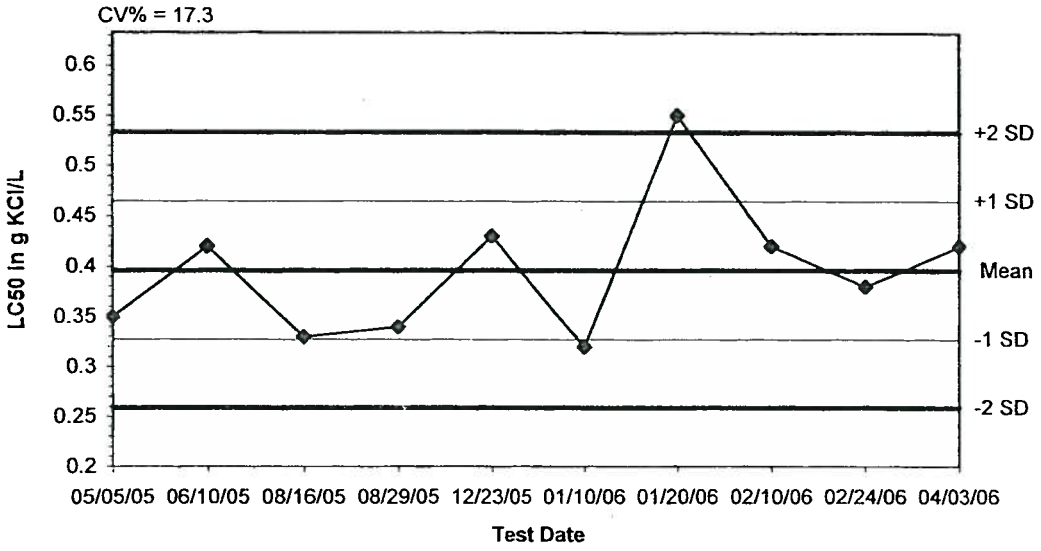
Test: AT-Acute 96-hr Toxicity Test
Species: HA-Hyalella azteca
Sample ID: REF-Ref Toxicant
Start Date: 2/2/2007 11:30 End Date: 2/6/2007 11:15

Test ID: 999-2236
Protocol: EPAA 91-EPA Acute
Sample Type: KCL-Potassium chloride
Lab ID: ORNAS-Northwestern Aquatic Sciences

| Pos | ID | Rep | Group | Start | 24 Hr | 48 Hr | 72 Hr | 96 Hr | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | D-Control | 10 | | | | 10 | |
| | 2 | 2 | D-Control | 9 | | | | 9 | |
| | 3 | 1 | 0.063 | 10 | | | | 10 | |
| | 4 | 2 | 0.063 | 10 | | | | 10 | |
| | 5 | 1 | 0.125 | 10 | | | | 10 | |
| | 6 | 2 | 0.125 | 10 | | | | 10 | |
| | 7 | 1 | 0.250 | 9 | | | | 9 | |
| | 8 | 2 | 0.250 | 10 | | | | 10 | |
| | 9 | 1 | 0.500 | 10 | | | | 1 | |
| | 10 | 2 | 0.500 | 10 | | | | 1 | |
| | 11 | 1 | 1.000 | 10 | | | | 0 | |
| | 12 | 2 | 1.000 | 10 | | | | 0 | |

Comments:

## Hyalella azteca acute reference toxicant - all points




| Dates | Values | Mean | -1 SD | -2 SD | +1 SD | +2 SD |
|---|---|---|---|---|---|---|
| 05/05/05 | 0.3500 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |
| 06/10/05 | 0.4200 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |
| 08/16/05 | 0.3300 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |
| 08/29/05 | 0.3400 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |
| 12/23/05 | 0.4300 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |
| 01/10/06 | 0.3200 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |
| 01/20/06 | 0.5500 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |
| 02/10/06 | 0.4200 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |
| 02/24/06 | 0.3800 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |
| 04/03/06 | 0.4200 | 0.3960 | 0.3275 | 0.2590 | 0.4645 | 0.5330 |

MLR
4-10-06

# SECTION B

## Midge (*Chironomus dilutus*) sediment bioassay 762-2 data report

# TOXICITY TEST REPORT

## TEST IDENTIFICATION

Test No.: 762-2

Title: Toxicity of freshwater sediments using a 10-day midge, *Chironomus dilutus* (formerly *C. tentans*), sediment bioassay as part of the Northwestern Lake Sediment Characterization Condit Dam Removal Project (FERC No.2342), White Salmon, Washington, Kleinfelder Project No. 58336 / 4.

Protocol No.: NAS-XXX-CT4b, April 7, 1998. Revision 1 (10-28-03). Based on ASTM 2001 (Standard test methods for measuring the toxicity of sediment-associated contaminants with fresh water invertebrates, E1706-00), Am. Soc. Test. Mat., Phila., PA, and EPA Method 100.2 (Methods for measuring the toxicity and bioaccumulation of sediment-associated contaminants with freshwater invertebrates, EPA/600/R-99/064).

## STUDY MANAGEMENT

Study Sponsor: Squier | Kleinfelder, 15050 SW Koll Parkway, Suite L, Beaverton, OR 97006-6028
Sponsor's Study Monitor: Mr. David King
Testing Laboratory: Northwestern Aquatic Sciences, P.O. Box 1437, Newport, OR 97365
Test Location: Newport laboratory
Laboratory's Study Personnel: G.J. Irissarri, B.S., Proj. Man./Study Dir.; L.K. Nemeth, B.A., M.B.A., QA Officer; R.S. Caldwell, PhD, Sr. Toxicologist; M.S. Redmond, M.S., Aq. Toxicologist; S.J. Gage, B.A., Sr. Tech.; G. Hutchinson, B.S., Tech.
Study Schedule:
Test Beginning: 2-2-07, 1150 hrs.
Test Ending: 2-12-07, 0955 hrs.
Disposition of Study Records: All specimens, raw data, reports and other study records are stored according to Good Laboratory Practice regulations at Northwestern Aquatic Sciences, 3814 Yaquina Bay Rd., Newport, OR 97365.
Good Laboratory Practices: The test was conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).
Statement of Quality Assurance: The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with the protocol and standard operating procedures. This report is an accurate reflection of the raw data.

## TEST MATERIAL

Test Sediments: Freshwater test sediments collected as part the Northwestern Lake Sediment Characterization Condit Dam Removal Project (FERC No.2342), White Salmon, Washington, Kleinfelder Project No. 58336 / 4. Details are as follows:

| | | |
|---|---|---|
| NAS Sample No. | 0941G | 0942G |
| Description | B5-011507 | NW Lakes |
| Collection Date | 1/15/07 | 12/14/06-12/18/06 |
| Receipt Date | 1/17/07 | 1/17/07 |

Reference Sediment: The reference sediment used for comparative analysis was B5-011507 (0941G).
Control Sediment: The negative control sediment (NAS#0946G) was collected on 1-25-07 from an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.
Treatments: Homogenized at test set up by mixing using stainless steel implements.
Storage: All test, reference, and control sediments were stored at 4°C in the dark in sealed containers until used.

## TEST WATER

Source: Dechlorinated municipal tap water, which is also used as culture water.
Dates of Preparation: 1-31-07

Water Quality:
pH: 6.7
conductivity: 140 µmhos/cm
hardness: 34 mg/L as $CaCO_3$
alkalinity: 30 mg/L as $CaCO_3$.
total chlorine: <0.02 mg/L
Pretreatment: Aerated ≥24 hr.

## TEST ORGANISMS

Species: *Chironomus dilutus* (formerly *C. tentans*), midge.
Size: 3rd instar, mean initial wt: 0.10 ± 0.00 mg
Source: NAS cultures, originally obtained from EPA, Duluth, MN.
Acclimation: Holding conditions prior to testing averaged: Temperature, 21.9 ± 3.6°C; dissolved oxygen, 8.4 ± 0.8 mg/L; pH, 6.8 ± 0.3; conductivity, 169 ± 2 µmhos/cm; hardness, 47 mg/L as $CaCO_3$; and alkalinity, 30 mg/L as $CaCO_3$. Photoperiod was 16:8, L:D. Half of the water in culture tanks was replaced twice weekly with dechlorinated municipal tap water during holding. Animals were fed Tetra Fin suspension and *Selenastrum*.

## TEST PROCEDURES AND CONDITIONS

The following is an abbreviated statement of the test procedures and a statement of the test conditions actually employed. See the test protocol (Appendix I) for a more detailed description of the test procedures used in this study.

Test Chambers: 300 ml high-form glass beakers
Test Volumes: 100 ml sediment layer; 175 ml test water.
Replicates/Treatment: 8
Organisms/Treatment: 80
Water Volume Changes: 2 water volumes per day
Aeration: None.
Feeding: Animals were fed 1.5 ml of Tetra Fin suspension (1.5 ml contains 6 mg dry solids) per beaker daily.
Effects Criteria: 1) survival after 10 days, and 2) average individual biomass (based on ash-free dry weight) after 10 days. Death is defined as no visible movement or response to tactile stimulation. Missing organisms were considered to be dead.
Water Quality and Other Test Conditions: The temperature, dissolved oxygen, conductivity, pH, hardness, alkalinity and ammonia-nitrogen were measured in the overlying water of one replicate test container per treatment on days 0 and 10 of the test. Temperature and dissolved oxygen were measured daily in the overlying water of one replicate test container per treatment. Hardness and alkalinity were measured with titrimetric methods. Ammonia-N was measured using Hach reagents based on the salicylate (Clin. Chim. Acta 14:403, 1996) colorimetric method; samples were not distilled prior to analysis. The photoperiod was 16:8, L:D.

## DATA ANALYSIS METHODS

Survival and individual biomass were calculated for each replicate as follows:

percent survival = 100 x (number surviving/initial number tested)
average individual ash-free dry wt. = (ash-free dry wt.)/number weighed,
where:
ash-free dry wt. = dry weight of organisms recovered on day 10 – ashed dry weight, in mg

Means and standard deviations for the biological endpoints described above, and for water quality data, were computed using Microsoft Excel 2000. The values for mortality and individual ash-free dry wt for each test sediment were statistically compared against the reference sediment. Where appropriate, an arcsine square root transformation was performed on proportional mortality data before analysis. Following determination of normality and homogeneity of variances, a one-tailed Student T-test, Mann-Whitney or Approximate T test was

conducted at the 0.05 level of significance. The statistical software used was BioStat (Beta v.4.1 (EXCEL)) bioassay software developed by the U.S. Army Corps of Engineers, Seattle District.

## PROTOCOL DEVIATIONS

None

## REFERENCE TOXICANT TEST

The reference toxicant test is a multi-concentration toxicity test using potassium chloride, to evaluate the performance of the test organisms used in the sediment toxicity test. The performance is evaluated by comparing the results of this test with historical results obtained at the laboratory. A summary of the reference toxicant test result is given below. The reference toxicant test raw data are found in Appendix III.

Test No.: 999-2237
Reference Toxicant and Source: Potassium chloride (KCl), Fisher, Lot No. 045768.
Test Date: 2-2-07
Dilution Water Used: Moderately hard synthetic water prepared from Milli-Q® deionized water.
Result: 96-hr LC50, 6.88 g/L. This result is within the laboratory's control chart warning limits (3.67 to 7.39 g/L).

## TEST RESULTS

Observations of water quality in the overlying water throughout the test are summarized in Table 1. A detailed tabulation of the water quality results by sample and test day can be found in Appendix II. The means and standard deviations of percent mortality and growth (ash-free dry wt.) of midges exposed for 10 days to sediments are summarized in Tables 2 and 3. Detailed data organized by sample and replicate, and summary statistics for these observations, are given in Appendix II.

All water quality observations of overlying water temperature and dissolved oxygen were within the protocol specified ranges. Ammonia-N in the overlying water was less than 0.1 mg/L in all day 0 and day 10 observations.

The test met the mortality and weight acceptability criteria specified in the *Dredged Material Evaluation Framework, Lower Columbia River Management Area* -Nov. 1998 (DMEF, LCRMA) with 21.3% mean control mortality (≤30% required) and 17.5% reference sediment mean mortality (≤35% required) and a control mean ash-free dry weight of 0.62 mg per larvae (≥0.48 mg required). The reference toxicant (positive control) EC50 result was within the laboratory's control chart limits (6.88 g/L; control chart mean ± 2 S.D. = 5.53 ± 1.86).

Data interpretation was conducted as described in *Dredged Material Evaluation Framework, Lower Columbia River Management Area* -Nov. 1998 (U.S. Army Corps of Engineers, Seattle District; U.S. Environmental Protection Agency, Region 10, Washington Department of Natural Resources, Washington Department of Ecology, and Oregon Department of Environmental Ecology). For a test sediment to fail under the single hit rule, the mean test mortality must be greater than 20 percentage points over the reference sediment response and "statistically different" from the reference sediment. Alternatively, if the reduction in the mean individual biomass is greater than 40% than that of the mean reference weight and is statistically different from the reference then the one hit rule also applies. A "statistically different" response is defined in the "Evaluation Framework" as having a mortality or growth response that is greater than 20% difference from that of the control, and is statistically different ($\alpha = 0.05$) from that of the reference sediment. If either or both endpoints fail the guideline, the test is considered a hit.

The NW Lakes test sediment did not produce mortality or growth endpoint results that met the above Evaluation Framework requirements for failure under the one hit rule.

**STUDY APPROVAL**

Gerald Lissarri 3-1-07
Project Manager/Study Director Date

Linda K. Nemeth 2/28/07
Quality Assurance Unit Date

Linda K. Nemeth 2/28/07
Laboratory Director Date

Table 1. Summary of water quality conditions during tests of the midge, *Chironomus dilutus*, exposed to freshwater sediments.

| Water Quality Parameter | Mean ± S.D. | Minimum | Maximum | N |
|---|---|---|---|---|
| Temperature (°C) | 22.6 ± 0.2 | 22.3 | 23.2 | 33 |
| Dissolved oxygen (mg/L) | 6.3 ± 0.8 | 4.5 | 7.5 | 33 |
| Conductivity (µmhos/cm) | 152 ± 10 | 135 | 165 | 6 |
| pH | 6.1 ± 0.2 | 5.9 | 6.4 | 6 |
| Hardness (mg/L as $CaCO_3$) | 34 ± 0 | 34 | 34 | 6 |
| Alkalinity (mg/L as $CaCO_3$) | 35 ± 5 | 30 | 40 | 6 |
| Total ammonia (mg/L) | --- | <0.1 | <0.1 | 6 |

Table 2. Mortality results of *Chironomus* toxicity test and data interpretation using guidelines from the "Dredged Material Evaluation Framework, Lower Columbia River Management Area," November 1998. For a test sediment to fail under the single hit rule using the mortality endpoint, the mean test mortality must be >20 percentage points over the reference sediment response, and "statistically different" from the reference sediment. A "statistically different" response is defined in the "Evaluation Framework" as having a response that is greater than 20% difference from that of the control, and is statistically different ($\alpha$ = 0.05) from that of the reference sediment.

| Sample description | Percent mortality (Mean ± SD) | Statistically significantly different than that of the reference? | Difference from negative control sediment | Difference from reference sediment | Failure under 1-hit rule? |
|---|---|---|---|---|---|
| Control (NAS# 0946G) | 21.3 ± 6.4 | --- | --- | --- | --- |
| B5-011507 (NAS# 0941G) * | 17.5 ± 10.4 | --- | --- | --- | --- |
| NW Lakes (NAS# 0942G) | 18.8 ± 18.1 | No | -2.5 | 1.3 | No |

*Reference sediment

Table 3. Growth results of *Chironomus* toxicity test and data interpretation using guidelines from the "Dredged Material Evaluation Framework, Lower Columbia River Management Area," November 1998. For a test sediment to fail under the single hit rule using the growth endpoint, the mean test biomass must be reduced by >40% from the reference sediment response, and "statistically different" ($\alpha$ = 0.05) from the reference sediment. A "statistically different" response is defined in the "Evaluation Framework" as having a response that is greater than 20% difference from that of the control, and is statistically different ($\alpha$ = 0.05) from that of the reference sediment.

| Sample description | Average ash-free dry wt/midge (mg)[1] (Mean ± SD) | Statistically significantly different that that of the reference? | Greater than 20% difference (i.e. <0.50 mg) from that of the control? | Greater than 40% difference (i.e. <0.23 mg) from that of the reference? | Failure under 1-hit rule? |
|---|---|---|---|---|---|
| Control (NAS# 0946G) | 0.62 ± 0.06 | --- | --- | --- | --- |
| B5-011507 (NAS# 0941G) * | 0.39 ± 0.05 | --- | --- | --- | --- |
| NW Lakes (NAS# 0942G) | 0.42 ± 0.09 | No | Yes | No | No |

[1] Pupae were not included in the sample to estimate ash-free dry weight (as per EPA/600/R-99/064, p. 59, section 12.3.8.2)
*Reference sediment

# APPENDIX I

# PROTOCOL

# TEST PROTOCOL

## FRESHWATER MIDGE, *CHIRONOMUS TENTANS*, 10-DAY SEDIMENT TOXICITY TEST

## 1. INTRODUCTION

1.1 Purpose of Study: The purpose of this study is to characterize the toxicity of freshwater sediments based on midge survival and growth using the midge, *Chironomus tentans*.

1.2 Referenced Method: This protocol is based on EPA Method 100.2 (EPA/600/R-99/064) and ASTM Method E 1706-00 (ASTM 2001).

1.3 Summary of Method: A summary of test conditions for the midge 10-day sediment toxicity test is tabulated below. The 10-day sediment toxicity test with *Chironomus tentans* is conducted at 23°C with a 16L:8D photoperiod at an illuminance of about100-1000 lux. Test chambers are 300-mL high-form lipless beakers containing 100 mL of sediment and 175 mL of overlying water. Ten second to third-instar midges are used in each replicate (all organisms must be third instar or younger and at least 50% of the larvae must be third instar). The number of replicates/treatment depends on the objective of the test. Eight replicates are recommended for routine testing. Midges in each test chamber are fed 1.5 mL of a 4 g/L fish food flakes suspension daily. Each chamber receives two volume additions per day of overlying water. Overlying water can be culture water, well water, surface water, site water, or reconstituted water. Test endpoints include survival and/or growth.

## 2. STUDY MANAGEMENT

2.1 Sponsor's Name and Address:

_____
_____
_____
_____

2.2 Sponsor's Study Monitor:

_____

2.3 Name of Testing Laboratory:
Northwestern Aquatic Sciences
3814 Yaquina Bay Road, P.O. Box 1437
Newport, OR 97365.

2.4 Test Location: _____

2.5 Laboratory's Personnel to be Assigned to the Study:
Study Director: _____
Quality Assurance Unit: _____
Aquatic Toxicologist: _____
Aquatic Toxicologist: _____

2.6 Proposed Testing Schedule: Tests are to begin within 14 days of sample collection. Eight week holding times may apply in some circumstances. Reference toxicant test to be run concurrently.

2.7 Good Laboratory Practices: The test is conducted following the principles of Good Laboratory Practices (GLP) as defined in the EPA/TSCA Good Laboratory Practice regulations revised August 17, 1989 (40 CFR Part 792).

## 3. TEST MATERIAL

The test materials are freshwater sediments. The control, reference, and test sediments are placed in solvent cleaned 1 L glass jars fitted with PTFE-lined screw caps. At the laboratory the samples are stored at 4°C in the dark. The original sealed containers may be stored for up to 14 days prior to testing. Eight week holding times may apply in some circumstances. If jars are not full when received or if sediment is removed for testing, headspaces should be filled with nitrogen to retard deterioration. A negative control sediment is collected from a clean site. In addition, a reference sediment, a clean sediment with physical characteristics similar to the test sediments, may be employed as a comparison station.

## 4. TEST WATER

Test water (overlying water) at NAS is normally *C. tentans* culture water, which is moderately hard synthetic water at a hardness of 80-100 mg/L as $CaCO_3$ and alkalinity of 60-70 mg/L as $CaCO_3$. Dilution water is prepared from Milli-Q reagent grade water and reagent grade chemicals. Test water may also be well water, surface water or site water depending on the study design.

## 5. TEST ORGANISMS

5.1 Species: midge, *Chironomus tentans*.

5.2 Source: Cultured at NAS (Originally obtained from U.S. EPA Environmental Research Lab, Duluth, MN) or purchased from a reputable commercial supplier.

5.3 Age: Third instar or younger larvae (at least 50% of the larvae must be in the third instar at the start of the test). Third instar is normally 9 to 11 days after hatching; head capsule widths range from 0.33 to 0.45 mm; or length ranges from 4-6 mm; or dry weight ranges 0 08 to 0.23 mg/individual.

5.4 Acclimation and Pretest Observation: Cultures are maintained at 23 ± 1°C under a 16:8 L:D photoperiod. The culture water is moderately hard synthetic water. Midge are fed finely ground Tetrafin flakes in suspension (10g Tetrafin in 100 mL Milli-Q water). Mortality during the 48-hr prior to testing should not be excessive.

## 6. DESCRIPTION OF TEST SYSTEM

6.1 Test Chambers and Environmental Control: Test chambers used in the toxicity test are 300-mL high-form lipless glass beakers (Pyrex® 1040 or equivalent). Test chambers are maintained at constant temperature by partial immersion in a temperature-controlled water bath or by placement in a temperature-controlled room. Aeration is not empolyed unless dissolved oxygen drops below 2.5 mg/L. The test is conducted under an illuminance of 100 to 1000 lux with a 16L:8D photoperiod.

6.2 Cleaning: All laboratory glassware, including test chambers, is cleaned as described in EPA/600/4-90/027F. New glassware and test systems are soaked 15 minutes in tap water and scrubbed with detergent (or cleaned in automatic dishwasher); rinsed twice with tap water; carefully rinsed once with fresh, dilute (10%, V:V) hydrochloric or nitric acid to remove scale, metals, and bases; rinsed twice with deionized water; rinsed once with acetone to remove organic compounds (using a fume hood or canopy); and rinsed three times with deionized water. Test systems and chambers are rinsed again with dilution water just before use.

## 7. EXPERIMENTAL DESIGN AND TEST PROCEDURES

7.1 Experimental Design: The test involves exposure of midge larvae to test, control, and reference sediments. The sediments are placed on the bottom of the test containers and are overlain with test water. The test exposure is

for 10 days. The renewal of overlying water consists of two volume additions per day, either continuous or intermittent. Each treatment consists of eight replicate test containers, each containing 10 organisms. Test chamber positions are completely randomized. Test organisms are randomly distributed to the test chambers. Blind testing is normally used.

7.2 Setup of Test Containers: Sediments are homogenized and placed in test chambers on the day before addition of test organisms. Sediment (100 ml) is placed into each of eight replicate beakers. After addition of the sediment, 175 ml of test water is gently added to each beaker in a manner to prevent resuspension. The overlying water is replaced twice daily. The test begins when midges are introduced to the test chambers. Initial water quality measurements are taken prior to the addition of test organisms.

7.3 Effect Criterion: The acute effect criterion used in the midge bioassay is mortality, defined as the lack of movement of body or appendages on response to tactile stimulation. The optional chronic effect criterion is growth which is determined by using dry weight measurements.

7.4 Test Conditions: No aeration is employed unless dissoved oxygen falls below 2.5 mg/L. The test temperature employed is 23°C (range of ± 1°C). A 16:8, L:D photoperiod is used. Illumination is supplied by daylight fluorescent lamps at 100-1000 lux. The overlying water is replaced twice daily.

7.5 Beginning the Test: The test is begun by adding the organisms to the equilibrated test containers as previously described. Three extra replicates of midge larvae should be counted out and randomly selected for drying to determine initial average weight and instar data.

7.6 Feeding: Midge larvae are fed 1.5 mL daily per test chamber (1.5 mL contains 6.0 mg of dry solids). A feeding may be skipped if there is a build up of excess food. However, all beakers must be treated similarly.

7.7 Test Duration, Type and Frequency of Observations, and Methods: The duration of the acute toxicity test is 10 days. The type and frequency of observations to be made are summarized as follows:

| Type Of Observation | Times Of Observation |
|---|---|
| **Biological Data** | |
| Survival, growth | Day 10 |
| **Physical And Chemical Data** | |
| Hardness, alkalinity, ammonia-N, conductivity, pH, dissolved oxygen, and temperature | Beginning and end of test in overlying water of one replicate beaker from each treatment. |
| Dissolved oxygen, temperature | Daily in overlying water of one replicate beaker from each treatment. |

Dissolved oxygen is measured using a polarographic oxygen probe calibrated according to the manufacturer's recommendations. The pH is measured using a pH probe and a properly calibrated meter with scale divisions of 0.1 pH units. Temperature is measured with a calibrated mercury thermometer or telethermometer. Conductivity is measured with a conductivity meter. Hardness and alkalinity are measured using titrometric methods. Ammonia-nitrogen is measured using the salicylate colerimetric method (Clin. Chim. Acta 14:403, 1996).

7.8 Growth Measurement: Growth is measured as ash-free dry weight (AFDW) of animals in a test replicate at the end of the test on day 10. Pooled animals from each test replicate are rinsed with deionized water, gently blotted and placed into tared aluminum weigh pans. The pans are dried at 60-90°C to constant weight. The dried organisms are placed into a dessicator and weighed as soon as possible to the nearest 0.01 mg (desirable to use 0.001 mg). The total weight of the dried midge in each pan is divided by the number of midge weighed to obtain an average dry weight per midge. The dried larvae in the pan are then ashed at 550°C for two hours. The pan with the ashed larvae is then reweighed and the tissue mass of the larvae is determined as the difference between the weight

of the dried larvae plus pan and the weight of the ashed larvae plus pan. Pupae or adult organisms are not included in the sample to estimate AFDW.

## 8. CRITERIA OF TEST ACCEPTANCE:

The test results are acceptable if the minimum survival of organisms in the control treatment at the end of the test is at least 70% and the average ash-free dry weight of *C. tentans* in the surviving controls is at least 0.48 mg.

## 9. DATA ANALYSIS

The endpoints of the toxicity test are survival and growth. Survival is obtained as a direct count of living organisms in each test container at the end of the test. Average midge ash-free dry weight, also measured at the end of the test, may be used to compare growth between treatment sediments and the control or reference sediment. Ordinarily the following data analysis is performed. Due to special requirements, alternative methods may be used. The means and standard deviations are calculated for each treatment level. Identification of toxic sediments is established by statistical comparison of test endpoints between test and control or reference sediments. Between treatment comparisons may be made using a Student's t-test or Wilcoxon's Two-Sample test, where each treatment is compared to the control or the reference sediment. An arcsine-square root transformation of proportional data, and tests for normality and heterogeneity of variances, are performed prior to statistical comparisons.

## 10. REPORTING

The final report of the test results must include all of the following standard information at a minimum: name and identification of the test; the investigator and laboratory; date and time of test beginning and end; information on the test material; information on the source and quality of the overlying/test water; detailed information about the test organisms including acclimation conditions; a description of the experimental design and test chambers and other test conditions including feeding, if any, and water quality; definition of the effect criteria and other observations; responses, if any, in the control treatment; tabulation and statistical analysis of measured responses and a summary table of endpoints; a description of the statistical methods used; any unusual information about the test or deviations from procedures; reference toxicant testing information.

## 11. STUDY DESIGN ALTERATION

Amendments made to the protocol must be approved by the sponsor and study director and should include a description of the change, the reason for the change, the date the change took effect and the dated signatures of the study director and sponsor. Any deviations in the protocol must be described and recorded in the study raw data.

## 12. REFERENCE TOXICANT

The reference toxicant test is a standard multi-concentration toxicity test using a specified chemical toxicant to evaluate the performance of test organisms used in the study. Reference toxicant tests are 96-hour, water only exposures, not 10-day sediment exposures. The reference toxicant test is run concurrently. Performance is evaluated by comparing the results of the reference toxicant test with historical results (e.g., control charts) obtained at the laboratory.

## 13. REFERENCED GUIDELINES

ASTM. 2001. Standard Test Methods for Measuring the Toxicity of Sediment-associated Contaminants with Fresh water Invertebrates. ASTM Standard Method No. E 1706-00. Am. Soc. Test. Mat., Philadelphia, PA.

U.S. EPA. 2000. Section 12, Test Method 100.2, *Chironomus tentans* 10-d Survival and Gowth Test for Sediments, pp. 55-62. In: Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates (Second Edition). EPA/600/R-99/064.

Weber, C.I. (Ed.) 1993. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (Fourth Edition). EPA/600/4-90/027F.

## 14. APPROVALS

_____ for _____
Name Date

_____ for **Northwestern Aquatic Sciences**
Name Date

**Appendix A**
**Test Conditions Summary**

| | |
|---|---|
| 1. Test type | whole sediment toxicity test with renewal of overlying water |
| 2. Test duration | 10 days |
| 3. Temperature | 23 ± 1°C |
| 4. Light quality | daylight flourescent light |
| 5. Illuminance | 100-1000 lux |
| 6. Photoperiod | 16L:8D |
| 7. Test chamber size | 300-mL high-form lipless beakers (Pyrex® 1040 or equivalent) |
| 8. Sediment volume | 100 mL |
| 9. Overlying water volume | 175 mL |
| 10. Renewal overlying water | 2 volume additions/day (continuous or intermittent) |
| 11. Age of test organisms | 2nd to 3rd instar or younger larvae (≥ 50% of organisms must be 3rd instar) |
| 12. Organisms per test chamber | 10 |
| 13. Replicates per treatment | 8 recommended for routine (depends on design) |
| 14. Organisms per treatment | 80 |
| 15. Feeding regime | Fish food flakes, fed 1.5 mL chamber (1.5 mL contains 6.0 mg of dry solids) daily on days 0 - 9. |
| 16. Aeration | None, unless DO falls below 2.5 mg/L. |
| 17. Overlying (test) water | **Culture water**, well water, surface water, site water or reconstituted water |
| 18. Water quality | Hardness, alkalinity, conductivity, pH, ammonia-N beginning and end; temperature and DO daily |
| 19. Endpoints | Survival and growth (dry weight) |
| 20. Test acceptability criteria | Minimum control survival of 70%; mean weight of surviving control organisms 0.48 mg AFDW |
| 21. Sample holding | ≤14 days at 4°C in the dark Longer under certain conditions |
| 22. Sample volume required | 1L (800 mL per sediment) |
| 23. Reference toxicant | Concurrent testing required |

# APPENDIX II

# RAW DATA

# TEST DESCRIPTION, MONITORING, AND RESULTS BENCHSHEETS

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator REVIEWED PAGES 1-22 GJI

**STUDY MANAGEMENT**

Client: Squier | Kleinfelder, 15050 SW Koll Parkway, Suite L, Beaverton, OR 97006

Client's Study Monitor: Mr. David King

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L.K. Nemeth

1. Greg Hutchinson GH
2. GA Bichler GAB
3. Susan Gagle SG
4.
5.
6.
7.
8.

Study Schedule:

Test Beginning: 2-2-07 1150 Test Ending: 2-12-07 0955

**TEST MATERIAL**

General description (see sample logbook/chain-of-custody for details):

| | | | | | |
|---|---|---|---|---|---|
| NAS Sample No.: | 0946G | 0941G | 0942G | | |
| Description: | Control | B5-011507 | NW Lakes | | |
| Collection Date: | 1/25/07 | 1/15/07 | 12/14/06-12/18/06 | | |
| Receipt Date: | 1/25/07 | 1/17/0~~6~~7 | 1/17/0~~6~~7 | | |
| _____: | | ③ GJI 2-27-07 | | | |
| NAS Sample No.: | | | | | |
| Description: | | | | | |
| Collection Date: | | | | | |
| Receipt Date: | | | | | |
| _____: | | | | | |
| NAS Sample No.: | | | | | |
| Description: | | | | | |
| Collection Date: | | | | | |
| Receipt Date: | | | | | |
| _____: | | | | | |
| NAS Sample No.: | | | | | |
| Description: | | | | | |
| Collection Date: | | | | | |
| Receipt Date: | | | | | |
| _____: | | | | | |
| NAS Sample No.: | | | | | |
| Description: | | | | | |
| Collection Date: | | | | | |
| Receipt Date: | | | | | |
| _____: | | | | | |

Error codes: 1) correction of handwriting error
2) written in wrong location; entry deleted
3) wrong date deleted, replaced with corrrect date
4) error found in measurement; measurement repeated

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator

SEDIMENT DESCRIPTIONS -- SUPPLEMENTAL NOTES

| Sample No. | Description |
|---|---|
| 0946G | BLACK FINE MUD |
| 0941G | LIGHT BROWN FINE MUD w/ GRASS ROOTS + PLANT DEBRIS |
| 0942G | DARK BROWN FINE MUD w/ SOME SAND AND PLANT DEBRIS |

CHIRONOMUS TENTANS. 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator

**TEST WATER**

Source: Dechlorinated municipal tap water

Date of Collection: 1-31-07

pH 6.7

Cond (umhos/cm2) 140

Hardness (mg/L) 34

Alkalinity (mg/L) 30

Total Chlorine (mg/L) <0.02

Treatments: Dechlorinated, aerated

**TEST ORGANISMS**

Species: *Chironomus tentans* Age: 3rd instar

Source: NAS cultures Date received: n/a

Acclimation Data:

| Date | Temp. (deg.C) | DO (mg/L) | pH | Cond. umhos/cm | Hardness (mg/L) | Alkalinity (mg/L) | Feeding | Water changes |
|---|---|---|---|---|---|---|---|---|
| 1-22-07 | 23.7 | 8.2 | 6.8 | 170 | – | – | Animals fed Tetra Fin | – |
| 1-24-07 | 23.4 | 7.6 | 6.4 | 170 | 43 | 30 | and *Selenastrum* | – |
| 1-26-07 | 23.2 | 8.0 | 6.9 | 170 | – | – | Details recorded on | – |
| 1-29-07 | 14.6 * | 10.0 | 7.3 | 170 | – | – | Chironomid culture | YES |
| 1-31-07 | 23.2 | 8.2 | 6.6 | 165 | 51 | 30 | data sheets | – |
| 2-2-07 | 23.3 | 8.2 | 6.6 | 170 | – | – | | YES |
| Mean | 21.9 | 8.4 | 6.8 | 169 | 47 | 30 | | |
| S.D. | 3.6 | 0.8 | 0.3 | 2.0 | – | – | | |
| (N) | 6 | 6 | 6 | 6 | 6 | 6 | | |

Photoperiod during acclimation: 16:8, L:D

* TEMPERATURE CONTROL FAILURE, UNIT REPLACED.

**TEST PROCEDURES AND CONDITIONS**

Test chambers: 300 ml glass beakers

Test volumes: 100 ml of test sediment; 275 ml total volume

Replicates/treatment: (8) 8 Organisms/treatment: (80) 80

Test water changes: Twice daily

Aeration: only if DO falls below 2.5 mg/L

Feeding: everyday beginning with day zero

Test temperature (°C): 23 ± 1

Beaker placement: Total randomization

Photoperiod: 16:8, L:D

Control Sediment:

Source: From an area approximately one mile east of the Hwy. 101 bridge at Beaver Creek, approx. 8 miles south of Newport, OR.

Date collected: 1/25/07

Sieved through 0.5 -mm screen

Storage: darkness at 4°C, in sealed containe NAS# 0946G

**MISCELLANEOUS NOTES**

Light intensity:

| Date | Location | Measurement | Initials |
|---|---|---|---|
| 2-2-07 | BEAKER 23 | 80 FT CANDES | GJ |

Test No. 762-2 Client Squier Kleinfelder Investigator

Test conducted in (circle one): room 1 room 2 trailer water bath other: ROOM #3

Randomization chart: TOP SHELF

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5 | 10 | 15 | 20 | | | | | | |
| 4 | 9 | 14 | 19 | 24 | | | | | |
| 3 | 8 | 13 | 18 | 23 | | | | | |
| 2 | 7 | 12 | 17 | 22 | | | | | |
| 1 | 6 | 11 | 16 | 21 | | | | | |

Randomization chart:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Randomization chart:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Randomization chart:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

NORTHWESTERN AQUATIC SCIENCES
CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

PROTOCOL NO. NAS-XXX-CT4b

Test No. 762-2 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 0 ( 2 / 2 /07) AJ/GJ

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond.* µmhos/cm) | pH* | Hardness* (mg/L) | Alkalinity* (mg/L) | NH3* (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.3 | 7.5 | 135 | 5.9 | 34 | 30 | <0.1 | Each beaker fed 1.5 ml |
| 17 | 22.8 | 7.2 | 165 | 6.4 | 34 | 30 | <0.1 | Tetra Fin suspension |
| 20 | 23.2 | 7.2 | 150 | 6.1 | 34 | 30 | <0.1 | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1640 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |

*Water quality measurements to be taken.

Day 1 (2 /3 /07) GJ

| Beaker No. | Temp. (deg.C) | DO (ppm) | Cond. µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.5 | 7.1 | | | | | | Each beaker fed 1.5 ml |
| 17 | 22.7 | 7.2 | | | | | | Tetra Fin suspension |
| 20 | 23.0 | 6.9 | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1700 |
| | | | | | | | | Initials: AJ |
| | | | | | | | | |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 2 (2/4/07) GJL

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.4 | 6.8 | | | | | | Each beaker fed 1.5 ml |
| 17 | 22.7 | 6.9 | | | | | | Tetra Fin suspension |
| 20 | 23.0 | 6.7 | | | | | | Initials: GJL |
| | | | | | | | | Water changed in all beakers. |
| | | | | | | | | Time: 0645 |
| | | | | | | | | Initials: GJL |
| | | | | | | | | Water changed in all beakers. |
| | | | | | | | | Time: 1705 |
| | | | | | | | | Initials: AJ |

*Water quality measurements to be taken.

Day 3 (2/5/07) WS/GH

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.4 | 6.5 | | | | | | Each beaker fed 1.5 ml |
| 17 | 22.7 | 6.6 | | | | | | Tetra Fin suspension |
| 20 | 22.9 | 6.8 | | | | | | Initials: GJL |
| | | | | | | | | Water changed in all beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: GJL |
| | | | | | | | | Water changed in all beakers. |
| | | | | | | | | Time: 1825 |
| | | | | | | | | Initials: AJ |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 4 (2/6/07) WS/AF

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.4 | 5.5 | | | | | | Each beaker fed 1.5 ml |
| 17 | 22.7 | 5.6 | | | | | | Tetra Fin suspension |
| 20 | 22.9 | 5.6 | | | | | | Initials: GAJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0630 |
| | | | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1720 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |

*Water quality measurements to be taken.

Day 5 (2/7/07) WS/AF

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.5 | 4.8 | | | | | | Each beaker fed 1.5 ml |
| 17 | 22.6 | 5.1 | | | | | | Tetra Fin suspension |
| 20 | 22.8 | 4.5 | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0615 |
| | | | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1635 |
| | | | | | | | | Initials: GH |
| | | | | | | | | |

*Water quality measurements to be taken.

Test No. 762-2 Client Squier Kleinfelder Investigator _____

DAILY RECORD SHEET

Day 6 (2/8/07) GJ/AJ

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.7 | 4.8 | ~ | | | | | Each beaker fed 1.5 ml |
| 17 | 22.7 | 4.8 | | | | | | Tetra Fin suspension |
| 20 | 22.6 | 5.4 | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0615 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1645 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |

*Water quality measurements to be taken.

Day 7 (2/9/07) GJ/AJ

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.6 | 5.8 | | | | | | Each beaker fed 1.5 ml |
| 17 | 22.7 | 6.2 | | | | | | Tetra Fin suspension |
| 20 | 22.9 | 6.0 | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: GJ |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1635 |
| | | | | | | | | Initials: GH |
| | | | | | | | | |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 8 (2/10/07) WS

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.4 | 6.8 | | | | | | Each beaker fed 1.5 ml |
| 17 | 22.4 | 6.9 | | | | | | Tetra Fin suspension |
| 20 | 22.3 | 7.1 | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0520 |
| | | | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1550 |
| | | | | | | | | Initials: SJ |

*Water quality measurements to be taken.

Day 9 (2/11/07) WS

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond. (µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.3 | 6.6 | | | | | | Each beaker fed 1.5 ml |
| 17 | 22.4 | 6.8 | | | | | | Tetra Fin suspension |
| 20 | 22.3 | 6.8 | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: WS |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 1730 |
| | | | | | | | | Initials: SJ |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator

DAILY RECORD SHEET

Day 10 ( 2 / 12 07 ) GJ2

| Beaker No. | Temp.* (deg.C) | DO* (ppm) | Cond.* µmhos/cm) | pH* | Hardness* (mg/L) | Alkalinity* (mg/L) | NH3* (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | 22.6 | 6.2 | 150 | 5.9 | 34 | 40 | <0.1 | Each beaker fed 1.5 ml |
| 17 | 22.8 | 6.2 | 155 | 6.0 | 34 | 40 | <0.1 | Tetra Fin suspension |
| 20 | 22.9 | 6.8 | 155 | 6.0 | 34 | 40 | <0.1 | Initials: – |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: 0640 |
| | | | | | | | | Initials: GJ2 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: |
| | | | | | | | | Initials: |
| | | | | | | | | |

*Water quality measurements to be taken.

Day ( / / )

| Beaker No. | Temp. (deg.C) | DO (ppm) | Cond. µmhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | NH3 (ppm) | Comments |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Each beaker fed 1.5 ml |
| | | | | | | | | Tetra Fin suspension |
| | | | | | | | | Initials: |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: |
| | | | | | | | | Initials: |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | Water changed in all |
| | | | | | | | | beakers. |
| | | | | | | | | Time: |
| | | | | | | | | Initials: |
| | | | | | | | | |

*Water quality measurements to be taken.

NORTHWESTERN AQUATIC SCIENCES

PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator

DAY 10 TEST TERMINATION SHEET

| Beaker No. | Number of survivors | Initials |
|---|---|---|
| 1 | 10 | GJL |
| 2 | 9 | GJL |
| 3 | 9 | GJL |
| 4 | ④ GJL 2-12-07 ~~9~~ 8 | GJL |
| 5 | ~~9~~ 10 | GJL |
| 6 | 8 | GJL |
| 7 | 9 | GJL |
| 8 | 9 | GJL |
| 9 | 5 | GJL |
| 10 | 8 | GJL |
| 11 | 8 | GJL |
| 12 | 9 | GJL |
| 13 | 8 | GJL |
| 14 | 8 | GJL |
| 15 | 8 | GJL |
| 16 | 7 | GJL |
| 17 | 8 | GJL |
| 18 | 8 | GJL |
| 19 | 7 | GJL |
| 20 | 6 | GJL |
| 21 | 7 | GJL |
| 22 | ② ~~8~~ 7 | GJL |
| 23 | 2-12-07 GJL ~~7~~ 8 | GJL |
| 24 | 10 | GJL |
| 25 | | |
| 26 | | |
| 27 | | |
| 28 | | |
| 29 | | |
| 30 | | |
| 31 | | |
| 32 | | |
| 33 | | |
| 34 | | |
| 35 | | |
| 36 | | |
| 37 | | |
| 38 | | |
| 39 | | |
| 40 | | |
| 41 | | |
| 42 | | |
| 43 | | |
| 44 | | |
| 45 | | |

| Beaker No. | Number of survivors | Initials |
|---|---|---|
| 46 | | |
| 47 | | |
| 48 | | |
| 49 | | |
| 50 | | |
| 51 | | |
| 52 | | |
| 53 | | |
| 54 | | |
| 55 | | |
| 56 | | |
| 57 | | |
| 58 | | |
| 59 | | |
| 60 | | |
| 61 | | |
| 62 | | |
| 63 | | |
| 64 | | |
| 65 | | |
| 66 | | |
| 67 | | |
| 68 | | |
| 69 | | |
| 70 | | |
| 71 | | |
| 72 | | |
| 73 | | |
| 74 | | |
| 75 | | |
| 76 | | |
| 77 | | |
| 78 | | |
| 79 | | |
| 80 | | |
| 81 | | |
| 82 | | |
| 83 | | |
| 84 | | |
| 85 | | |
| 86 | | |
| 87 | | |
| 88 | | |
| 89 | | |
| 90 | | |

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator

Tare: Date 1-30-07 Oven temp ( C.) 60 Drying time (hr.) 24 Initials 631
Standard Weights: 10 mg: 10.005 100mg: 100.015

Final #1 Date 2-5-07 Oven temp ( C.) 60 Drying time (hr.) 22 Initials 631
Standard Weights: 10 mg: 10.006 100mg: 100.016

Final: #2 Date 2-6-07 Oven temp ( C.) 60 Drying time (hr.) 24 Initials 631
Standard Weights: 10 mg: 10.003 100mg: 100.009

Equip. used: Oven: BLUE M #1 Balance: SARTORIUS M3P

**(Dry overnight at 60-90 degrees C)**

| Pan # | Tare wt. (mg) | Total wt. (mg) 1 | Total wt. (mg) 2 | #weighed | |
|---|---|---|---|---|---|
| 1 | 82.330 | 83.383 | 83.382 | 10 | |
| 2 | 77.125 | 78.166 | 78.174 | 10 | |
| 3 | 80.778 | 81.734 | 81.751 | 10 | |

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-XXX-CT4b

CHIRONOMUS TENTANS 10-DAY SOLID PHASE SEDIMENT TEST

Test No. 762-2 Client Squier Kleinfelder Investigator

**WEIGHING DATA SHEET**

Tare: Date 1-30-07 Oven temp ( C.) 550 Drying time (hr.) 2 Initials GJL
Standard Weights: 10 mg: 10.005 100mg: 100.015

Final #1: Date 2-15-07 Oven temp ( C.) 60 Drying time (hr.) 26 Initials GJL
Standard Weights: 10 mg: 10.004 100mg: 100.015

Final #2: Date 2-16-07 Oven temp ( C.) 64 Drying time (hr.) 24 Initials GJL
Standard Weights: 10 mg: 10.004 100mg: 100.012

Final #3: Date 2-19-07 Oven temp ( C.) 550 Drying time (hr.) 2 Initials GJL
Standard Weights: 10 mg: 10.003 100mg: 100.016

Equip. used: Oven BLUE M #1, FISHER ISOTEMP MUFFLE FURNACE Balance SARTORIUS M3P

**(Dry overnight at 60-90 degrees C)** **(Final ashing is at 550 degrees C for 2 hours)**

| Bkr. # | Pan # | Tare wt. (mg) | Dry total wt. (mg) 1 | Dry total wt. (mg) 2 | no. weighed | put into pans-initials | Ash weight (mg) | Comments |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 81.74 | 87.30 | 87.27 | 10 | AL | 82.75 | |
| 2 | 2 | 83.44 | 89.59 | 89.56 | 9 | AL | 84.26 | |
| 3 | 3 | 83.60 | 91.20 | 91.02 | 9 | AL | 86.41 | |
| 4 | 4 | 88.03 | 92.62 | 92.49 | 8 | AL | 88.92 | |
| 5 | 5 | 79.30 | 85.50 | 85.46 | 10 | AL | 81.54 | |
| 6 | 6 | 81.64 | 85.25 | 85.16 | 8 | AL | 82.30 | |
| 7 | 7 | 76.39 | 82.07 | 81.97 | 9 | AL | 78.65 | |
| 8 | 8 | 74.22 | 78.12 | 78.08 | 9 | AL | 75.03 | |
| 9 | 9 | 81.27 | 84.80 | 84.78 | 5 | AL | 82.48 | |
| 10 | 10 | 79.28 | 84.89 | 84.78 | 8 | AL | 81.36 | |
| 11 | 11 | 78.51 | 85.25 | 85.21 | 8 | AL | 80.39 | |
| 12 | 12 | 81.54 | 85.57 | 85.56 | 9 | AL | 82.30 | |
| 13 | 13 | 82.93 | 90.19 | 90.17 | 8 | AL | 84.63 | |
| 14 | 14 | 83.97 | 89.69 | 89.67 | 8 | AL | 85.17 | |
| 15 | 15 | 82.67 | 86.92 | 86.87 | 8 | AL | 83.53 | |
| 16 | 16 | 83.83 | 87.38 | 87.36 | 7 | AL | 84.61 | |
| 17 | 17 | 81.66 | 87.58 | 87.58 | 8 | AL | 83.01 | |
| 18 | 18 | 84.05 | 89.89 | 89.85 | 8 | AL | 85.29 | |
| 19 | 19 | 79.78 | 82.69 | 82.67 | 7 | AL | 80.33 | |
| 20 | 20 | 84.48 | 86.69 | 86.66 | 6 | AL | 85.15 | |
| 21 | 21 | 78.39 | 84.20 | 84.18 | 7 | AL | 79.63 | |
| 22 | 22 | 80.39 | 87.50 | 87.49 | 7 | AL | 82.58 | |
| 23 | 23 | 79.43 | 85.55 | 85.51 | 8 | AL | 81.93 | |
| 24 | 24 | 76.53 | 85.35 | 85.32 | 10 | AL | 79.96 | |
| 25 | 25 | | | | | | | |
| 26 | 26 | | | | | | | |
| 27 | 27 | | | | | | | |
| 28 | 28 | | | | | | | |
| 29 | 29 | | | | | | | |
| 30 | 30 | | | | | | | |
| 31 | 31 | | | | | | | |
| 32 | 32 | | | | | | | |
| 33 | 33 | | | | | | | |

Test Number: P762-2

Freshwater Sediment Test
10-day Chironomus tentans

| BKR | NAS SMPL | CLIENT DESCRIP | REPL | |
|---|---|---|---|---|
| 13 | 0946G | Control | 1 | |
| 21 | 0946G | Control | 2 | |
| 11 | 0946G | Control | 3 | |
| 2 | 0946G | Control | 4 | |
| 22 | 0946G | Control | 5 | |
| 14 | 0946G | Control | 6 | |
| 18 | 0946G | Control | 7 | |
| 17 | 0946G | Control | 8 | wq replicate |
| 19 | 0941G | B5-011507 | 1 | |
| 8 | 0941G | B5-011507 | 2 | |
| 16 | 0941G | B5-011507 | 3 | |
| 15 | 0941G | B5-011507 | 4 | |
| 1 | 0941G | B5-011507 | 5 | |
| 6 | 0941G | B5-011507 | 6 | |
| 12 | 0941G | B5-011507 | 7 | |
| 4 | 0941G | B5-011507 | 8 | wq replicate |
| 5 | 0942G | NW Lakes | 1 | |
| 23 | 0942G | NW Lakes | 2 | |
| 10 | 0942G | NW Lakes | 3 | |
| 9 | 0942G | NW Lakes | 4 | |
| 24 | 0942G | NW Lakes | 5 | |
| 7 | 0942G | NW Lakes | 6 | |
| 3 | 0942G | NW Lakes | 7 | |
| 20 | 0942G | NW Lakes | 8 | wq replicate |

# TEST DATA ANALYSIS RECORDS

Test Number: P762-2

Freshwater Sediment Test
10-day Chironomus tentans

## Endpoints Data Entry and Calculations File

BKR=beaker number
INIT=initial number
SURV=number survivors
MORT=number dead=INIT-SURV
PSURV=%survival=100(SURV/INIT)
PMORT=%mortality=100(MORT/INIT)

TARE WT= ashed weight of pan used for that replicate at test termination (mg), or dry weight of pan if ash-free dry weight is not an endpoint
WT COUNT= number of test organisms weighed at test end
DRY WT= TARE WT + dry weight of test organisms recovered at test termination (mg)
TWT=total biomass=DRY WT-TARE WT
WT=average individual biomass=TWT/WT COUNT

ASHED DRY WT= weight of ashed pan + weight of ashed test organisms recovered at test termination
TAFDW=DRY WT - ASHED DRY WT= total ash-free organism weight for given replicate
AFDW=average individual ash-free biomass=TAFDW/WT COUNT

INITIAL WEIGHT

| pan # | tare wt (mg) | final wt (mg) | wt count | avg. wt/ organism |
|---|---|---|---|---|
| 1 | $82.330 | 83.382 | 10 | 0.105 |
| 2 | $77.125 | 78.174 | 10 | 0.105 |
| 3 | $80.778 | 81.751 | 10 | 0.097 |

| INDEX | BKR | NAS SMPL | CLIENT DESCRIP | REPL | | INIT | SURV | MORT | PSURV | PMORT | TARE WT (mg) | WT COUNT | DRY WT (mg) | ASHED DRY WT (mg) | TWT (mg) | WT (mg) | TAFDW (mg) | AFDW (mg) | | SURV | MORT | PSURV | PMORT | WT | AFDW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 0946G | Control | 1 | | 10 | 8 | 2 | 80.0 | 20.0 | 82.93 | 8 | 90.17 | 84.63 | 7.24 | 0.90 | 5.54 | 0.69 | | | | | | | |
| 2 | 21 | 0946G | Control | 2 | | 10 | 7 | 3 | 70.0 | 30.0 | 78.39 | 7 | 84.18 | 79.63 | 5.79 | 0.83 | 4.55 | 0.65 | | | | | | | |
| 3 | 11 | 0946G | Control | 3 | | 10 | 8 | 2 | 80.0 | 20.0 | 78.51 | 8 | 85.21 | 80.39 | 6.70 | 0.84 | 4.82 | 0.60 | | | | | | | |
| 4 | 2 | 0946G | Control | 4 | | 10 | 9 | 1 | 90.0 | 10.0 | 83.44 | 9 | 89.56 | 84.26 | 6.12 | 0.68 | 5.30 | 0.59 | | | | | | | |
| 5 | 22 | 0946G | Control | 5 | | 10 | 7 | 3 | 70.0 | 30.0 | 80.39 | 7 | 87.49 | 82.58 | 7.10 | 1.01 | 4.91 | 0.70 | Mean | 7.9 | 2.1 | 78.8 | 21.3 | 0.81 | 0.62 |
| 6 | 14 | 0946G | Control | 6 | | 10 | 8 | 2 | 80.0 | 20.0 | 83.97 | 8 | 89.67 | 85.17 | 5.70 | 0.71 | 4.50 | 0.56 | SD | 0.6 | 0.6 | 6.4 | 6.4 | 0.11 | 0.06 |
| 7 | 18 | 0946G | Control | 7 | | 10 | 8 | 2 | 80.0 | 20.0 | 84.05 | 8 | 89.85 | 85.29 | 5.80 | 0.73 | 4.56 | 0.57 | n | 8 | 8 | 8 | 8 | 8 | 8 |
| 8 | 17 | 0946G | Control | 8 | wq replicate | 10 | 8 | 2 | 80.0 | 20.0 | 81.66 | 8 | 87.58 | 83.01 | 5.92 | 0.74 | 4.57 | 0.57 | | | | | | | |
| 9 | 19 | 0941G | B5-011507 | 1 | | 10 | 7 | 3 | 70.0 | 30.0 | 79.78 | 7 | 82.67 | 80.33 | 2.89 | 0.41 | 2.34 | 0.33 | | | | | | | |
| 10 | 8 | 0941G | B5-011507 | 2 | | 10 | 9 | 1 | 90.0 | 10.0 | 74.22 | 9 | 78.08 | 75.03 | 3.86 | 0.43 | 3.05 | 0.34 | | | | | | | |
| 11 | 16 | 0941G | B5-011507 | 3 | | 10 | 7 | 3 | 70.0 | 30.0 | 83.83 | 7 | 87.36 | 84.61 | 3.53 | 0.50 | 2.75 | 0.39 | | | | | | | |
| 12 | 15 | 0941G | B5-011507 | 4 | | 10 | 8 | 2 | 80.0 | 20.0 | 82.67 | 8 | 86.87 | 83.53 | 4.20 | 0.53 | 3.34 | 0.42 | | | | | | | |
| 13 | 1 | 0941G | B5-011507 | 5 | | 10 | 10 | 0 | 100.0 | 0.0 | 81.74 | 10 | 87.27 | 82.75 | 5.53 | 0.55 | 4.52 | 0.45 | Mean | 8.3 | 1.8 | 82.5 | 17.5 | 0.48 | 0.39 |
| 14 | 6 | 0941G | B5-011507 | 6 | | 10 | 8 | 2 | 80.0 | 20.0 | 81.64 | 8 | 85.16 | 82.30 | 3.52 | 0.44 | 2.86 | 0.36 | SD | 1.0 | 1.0 | 10.4 | 10.4 | 0.06 | 0.05 |
| 15 | 12 | 0941G | B5-011507 | 7 | | 10 | 9 | 1 | 90.0 | 10.0 | 81.54 | 9 | 85.56 | 82.30 | 4.02 | 0.45 | 3.26 | 0.36 | n | 8 | 8 | 8 | 8 | 8 | 8 |
| 16 | 4 | 0941G | B5-011507 | 8 | wq replicate | 10 | 8 | 2 | 80.0 | 20.0 | 88.03 | 8 | 92.49 | 88.92 | 4.46 | 0.56 | 3.57 | 0.45 | | | | | | | |
| 17 | 5 | 0942G | NW Lakes | 1 | | 10 | 10 | 0 | 100.0 | 0.0 | 79.30 | 10 | 85.46 | 81.54 | 6.16 | 0.62 | 3.92 | 0.39 | | | | | | | |
| 18 | 23 | 0942G | NW Lakes | 2 | | 10 | 8 | 2 | 80.0 | 20.0 | 79.43 | 8 | 85.51 | 81.93 | 6.08 | 0.76 | 3.58 | 0.45 | | | | | | | |
| 19 | 10 | 0942G | NW Lakes | 3 | | 10 | 8 | 2 | 80.0 | 20.0 | 79.28 | 8 | 84.78 | 81.36 | 5.50 | 0.69 | 3.42 | 0.43 | | | | | | | |
| 20 | 9 | 0942G | NW Lakes | 4 | | 10 | 5 | 5 | 50.0 | 50.0 | 81.27 | 5 | 84.78 | 82.48 | 3.51 | 0.70 | 2.30 | 0.46 | | | | | | | |
| 21 | 24 | 0942G | NW Lakes | 5 | | 10 | 10 | 0 | 100.0 | 0.0 | 76.53 | 10 | 85.32 | 79.96 | 8.79 | 0.88 | 5.36 | 0.54 | Mean | 8.1 | 1.9 | 81.3 | 18.8 | 0.68 | 0.42 |
| 22 | 7 | 0942G | NW Lakes | 6 | | 10 | 9 | 1 | 90.0 | 10.0 | 76.39 | 9 | 81.97 | 78.65 | 5.58 | 0.62 | 3.32 | 0.37 | SD | 1.8 | 1.8 | 18.1 | 18.1 | 0.16 | 0.09 |
| 23 | 3 | 0942G | NW Lakes | 7 | | 10 | 9 | 1 | 90.0 | 10.0 | 83.60 | 9 | 91.02 | 86.41 | 7.42 | 0.82 | 4.61 | 0.51 | n | 8 | 8 | 8 | 8 | 8 | 8 |
| 24 | 20 | 0942G | NW Lakes | 8 | wq replicate | 10 | 6 | 4 | 60.0 | 40.0 | 84.48 | 6 | 86.66 | 85.15 | 2.18 | 0.36 | 1.51 | 0.25 | | | | | | | |

PAGE 15 OF 22

Project Name: P762-2 Chironomus 10-day; % Mortality

| | |
|---|---|
| Sample: | x1 |
| Samp ID: | NW Lakes |
| Alias: | NAS# 0942G - X1 |
| Replicates: | 8 |
| Mean: | 18.75 |
| SD: | 18.077 |
| Tr Mean: | 21.779 |
| Trans SD: | 16.303 |

| | |
|---|---|
| Ref Samp: | x2 |
| Ref ID: | B5-011507 |
| Alias: | NAS# 0941G - X2 |
| Replicates: | 8 |
| Mean: | 17.5 |
| SD: | 10.351 |
| Tr Mean: | 22.873 |
| Trans SD: | 10.805 |

| Shapiro-Wilk Results: | | Levene's Results: | | Test Results: | |
|---|---|---|---|---|---|
| Residual Mean: | 0 | Test Residual Mean: | 12.561 | Statistic: | Student's t |
| Residual SD: | 11.872 | Test Residual SD: | 9.245 | Balanced Design: | Yes |
| SS: | 2677.826 | Ref. Residual Mean: | 7.938 | Transformation: | ArcSin |
| K: | 8 | Ref. Residual SD: | 6.689 | | |
| b: | 49.743 | Deg. of Freedom: | 14 | | |
| | | | | Experimental Hypothesis | |
| Alpha Level: | 0.05 | Alpha Level: | 0.1 | Null: | x1 <= x2 |
| Calculated Value: | 0.924 | Calculated Value: | 1.1461 | Alternate: | x1 > x2 |
| Critical Value: | <= 0.887 | Critical Value: | >= 1.761 | | |
| Normally Distributed: | Yes | Variances Homogeneous: | Yes | Degrees of Freedom: | 14 |
| | | | | Experimental Alpha Level: | 0.05 |
| | | | | Calculated Value: | -0.1583 |
| Override Option: | N/A | | | Critical Value: | >= 1.761 |
| | | | | Accept Null Hypothesis: | Yes |
| | | | | Power: | |
| | | | | Min. Difference for Power: | |

| Replicate Number | Test Data | Trans. Test Data | Reference Data | Trans. Reference Data | Levene's Test Residuals | Levene's Reference Residuals | Mann-Whitney Ranks | Rankits | Shipiro-Wilk Residuals |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 30 | 33.211 | 21.779 | 10.338 | | | -22.873 |
| 2 | 20 | 26.565 | 10 | 18.435 | 4.786 | 4.438 | | | -21.779 |
| 3 | 20 | 26.565 | 30 | 33.211 | 4.786 | 10.338 | | | -21.779 |
| 4 | 50 | 45 | 20 | 26.565 | 23.221 | 3.692 | | | -4.438 |
| 5 | 0 | 0 | 0 | 0 | 21.779 | 22.873 | | | -4.438 |
| 6 | 10 | 18.435 | 20 | 26.565 | 3.344 | 3.692 | | | -3.344 |
| 7 | 10 | 18.435 | 10 | 18.435 | 3.344 | 4.438 | | | -3.344 |
| 8 | 40 | 39.231 | 20 | 26.565 | 17.453 | 3.692 | | | 3.692 |
| 9 | | | | | | | | | 3.692 |
| 10 | | | | | | | | | 3.692 |
| 11 | | | | | | | | | 4.786 |
| 12 | | | | | | | | | 4.786 |
| 13 | | | | | | | | | 10.338 |
| 14 | | | | | | | | | 10.338 |
| 15 | | | | | | | | | 17.453 |
| 16 | | | | | | | | | 23.221 |

THE % MORTALITY OF NW LAKES (NAS# 0942G) WAS NOT SIGNIFICANTLY GREATER THAN THAT OF THE REFERENCE (B5-011507) AT $\alpha = 0.05$

-652

Project Name: P762-2 Midge 10-d; ind.biomass (ash-free dry wt)

| | |
|---|---|
| Sample: | x1 |
| Samp ID: | NW Lakes |
| Alias: | NAS# 0942G - X1 |
| Replicates: | 8 |
| Mean: | 0.425 |
| SD: | 0.09 |
| Tr Mean: | 0.425 |
| Trans SD: | 0.09 |

| | |
|---|---|
| Ref Samp: | x2 |
| Ref ID: | B5-011507 |
| Alias: | NAS# 0941G - X2 |
| Replicates: | 8 |
| Mean: | 0.388 |
| SD: | 0.048 |
| Tr Mean: | 0.388 |
| Trans SD: | 0.048 |

| Shapiro-Wilk Results: | | Levene's Results: | | Test Results: | |
|---|---|---|---|---|---|
| Residual Mean: | 0 | Test Residual Mean: | 0.066 | Statistic: | Student's t |
| Residual SD: | 0.062 | Test Residual SD: | 0.056 | Balanced Design: | Yes |
| SS: | 0.073 | Ref. Residual Mean: | 0.04 | Transformation: | No Transformation |
| K: | 8 | Ref. Residual SD: | 0.021 | | |
| b: | 0.264 | Deg. of Freedom: | 14 | | |
| | | | | Experimental Hypothesis | |
| Alpha Level: | 0.05 | Alpha Level: | 0.1 | Null: | x1 >= x2 |
| Calculated Value: | 0.9512 | Calculated Value: | 1.2365 | Alternate: | x1 < x2 |
| Critical Value: | <= 0.887 | Critical Value: | >= 1.761 | | |
| Normally Distributed: | Yes | Variances Homogeneous: | Yes | Degrees of Freedom: | 14 |
| | | | | Experimental Alpha Level: | 0.05 |
| | | | | Calculated Value: | -1.0376 |
| Override Option: | N/A | | | Critical Value: | >= 1.761 |
| | | | | Accept Null Hypothesis: | Yes |
| | | | | Power: | |
| | | | | Min. Difference for Power: | |

| Replicate Number | Test Data | Trans. Test Data | Reference Data | Trans. Reference Data | Levene's Test Residuals | Levene's Reference Residuals | Mann-Whitney Ranks | Rankits | Shipiro-Wilk Residuals |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.39 | 0.39 | 0.33 | 0.33 | 0.035 | 0.058 | | | -0.175 |
| 2 | 0.45 | 0.45 | 0.34 | 0.34 | 0.025 | 0.048 | | | -0.058 |
| 3 | 0.43 | 0.43 | 0.39 | 0.39 | 0.005 | 0.003 | | | -0.055 |
| 4 | 0.46 | 0.46 | 0.42 | 0.42 | 0.035 | 0.033 | | | -0.048 |
| 5 | 0.54 | 0.54 | 0.45 | 0.45 | 0.115 | 0.063 | | | -0.035 |
| 6 | 0.37 | 0.37 | 0.36 | 0.36 | 0.055 | 0.028 | | | -0.028 |
| 7 | 0.51 | 0.51 | 0.36 | 0.36 | 0.085 | 0.028 | | | -0.028 |
| 8 | 0.25 | 0.25 | 0.45 | 0.45 | 0.175 | 0.063 | | | 0.003 |
| 9 | | | | | | | | | 0.005 |
| 10 | | | | | | | | | 0.025 |
| 11 | | | | | | | | | 0.033 |
| 12 | | | | | | | | | 0.035 |
| 13 | | | | | | | | | 0.063 |
| 14 | | | | | | | | | 0.063 |
| 15 | | | | | | | | | 0.085 |
| 16 | | | | | | | | | 0.115 |

THE MEAN INDIVIDUAL ASH-FREE DRY WT OF NW LAKES (NAS#0942G) WAS NOT SIGNIFICANTLY LESS THAN THAT OF THE REFERENCE (B5-011507) AT $\alpha = 0.05$.

-657

## Water Quality Data

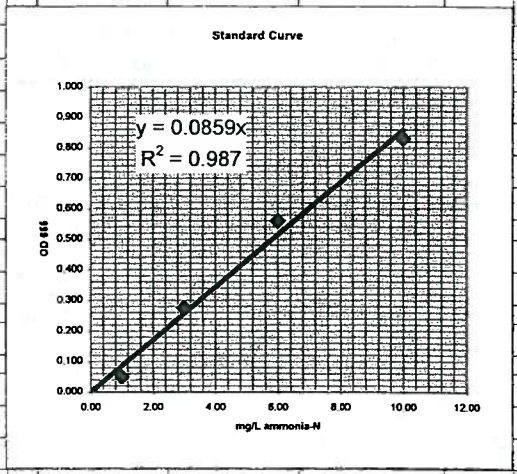
| | NAS | CLIENT | | | Overlying water | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BKR | SMPL | DESCRIP | REPL | DAY | TEMP | DO | COND | pH | NH3 | HARD | ALK |
| 4 | 0941G | B5-011507 | 8 | 0 | 22.3 | 7.5 | 135 | 5.9 | <0.1 | 34 | 30 |
| 17 | 0946G | Control | 8 | 0 | 22.8 | 7.2 | 165 | 6.4 | <0.1 | 34 | 30 |
| 20 | 0942G | NW Lakes | 8 | 0 | 23.2 | 7.2 | 150 | 6.1 | <0.1 | 34 | 30 |
| 4 | 0941G | B5-011507 | 8 | 1 | 22.5 | 7.1 | | | | | |
| 17 | 0946G | Control | 8 | 1 | 22.7 | 7.2 | | | | | |
| 20 | 0942G | NW Lakes | 8 | 1 | 23.0 | 6.9 | | | | | |
| 4 | 0941G | B5-011507 | 8 | 2 | 22.4 | 6.8 | | | | | |
| 17 | 0946G | Control | 8 | 2 | 22.7 | 6.9 | | | | | |
| 20 | 0942G | NW Lakes | 8 | 2 | 23.0 | 6.7 | | | | | |
| 4 | 0941G | B5-011507 | 8 | 3 | 22.4 | 6.5 | | | | | |
| 17 | 0946G | Control | 8 | 3 | 22.7 | 6.6 | | | | | |
| 20 | 0942G | NW Lakes | 8 | 3 | 22.9 | 6.8 | | | | | |
| 4 | 0941G | B5-011507 | 8 | 4 | 22.4 | 5.5 | | | | | |
| 17 | 0946G | Control | 8 | 4 | 22.7 | 5.6 | | | | | |
| 20 | 0942G | NW Lakes | 8 | 4 | 22.9 | 5.6 | | | | | |
| 4 | 0941G | B5-011507 | 8 | 5 | 22.5 | 4.8 | | | | | |
| 17 | 0946G | Control | 8 | 5 | 22.6 | 5.1 | | | | | |
| 20 | 0942G | NW Lakes | 8 | 5 | 22.8 | 4.5 | | | | | |
| 4 | 0941G | B5-011507 | 8 | 6 | 22.7 | 4.8 | | | | | |
| 17 | 0946G | Control | 8 | 6 | 22.7 | 4.8 | | | | | |
| 20 | 0942G | NW Lakes | 8 | 6 | 22.6 | 5.4 | | | | | |
| 4 | 0941G | B5-011507 | 8 | 7 | 22.6 | 5.8 | | | | | |
| 17 | 0946G | Control | 8 | 7 | 22.7 | 6.2 | | | | | |
| 20 | 0942G | NW Lakes | 8 | 7 | 22.9 | 6.0 | | | | | |
| 4 | 0941G | B5-011507 | 8 | 8 | 22.4 | 6.8 | | | | | |
| 17 | 0946G | Control | 8 | 8 | 22.4 | 6.9 | | | | | |
| 20 | 0942G | NW Lakes | 8 | 8 | 22.3 | 7.1 | | | | | |
| 4 | 0941G | B5-011507 | 8 | 9 | 22.3 | 6.6 | | | | | |
| 17 | 0946G | Control | 8 | 9 | 22.4 | 6.8 | | | | | |
| 20 | 0942G | NW Lakes | 8 | 9 | 22.3 | 6.8 | | | | | |
| 4 | 0941G | B5-011507 | 8 | 10 | 22.6 | 6.2 | 150 | 5.9 | <0.1 | 34 | 40 |
| 17 | 0946G | Control | 8 | 10 | 22.8 | 6.2 | 155 | 6.0 | <0.1 | 34 | 40 |
| 20 | 0942G | NW Lakes | 8 | 10 | 22.9 | 6.8 | 155 | 6.0 | <0.1 | 34 | 40 |
| | | | | | | | | | | | |
| | | | | **Mean** | 22.6 | 6.3 | 152 | 6.1 | --- | 34 | 35 |
| | | | | **SD** | 0.2 | 0.8 | 10 | 0.2 | --- | 0 | 5 |
| | | | | **n** | 33 | 33 | 6 | 6 | 6 | 6 | 6 |
| | | | | **Min** | 22.3 | 4.5 | 135 | 5.9 | <0.1 | 34 | 30 |
| | | | | **Max** | 23.2 | 7.5 | 165 | 6.4 | <0.1 | 34 | 40 |

# AMMONIA EXPOSURE BENCHSHEETS AND ANALYSIS

# Total Ammonia-N in Sediment Pore Water: Computation Worksheet
## Salicylate Method (SOP #5492)

**Result**

| | Sample description | Dilution factor | OD655 | $NH_3$-N (mg/L) | pH | Salinity (ppt) |
|---|---|---|---|---|---|---|
| | Blank | ----- | ----- | ----- | | |
| | 1.0 mg/L $NH_3$-N Std. | ----- | 0.050 | 1.00 | | |
| | 3.0 mg/L $NH_3$-N Std. | ----- | 0.277 | 3.00 | | |
| | 6.0 mg/L $NH_3$-N Std. | ----- | 0.560 | 6.00 | | |
| | 10.0 mg/L $NH_3$-N Std. | ----- | 0.830 | 10.00 | | |
| | 3.0 mg/L spike | ----- | 0.247 | 2.86 | | |
| | 3.0 mg/L spike dupl. | ----- | 0.233 | 2.70 | | |
| | 5.0 mg/L 2nd source | | 0.340 | 3.94 | | |
| 1. | Day 0 (2-2-07) | | | | | |
| 2. | 4 | 1 | 0.000 | ND | | |
| 3. | 17 | 1 | 0.000 | ND | | |
| 4. | 20 | 1 | 0.006 | ND | | |
| 5. | Day 10 (2-12-07) | | | | | |
| 6. | 4 | 1 | 0.000 | ND | | |
| 7. | 17 | 1 | 0.000 | ND | | |
| 8. | 20 | 1 | 0.000 | ND | | |
| 9. | | | | | | |
| 10. | | | | | | |
| 11. | | | | | | |
| 12. | | | | | | |
| 13. | | | | | | |
| 14. | | | | | | |
| 15. | | | | | | |
| 16. | | | | | | |
| 17. | | | | | | |
| 18. | | | | | | |
| 19. | | | | | | |
| 20. | | | | | | |
| 21. | | | | | | |
| 22. | | | | | | |
| 23. | | | | | | |
| 24. | | | | | | |
| 25. | | | | | | |
| 26. | | | | | | |
| 27. | | | | | | |
| 28. | | | | | | |
| 29. | | | | | | |
| 30. | | | | | | |
| 31. | | | | | | |
| 32. | | | | | | |
| 33 | | | | | | |
| 34 | | | | | | |
| 35 | | | | | | |
| 36 | | | | | | |




| | |
|---|---|
| Reporting limit (mg/L) = | 0.1 |
| Recovery (%) = | 92.7 |
| Precision (RPD) = | 5.83 |
| 2nd source (%) = | 78.8 |
| Sample volume (ml): | 0.50 |
| Dilution factor | 1 |

**Sample Set Description:**

Proj. No.: 762-2
Test Day: 0 & 10
Species: *Chironomus*

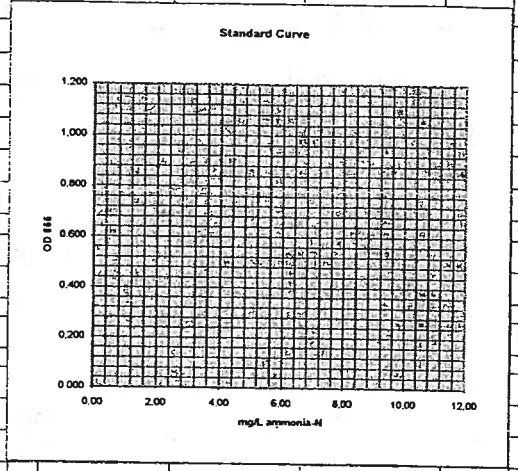
Overlying water

Analyst: GJI
Date analysed: 2/21/07

# Total Ammonia-N in Sediment Pore Water: Computation Worksheet
## Salicylate Method (SOP #5492)

**Result**

| | Sample description | Dilution factor | OD655 | $NH_3$-N (mg/L) | pH | Salinity (ppt) |
|---|---|---|---|---|---|---|
| | Blank | ----- | ----- | ----- | | |
| | 1.0 mg/L $NH_3$-N Std. | ----- | 0.050 | 1.00 | | |
| | 3.0 mg/L $NH_3$-N Std. | ----- | 0.277 | 3.00 | | |
| | 6.0 mg/L $NH_3$-N Std. | ----- | 0.560 | 6.00 | | |
| | 10.0 mg/L $NH_3$-N Std. | ----- | 0.830 | 10.00 | | |
| | 3.0 mg/L spike | ----- | 0.247 | | | |
| | 3.0 mg/L spike dupl. | ----- | 0.233 | | | |
| | 5.0 mg/L 2nd source | | 0.340 | | | |
| 1. | Day 0 (2-2-07) | | | | | |
| 2. | 4 | 1 | 0.000 | | | |
| 3. | 17 | 1 | 0.000 | | | |
| 4. | 20 | 1 | 0.006 | | | |
| 5. | Day 10 (2-12-07) | | | | | |
| 6. | 4 | 1 | 0.000 | | | |
| 7. | 17 | 1 | 0.000 | | | |
| 8. | 20 | 1 | 0.000 | | | |
| 9. | | | | | | |
| 10. | | | | | | |
| 11. | | | | | | |
| 12. | | | | | | |
| 13. | | | | | | |
| 14. | | | | | | |
| 15. | | | | | | |
| 16. | | | | | | |
| 17. | | | | | | |
| 18. | | | | | | |
| 19. | | | | | | |
| 20. | | | | | | |
| 21. | | | | | | |
| 22. | | | | | | |
| 23. | | | | | | |
| 24. | | | | | | |
| 25. | | | | | | |
| 26. | | | | | | |
| 27. | | | | | | |
| 28. | | | | | | |
| 29. | | | | | | |
| 30. | | | | | | |
| 31. | | | | | | |
| 32. | | | | | | |
| 33 | | | | | | |
| 34 | | | | | | |
| 35 | | | | | | |
| 36 | | | | | | |




| | |
|---|---|
| Reporting limit (mg/L) = | 0.1 |
| Recovery (%) = | #VALUE! |
| Precision (RPD) = | #VALUE! |
| 2nd source (%) = | #VALUE! |
| Sample volume (ml): | 0.50 |
| Dilution factor | 1 |

**Sample Set Description:**

Proj. No.: 762-2
Test Day: 0 & 10
Species: *Chironomus*

Overlying water

| | |
|---|---|
| Analyst: | GJI |
| Date analysed: | 2/21/07 |

# CHAIN-OF-CUSTODY RECORDS

# KLEINFELDER

| PROJECT NO. | PROJECT NAME | RECEIVING LAB: |
|---|---|---|
| 53886 | Condit Dam | Northwest Aquatic Services |
| L.P. NO. (P.O. NO.) | SAMPLERS: (Signature/Number) BPP [signature] SS Scott Shaul | INSTRUCTIONS/REMARKS |

| | DATE MM/DD/YY | SAMPLE I.D. TIME HH-MM-SS | SAMPLE I.D. | MATRIX | NO. OF CON-TAINERS | TYPE OF CON-TAINERS | ANALYSIS: BioAssay | Chironomus | Hyalella | INSTRUCTIONS/REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1/15/07 | 1400 | B5-011507 | Sediment | 8 | 32oz | X | X | X | REFERENCE 0941G |
| 2 | 12-14-06 TO ~~12-15-06~~ | 0900 1325 * | NORTHWESTERN CAKES | SEDIMENT | 13 | 8oz | X | X | X | LAB COMPOSITE 0942G |
| 3 | | | | | | | | | | |
| 4 | | | | | | | | | | |
| 5 | | | | | | | | | | |
| 6 | | * PHONE CALL WITH DAVID KING | | | | | | | | |
| 7 | | ON 1-18-07 -GJ1 | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 16 | | | | | | | | | | |
| 17 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | | | | | | | | | | |

| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
|---|---|---|
| [signature] | 011607 1200 | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
| | | |
| Relinquished by: (Signature) | Date/Time | Received for Laboratory by: (Signature) |
| | 1-17-07 1130 | [signature] |

Instructions/Remarks:

INSIDE COOLER TEMPERATURE UPON RECEIPT AT LAB: 1.5°C

Send Results To:

KLEINFELDER
15050 S.W. KOLL PARKWAY
SUITE L
BEAVERTON, OR 97006
(503) 644-9447

Attn:

M-60 White - Sampler Canary - Return Copy To Shipper Pink - Lab Copy

CHAIN OF CUSTODY NO. [illegible]

## UPS Internet Shipping: View/Print Label

1. **Print the label(s):** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the dotted line.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**

   **Customers without a Daily Pickup**
   - Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   - Hand the package to any UPS driver in your area.
   - Take your package to a location of The UPS Store®, UPS Drop Box, UPS Customer Center or Authorized Shipping Outlet near you. Items sent via UPS Return Services (including Ground Returns) are accepted at any UPS Drop Box.
   - To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

   **Customers with a Daily Pickup**
   - Your driver will pickup your shipment(s) as usual.

FOLD HERE

AMIE WEITZ
503-644-9447 102
KLEINFELDER, INC.
15050 SW KOLL PARKWAY
BEAVERTON OR 97006

20 LBS 1 OF 1

DWT:20,12,15

**SHIP TO:**
NORTHWESTERN AQUATIC SCIENCE
541-265-7225
3814 YAQUINA BAY RD.
**NEWPORT OR 97365-9639**

OR 973 2-01

**UPS GROUND**
TRACKING #: 1Z 897 E50 03 9808 2501

BILLING: P/P

Reference#1: 53886
Reference#2: 4

53886

US 9.0.18.0 WXPE60 60 1A 10/2006

TM

# APPENDIX III

# RAW DATA – REFERENCE TOXICANT TEST

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

REVIEWED PAGES 1-7 GJI

Test No. 999-2237 Client: QC Test Investigator _____

Test Type (rangefinding/definitive) _____ Test Length (hr) 96

Species *Chironomus tentans*

## STUDY MANAGEMENT

Client: QC test

Client's Study Monitor: QC test

Testing Laboratory: Northwestern Aquatic Sciences

Test Location: Newport Laboratory

Laboratory's Study Personnel:

Proj. Man./Study Dir. G.J. Irissarri GJI

QA Officer L. K. Nemeth

1. Susan Gage SG 2. Greg Hutchinson GH

3. _____ 4. _____

Study Schedule:

Test Beginning: 2-2-07 1210 Test Ending: 2-6-07 1130

## TEST MATERIAL

Description: Potassium Chloride Crystals - Lot No.: 045768

| | | | | |
|---|---|---|---|---|
| NAS Sample No. | | | | |
| Date of Collection: | | | | |
| Date of Receipt: | | | | |
| Temperature (deg C): | | | | |
| Dissolved oxygen (mg/L): | | | | |
| pH: | | | | |
| Conductivity (umhos/cm): | | | | |
| Hardness (mg/L): | | | | |
| Alkalinity (mg/L): | | | | |
| Salinity (ppt): | | | | |
| Total chlorine (mg/L): | | | | |
| Total ammonia-N (mg/L): | | | | |
| _____: | | | | |

## DILUTION WATER

Description: Moderately hard synthetic water

Date of Preparation/Collection: ~~1-31-07~~ 1-30-07 ② GJI 2-27-07

Water Quality: Cond. (umhos/cm): ~~110~~ 295 Salinity (ppt) — pH ~~6.7~~ 7.3

Hardness (mg/L as $CaCO_3$): ~~34~~ 86 Alkalinity (mg/L as $CaCO_3$): ~~30~~ 70

Treatments: Aerated ≥ 24 hrs, TOTAL CHLORINE ≤ 0.02 mg/L

## TEST LOCATION

Test conducted in (circle one): room 1 room 2 trailer water bath other: ROOM #3

**Randomization chart:**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2.5 | ∅ | 1.25 | 20 | 5 | 2.5 | 1.25 | ∅ | 5 | 20 |
| 1.25 | 20 | ∅ | 10 | ∅ | 1.25 | 10 | 2.5 | ∅ | 5 |
| 20 | 10 | 5 | 2.5 | 1.25 | 10 | 5 | 20 | 2.5 | ∅ |
| ∅ | 2.5 | 20 | 1.25 | 2.5 | 5 | ∅ | 5 | 10 | 1.25 |
| 5 | 1.25 | 10 | 5 | 20 | ∅ | 2.5 | 1.25 | 20 | 10 |
| 10 | 5 | 2.5 | ∅ | 10 | 20 | 20 | 10 | 1.25 | 2.5 |

Error codes: 1) Correction of handwriting error
2) Written in wrong location; entry deleted
3) Wrong date deleted; replaced with correct date
4) Error found in measurement; measurement repeated



Revised 12-5-01

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-2237 Client QC Test Investigator _____

## TEST ORGANISMS

Species: *Chironomus tentans* Age: 3rd instar

Source: NAS cultures Date received: —

Acclimation Data:

| Date | Temp. (deg.C) | DO (mg/L) | pH | Cond. umhos/cm | Hardness (mg/L) | Alkalinity (mg/L) | Feeding | Water changes |
|---|---|---|---|---|---|---|---|---|
| 1-22-07 | 23.7 | 8.2 | 6.8 | 170 | — | — | Animals fed Tetra Fin | |
| 1-24-07 | 23.4 | 7.6 | 6.4 | 170 | 43 | 30 | and *Selenastrum* | |
| 1-26-07 | 23.2 | 8.0 | 6.9 | 170 | — | — | Details recorded on | |
| 1-29-07 | 14.6* | 10.0 | 7.3 | 170 | — | — | Chironomid culture | YES - *TEMPERATURE CON FAILURE, UNIT REP |
| 1-31-07 | 23.2 | 8.2 | 6.6 | 165 | 51 | 30 | data sheets | - |
| 2-2-07 | 23.3 | 8.2 | 6.6 | 170 | — | — | | YES |
| Mean | 21.9 | 8.4 | 6.8 | 169 | 47 | 30 | | |
| S.D. | 3.6 | 0.8 | 0.3 | 2.0 | — | — | | |
| (N) | 6 | 6 | 6 | 6 | 2 | 2 | | |

Photoperiod during acclimation: 16:8, L:D

## TEST PROCEDURES AND CONDITIONS

Test concentrations (50% series recommended): 20, 10, 5, 2.5, 1.25, 0 g/L

Test chamber: 30 ml plastic cups Test volume: 20 ml

Replicates/treatment: 10 Organisms/treatment: 10 (1/rep)

Test water changes: None Aeration during test: None

Feeding: 0.25 ml Tetra Fin (4g/L) suspension per cup on days 0 and 2

Duration: 24-hr, 48-hr, 96-hr Test temperature (deg.C): 23 ± 1

Beaker placement: Stratified randomization Photoperiod: 16:8, L:D

## MISCELLANEOUS NOTES

Test solution preparation:

Working stock: Dissolve 10g KCl crystals in dilution water and dilute to 500 mL.
Final conc.: 20 g/L.

| Test concentration (g/L) | KCl working stock (ml/200ml) | ml of dilution water per 200 ml |
|---|---|---|
| 20 | 200 | 0 |
| 10 | 100 | 100 |
| 5 | 50 | 150 |
| 2.5 | 25 | 175 |
| 1.25 | 12.5 | 187.5 |
| 0 | 0 | 0 |

2-2-07
GJI

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS-_____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-2237 Client QC Test

DAILY RECORD SHEET

Day 0 (2 / 2 / 07) sf/GH Temp Beaker (°C):

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Comments |
|---|---|---|---|---|---|---|---|
| 1. 20 | 23.7 | 8.4 | 11650 | 7.9 | 68 | 70 | |
| 2. 10 | 23.8 | 8.4 | 7200 | 7.8 | | | |
| 3. 5 | 23.6 | 8.3 | 3970 | 7.8 | | | |
| 4. 2.5 | 23.9 | 8.3 | 2270 | 7.7 | | | |
| 5. 1.25 | 23.8 | 8.3 | 1325 | 7.6 | | | |
| 6. 0 | 23.9 | 8.3 | 285 | 7.5 | 68 | 70 | |
| All animals fed 0.25 ml Tetra Fin suspension. Initials: GJL | | | | | | | |

Day 1 (2 / 3 / 07) GJL Temp Beaker (°C): 23.3

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Comments |
|---|---|---|---|---|---|---|---|
| 1. 20 | | | | | | | |
| 2. 10 | | | | | | | |
| 3. 5 | | | | | | | |
| 4. 2.5 | | | | | | | |
| 5. 1.25 | | | | | | | |
| 6. 0 | | | | | | | |

Day 2 (2 / 4 / 07) GJL Temp Beaker (°C): 23.3

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Comments |
|---|---|---|---|---|---|---|---|
| 1. 20 | | | | | | | |
| 2. 10 | | | | | | | |
| 3. 5 | | | | | | | |
| 4. 2.5 | | | | | | | |
| 5. 1.25 | | | | | | | |
| 6. 0 | | | | | | | |
| All animals fed 0.25 ml Tetra Fin suspension. Initials: GJL | | | | | | | |

Day 3 (2 / 5 / 07) GJL Temp Beaker (°C): 23.1

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Comments |
|---|---|---|---|---|---|---|---|
| 1. 20 | | | | | | | |
| 2. 10 | | | | | | | |
| 3. 5 | | | | | | | |
| 4. 2.5 | | | | | | | |
| 5. 1.25 | | | | | | | |
| 6. 0 | | | | | | | |

Day 4 (2 / 6 / 07) sf Temp Beaker (°C): 23.1

| Conc. ( g/L ) | Temp. (deg.C) | DO (ppm) | Cond. (umhos/cm) | pH | Hardness (mg/L) | Alkalinity (mg/L) | Comments |
|---|---|---|---|---|---|---|---|
| 1. 20 | — | — | — | — | — | — | |
| 2. 10 | 23.2 | 7.8 | 7580 | 7.6 | | | |
| 3. 5 | 23.2 | 7.7 | 4350 | 7.6 | | | |
| 4. 2.5 | 23.2 | 7.7 | 2430 | 7.5 | | | |
| 5. 1.25 | 23.3 | 7.6 | 1370 | 7.4 | | | |
| 6. 0 | 23.3 | 7.6 | 345 | 7.3 | 94 | 100 | |
| Mean | 23.5 | 8.0 | | 7.6 | 77 | 80 | |
| SD | 0.3 | 0.3 | | 0.2 | 15 | 17 | |
| n | 11 | 11 | | 11 | 3 | 3 | |



Revised 12-5-01

NORTHWESTERN AQUATIC SCIENCES PROTOCOL NO. NAS- _____

ACUTE TOXICITY TEST (ALL SPECIES)

Test No. 999-2237 Client QC Test Investigator _____

DAILY RECORD SHEET - Survivors

Day 0 ( 2 / 2 /07) GJ

| Conc. (g/L) | Survivors in Replicate: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 2. 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 3. 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 4. 2.5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 5. 1.25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 6. 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |

Day 1 ( 2/3 /07) GJ

| Conc. (g/L) | Survivors in Replicate: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. 20 | X | X | X | X | X | X | X | X | X | X | ∅ (10D) |
| 2. 10 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 3. 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 4. 2.5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 5. 1.25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 6. 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |

Day 2 ( 2 / 4 /07) GJ

| Conc. (g/L) | Survivors in Replicate: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. 20 | X | X | X | X | X | X | X | X | X | X | ∅ |
| 2. 10 | X | 1 | 1 | 1 | 1 | 1 | X | 1 | 1 | 1 | 8 (2D) |
| 3. 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | X | 1 | 9 (1D) |
| 4. 2.5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 5. 1.25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 6. 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |

Day 3 ( 2 / 5 /07) GJ

| Conc. (g/L) | Survivors in Replicate: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. 20 | X | X | X | X | X | X | X | X | X | X | ∅ |
| 2. 10 | X | X | X | 1 | X | 1 | X | X | X | 1 | 3 (5D) |
| 3. 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | X | 9 |
| 4. 2.5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 5. 1.25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 6. 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |

Day 4 ( 2 / 6 /07) GJ

| Conc. (g/L) | Survivors in Replicate: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. 20 | X | X | X | X | X | X | X | X | X | X | ∅ |
| 2. 10 | X | X | X | 1 | X | 1 | X | X | X | X | 2 (1D) |
| 3. 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | X | 9 |
| 4. 2.5 | 1 | X | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 9 (1D) |
| 5. 1.25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 6. 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |



Revised 12-5-01

## Acute 96-hr Toxicity Test-96 Hr Survival

| | | | | | |
|---|---|---|---|---|---|
| Start Date: | 2/2/2007 12:10 | Test ID: | 999-2237 | Sample ID: | REF-Ref Toxicant |
| End Date: | 2/6/2007 11:30 | Lab ID: | ORNAS-Northwestern Aquati | Sample Type: | KCL-Potassium chloride |
| Sample Date: | | Protocol: | EPAF 91-EPA Freshwater | Test Species: | CT-Chironomus tentans |
| Comments: | | | | | |

| Conc-gm/L | 1 |
|---|---|
| D-Control | 1.0000 |
| 1.25 | 1.0000 |
| 2.5 | 0.9000 |
| 5 | 0.9000 |
| 10 | 0.2000 |
| 20 | 0.0000 |

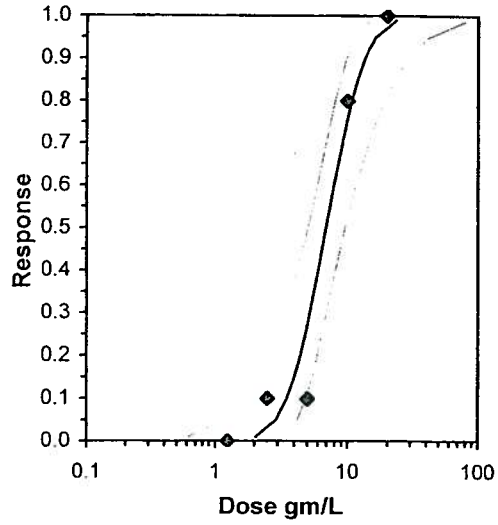
| Conc-gm/L | Mean | N-Mean | Resp | Not Resp | Total | N | Fisher's Exact P | 1-Tailed Critical | Number Resp | Total Number |
|---|---|---|---|---|---|---|---|---|---|---|
| D-Control | 1.0000 | 1.0000 | 0 | 10 | 10 | 1 | | | 0 | 10 |
| 1.25 | 1.0000 | 1.0000 | 0 | 10 | 10 | 1 | 1.0000 | 0.0500 | 0 | 10 |
| 2.5 | 0.9000 | 0.9000 | 1 | 9 | 10 | 1 | 0.5000 | 0.0500 | 1 | 10 |
| 5 | 0.9000 | 0.9000 | 1 | 9 | 10 | 1 | 0.5000 | 0.0500 | 1 | 10 |
| *10 | 0.2000 | 0.2000 | 8 | 2 | 10 | 1 | 0.0004 | 0.0500 | 8 | 10 |
| *20 | 0.0000 | 0.0000 | 10 | 0 | 10 | 1 | 0.0000 | 0.0500 | 10 | 10 |

| Hypothesis Test (1-tail, 0.05) | NOEC | LOEC | ChV | TU |
|---|---|---|---|---|
| Fisher's Exact Test | 5 | 10 | 7.07107 | |

### Maximum Likelihood-Probit

| Parameter | Value | SE | 95% Fiducial Limits | | Control | Chi-Sq | Critical | P-value | Mu | Sigma | Iter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Slope | 4.38161 | 1.09123 | 2.24281 | 6.52042 | 0 | 3.81642 | 7.81472 | 0.28 | 0.83753 | 0.22823 | 4 |
| Intercept | 1.33026 | 0.95018 | -0.5321 | 3.1926 | | | | | | | |
| TSCR | | | | | | | | | | | |

| Point | Probits | gm/L | 95% Fiducial Limits | |
|---|---|---|---|---|
| EC01 | 2.674 | 2.02581 | 0.59661 | 3.21478 |
| EC05 | 3.355 | 2.89823 | 1.17353 | 4.18525 |
| EC10 | 3.718 | 3.50791 | 1.67009 | 4.85488 |
| EC15 | 3.964 | 3.99016 | 2.10747 | 5.39561 |
| EC20 | 4.158 | 4.4203 | 2.52353 | 5.89565 |
| EC25 | 4.326 | 4.82609 | 2.93199 | 6.3904 |
| EC40 | 4.747 | 6.0216 | 4.16271 | 8.04781 |
| EC50 | 5.000 | 6.87911 | 5.00804 | 9.48856 |
| EC60 | 5.253 | 7.85874 | 5.89165 | 11.4405 |
| EC75 | 5.674 | 9.80547 | 7.39945 | 16.2872 |
| EC80 | 5.842 | 10.7056 | 8.01465 | 18.937 |
| EC85 | 6.036 | 11.8597 | 8.7519 | 22.6899 |
| EC90 | 6.282 | 13.4901 | 9.7212 | 28.6482 |
| EC95 | 6.645 | 16.3279 | 11.2706 | 40.7919 |
| EC99 | 7.326 | 23.3596 | 14.6655 | 80.2785 |



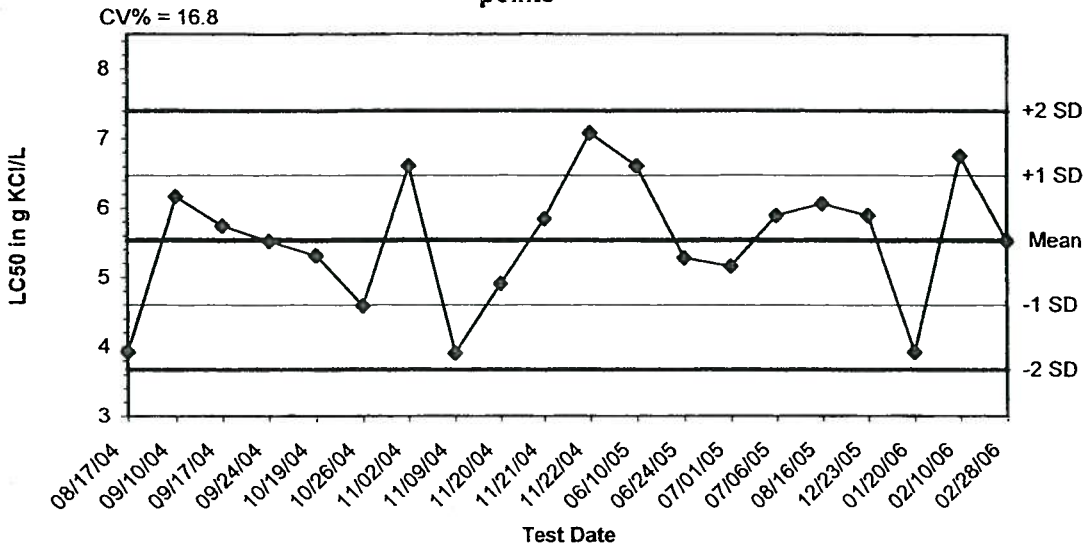
Test: AT-Acute 96-hr Toxicity Test
Species: CT-Chironomus tentans
Sample ID: REF-Ref Toxicant
Start Date: 2/2/2007 12:10 End Date: 2/6/2007 11:30

Test ID: 999-2237
Protocol: EPAF 91-EPA Freshwater
Sample Type: KCL-Potassium chloride
Lab ID: ORNAS-Northwestern Aquatic Sciences

| Pos | ID | Rep | Group | Start | 24 Hr | 48 Hr | 72 Hr | 96 Hr | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | D-Control | 10 | | | | 10 | |
| | 2 | 1 | 1.250 | 10 | | | | 10 | |
| | 3 | 1 | 2.500 | 10 | | | | 9 | |
| | 4 | 1 | 5.000 | 10 | | | | 9 | |
| | 5 | 1 | 10.000 | 10 | | | | 2 | |
| | 6 | 1 | 20.000 | 10 | | | | 0 | |

Comments:

## Midge, Chironomus tentans, 3rd instar reference toxicant test - last 20 points




| Dates | Values | Mean | -1 SD | -2 SD | +1 SD | +2 SD |
|---|---|---|---|---|---|---|
| 08/17/04 | 3.9300 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 09/10/04 | 6.1600 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 09/17/04 | 5.7400 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 09/24/04 | 5.5200 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 10/19/04 | 5.3100 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 10/26/04 | 4.5900 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 11/02/04 | 6.6000 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 11/09/04 | 3.9200 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 11/20/04 | 4.9100 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 11/21/04 | 5.8400 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 11/22/04 | 7.0700 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 06/10/05 | 6.6000 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 06/24/05 | 5.2800 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 07/01/05 | 5.1600 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 07/06/05 | 5.8900 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 08/16/05 | 6.0600 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 12/23/05 | 5.8900 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 01/20/06 | 3.9300 | 5 5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 02/10/06 | 6.7400 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |
| 02/28/06 | 5.5300 | 5.5335 | 4.6036 | 3.6736 | 6.4634 | 7.3934 |