Port Everglades 2004 Section 103 Sediment Characterization

Prepared for

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Executive Summary

A maintenance dredging and new work area project has been proposed for Port Everglades located in Fort Lauderdale, Florida. The project consists of the entrance channel 400 feet wide and 30 feet deep and a turning basin 28 feet deep, with an allowable overdraft of one foot. Before ocean disposal of dredged sediments could occur, harbor sediments needed to be tested and compared to reference sediments to determine if they contained elevated concentrations of potentially toxic chemicals or displayed unacceptable levels of toxicity as measured by bioassays and bioaccumulation of chemicals.

This report presents field data and test results from sediment collection activities that occurred in April 2004. The purpose of this sampling effort was to provide information required by decision makers for the evaluation of sediment disposal options, including placement in the Port Everglades Ocean Dredged Material Disposal Site (ODMDS).

Prior to initiating fieldwork, a Sampling Plan and Protocol was developed by the US Army Corps of Engineers, Jacksonville District, and approved by EPA Region IV. The sampling and laboratory test procedures used followed those specified in the Sampling Plan and Protocol.

Review of the field data and sample collection process and laboratory data and quality assurance reports show that all data are usable for project purposes of this Section 103 pre-dredging sediment evaluation.

Sediment and Elutriate Chemistry Comparison

Sediments

The reference sediment was found to contain a courser material than the composited harbor zone sediment samples with approximately 20.6 percent more sand and 18.5 percent less silt/clay.

Antimony, cadmium, chromium, and iron concentrations were greater in the reference sediment than that in the harbor zone composites. Silver in sediment yielded concentrations less than the requested detection limits listed in the Sampling Plan and Protocol document (see Appendix A for Sampling Plan and Protocol document). Mercury was detected in slight concentrations in three of the zone composite sediments. Antimony was detected in the reference sediment sample, but in a low concentration. Arsenic was found in all sediment samples in low amounts. Cadmium was detected in the control sediment and in the reference sediment composites, but in trace amounts. Aluminum, chromium, copper, iron, lead, nickel, and zinc were found in all sediments in varying concentrations.

Pesticides were not detected in the zone sediment samples, reference sediment or the control sediment.

Only one PCB aroclor, PCB-1254, was detected in the sediment composite samples.

PCB congeners (118, 138, and 153) were detected in zone sediment sample E-PE04-2, but in trace amounts.

Unlike pesticide, PCB aroclor, and PCB congener values, four zone composite samples had detectable measurements of PAH compounds.

No monobutyltins were detected in the sediment samples. Harbor samples 2 through 4 had detectable levels of Dibutyltin, and all harbor samples had varying ranges of Tributyltin. The offshore reference sample and the control sediment had no detectable levels of total organic tins.

Elutriates

Antimony, cadmium, chromium, lead, mercury, and silver were undetected in all of the elutriated samples including the background water. Arsenic, nickel, and zinc were found in all of the elutriate samples and background water sample. Trace amounts of copper were detected in the background water sample and in zone sample E-PE04-1.

Pesticides were not detected in the reference elutriate sample, background water, control sample, or in the zone elutriate samples.

PCB Aroclors, PCB congeners and PAH compounds were not found in any of the elutriate samples or background water sample.

There were no detectable levels of organotin compounds in the elutriate samples or the background water sample.

Bioassay and Bioaccumulation

A suite of bioassays was conducted in accordance with the USEPA and USACE guidance.

Elutriate Bioassay Survivorship

Elutriate bioassays were conducted on sediments collected from the Port Everglades area to determine the potential impact of dissolved and suspended contaminants on organisms exposed to the elutriate after conducting an initial mixing period.

The test organisms used for the elutriate tests included the inland silverside, *Menidia beryllina*, the mysid shrimp, *Mysidopsis bahia*, and gametes of the sea urchin, *Arbacia punctulata*.

Mysidopsis bahia survivorship was 96 percent in the laboratory control seawater. Survivorship in the laboratory control sediment was 100 percent (10 % and 50 % concentrations), and 92 percent (100 % concentration). Sample survivorship ranged from 92 percent (100% exposure for sample E-PE04-3 and 50% exposure for sample E-PE04-4) to 100 percent (10 % exposure for sample E-PE04-3). *M. bahia* survivorship among replicates was uniform.

Menidia beryllina survivorship was 100 percent in laboratory control seawater. Survivorship for laboratory control sediment was 100 percent (10%, 50%, and 100% exposures). Sample survivorship ranged from 100 percent (10%, 50%, 100% exposures in samples E-PE04-1 and EPE04-2 and 50% and 100% exposures in sample E-PE04-3) to 96 percent (10% and 50% exposures in sample E-PE04-4). *M. beryllina* survivorship among replicates was uniform.

LC_{50}s for both *M. bahia* and *M. beryllina* were greater than 100 percent.

Arbacia punctulata fertilization data from the elutriate bioassays of control seawater, control sediment, zone sample stations are presented in Table 30. Fertilization of *A. punctulata* gametes was 83 % in the control water (0% elutriate) and 73% in the 100% elutriate control sediment. Fertilization of *A. punctulata* gametes in the zone samples ranged from 76% (100% elutriate from sample station E-PE04-1) to 88% (10% elutriate from sample stations E-PE04-3 and E-PE04-Dupe). EC_{50} for *A. punctulata* was greater than 100 percent.

Sediment Bioassay Survivorship

M. bahia survivorship was 92 percent in the laboratory control sediment and 88 percent in the reference sediment, RS-PE04. Survivorship of *M. bahia* in the site sediments ranged from 84 percent in sample E-PE04-3 to 92 percent in samples E-PE04-4. Surviving *M. bahia* appeared healthy at the termination of the tests.

L. plumulosus survivorship was 94 percent in the laboratory control sediment and 91 percent in the reference sediment, RS-PE04. Survivorship of *L. plumulosus* in the zone sediments ranged from 67 percent in sample E-PE04-1 to 94 percent in sample E-PE04-2. Surviving *L. plumulosus* appeared healthy at test termination. *L. plumulosus* survivorship among replicates was relatively uniform.

Bioaccumulation Survivorship

M. nasuta survivorship in the laboratory control sediments was 91 percent. Survival of *M. nasuta* in the zone sediments ranged from 65 percent (E-PE04-1) to 78 percent (E-PE04-Dupe). Survival of *M. nasuta* in the reference sediment was 65%.

N. virens survivorship in the laboratory control sediments was 91 percent. Survival of *N. virens* in the zone sediments ranged from 66 percent (E-PE04-Dupe) to 84 percent (E-PE04-3). Survival of *N. virens* in the reference sediment was 96%.

Tissue Chemistry Comparison

After review of the chemical testing results for the sediment samples, it was decided that the bioaccumulated tissue samples (*Macoma nasuta* and *Nereis virens*), which were exposed to the harbor zone sediments and reference sediment, would be analyzed for metals, pesticides, PCB aroclors and congeners, and PAHs. The harbor zone bioaccumulated tissues that were analyzed were E-PE04-2, E-PE04-3, and E-PE04-4, which were composited into one sample per set of replicates.

Macoma nasuta

All metals were detected in the harbor tissue samples slightly above the reference tissues and pretest organism tissues, except for cadmium.

Cadmium was found in the pretest organisms in higher concentrations than the harbor tissue samples and the reference tissue samples.

Antimony, arsenic, mercury and silver were detected in the composited harbor tissues slightly above the reference tissues.

Chromium, lead, copper, and zinc were detected in the harbor tissue samples.

Pesticides, PCB Aroclors, PCB congeners and PAHs were not detected in the harbor tissue samples, reference tissue samples or in the pretest tissue samples.

No monobutyltin was detected the tissue samples.

Dibutyltin was found in the all of the tissue samples.

Tributyltin was detected in the harbor tissue samples.

Nereis virens

Arsenic and zinc in the harbor tissue samples were the only two metals with higher values than the reference tissue samples.

Pesticides were not detected in the harbor tissue samples, reference tissue samples or in the pretest tissue samples.

Only one slightly elevated PCB aroclor, PCB-1260, was detected in the pretest samples.

PCB congeners were not detected in the harbor tissue samples, reference tissue samples or in the pretest tissue samples.

Fluoranthene and pyrene were detected in the pretest tissues in concentrations slightly above the method detection limits.

No monobutyltin was detected the tissue samples.

Dibutyltin was found in the all of the tissue samples except for the pretest tissues.

Tributyltin was yielded in the harbor tissue samples.

ADDAMS Modeling

STFATE

The initial screening application of the STFATE model failed, i.e., under the assumption that all copper in the bulk sediment is released to the water column, the water quality criteria would be exceeded. This is an unnecessarily conservative assumption, but constitutes the first step in a tiered evaluation process. This result indicated that evaluation of the elutriate data would be necessary for copper.

Application of the STFATE module based on elutriate concentrations of copper was performed, the results indicated that open water disposal of these sediments would not result in violation of any water quality criteria. Because no toxicity was observed in elutriate tests, it is not necessary to perform a Tier III evaluation of water column toxicity. Regardless, a Tier III evaluation was performed using 100% effluent as the LC50. In fact it was shown that there was no significant toxicity and the LC50 is actually > 100% effluent. Thus this analysis is unrealistically conservative. The analysis using STFATE, documented in an appendix, determined that the toxicity criterion for the disposal site was not violated.

STFATE output can be referenced in Appendix H.

Tissue Statistical Comparisons (SYSTAT Version 10)

Macoma nasuta

M. nasuta tissues exposed to site-related samples were significantly elevated when compared with exposures to reference sediments for antimony, cadmium, copper, lead, silver, zinc, and tri-n-butyltin.

Nereis virens

Di-n-butyltin and tri-n-butyltin were significantly elevated in *N. virens* tissue exposed to site sediments, when compared with reference sediments.

Port Everglades Historical Data Comparison

Sediment and elutriate samples produced similar values between the 1998 sampling event and the 2004 event, with few exceptions.

Lead was detected in sediment sample E-PE04-2 in concentrations approximately two times that of the 1998 event. The lead concentration in E-PE04-2 was 11.8 ppm.

Oil and grease was detected in some of the 1998 sediment samples in concentrations approximately eight times greater than in the 2004 sediment samples.

Ammonia was found in the 2004 sediment samples at approximately two to three times greater concentrations than the 1998 event.

Testing was not performed for sulfide and PCB congeners (sediments and elutriates) in 1998.

The same series of PAH compounds were found at both events in similar concentrations.

Di-butyltin and tri-butyltin were first detected in the more recent sediment samples.

Oil and grease in elutriates were first tested in 2004.

Low concentrations of cyanide were found in the 2004 elutriates. Cyanide was not detected in the 1998 samples.

Tissue testing was not performed on the 1998 bioaccumulated organisms.

1 Introduction

This report presents information regarding sediment proposed for dredging from Port Everglades. The area was evaluated for 103 certification in accordance with the 1991 "Green Book" ("Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual"). This evaluation included chemical analysis of sediments, waters, and elutriates; water column and sediment bioassays; and bioaccumulation studies.

The current ocean disposal evaluation of Port Everglades considered potential dredge material from the turning basin and the new work area, which is located within the Navy berthing area, south of the east end of the entrance channel. Potential dredged material from the channel is of beach quality sand and will be used for beach nourishment. Testing of this material was not required.

The Port Everglades Ocean Dredged Material Disposal Site (ODMDS) is an area of approximately one square nautical mile and is located approximately five nautical miles offshore from Fort Lauderdale, Florida.

Figure 1. Port Everglades Harbor Sampling Locations for the Evaluation of Dredged Material for Ocean Disposal

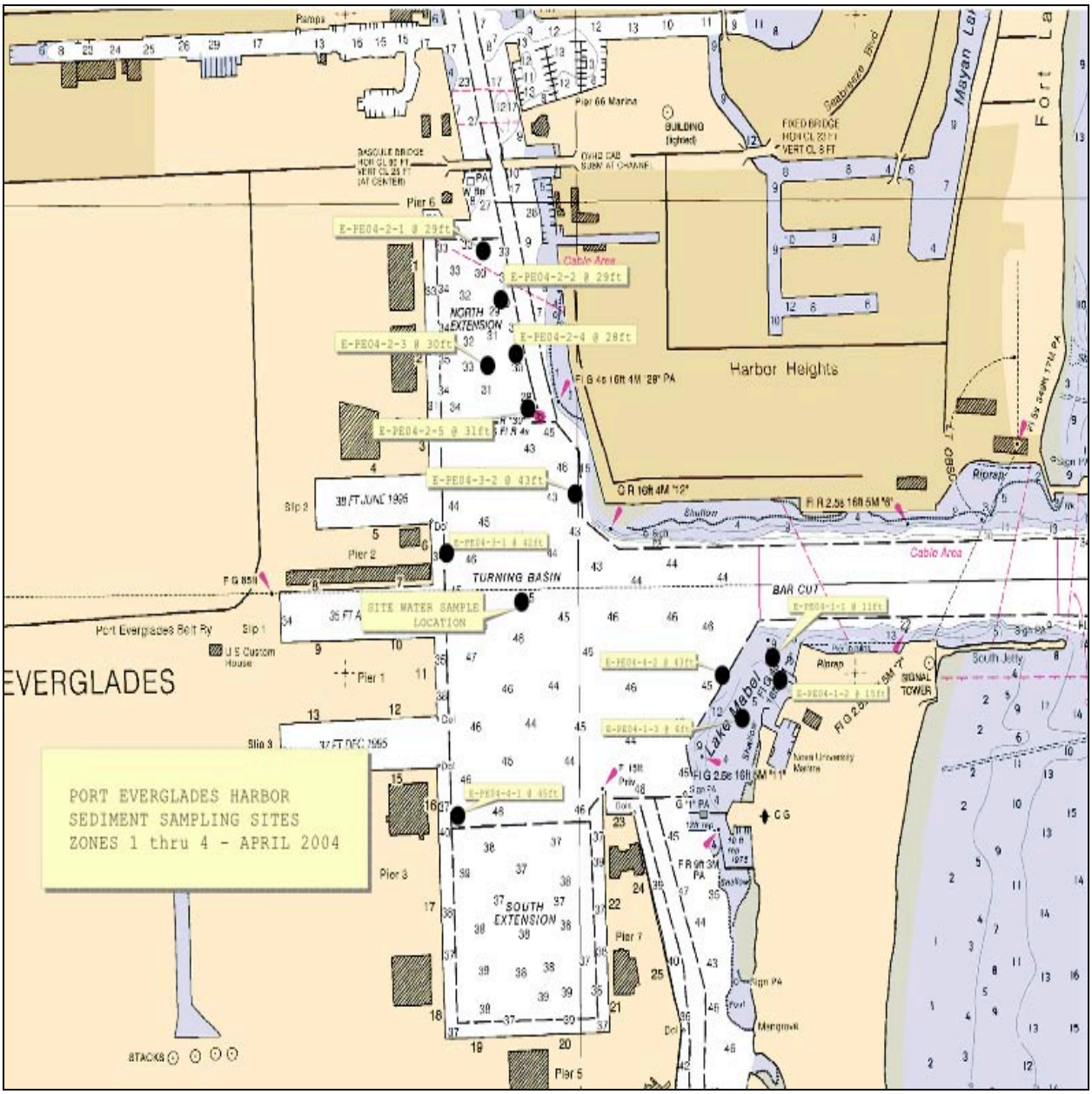
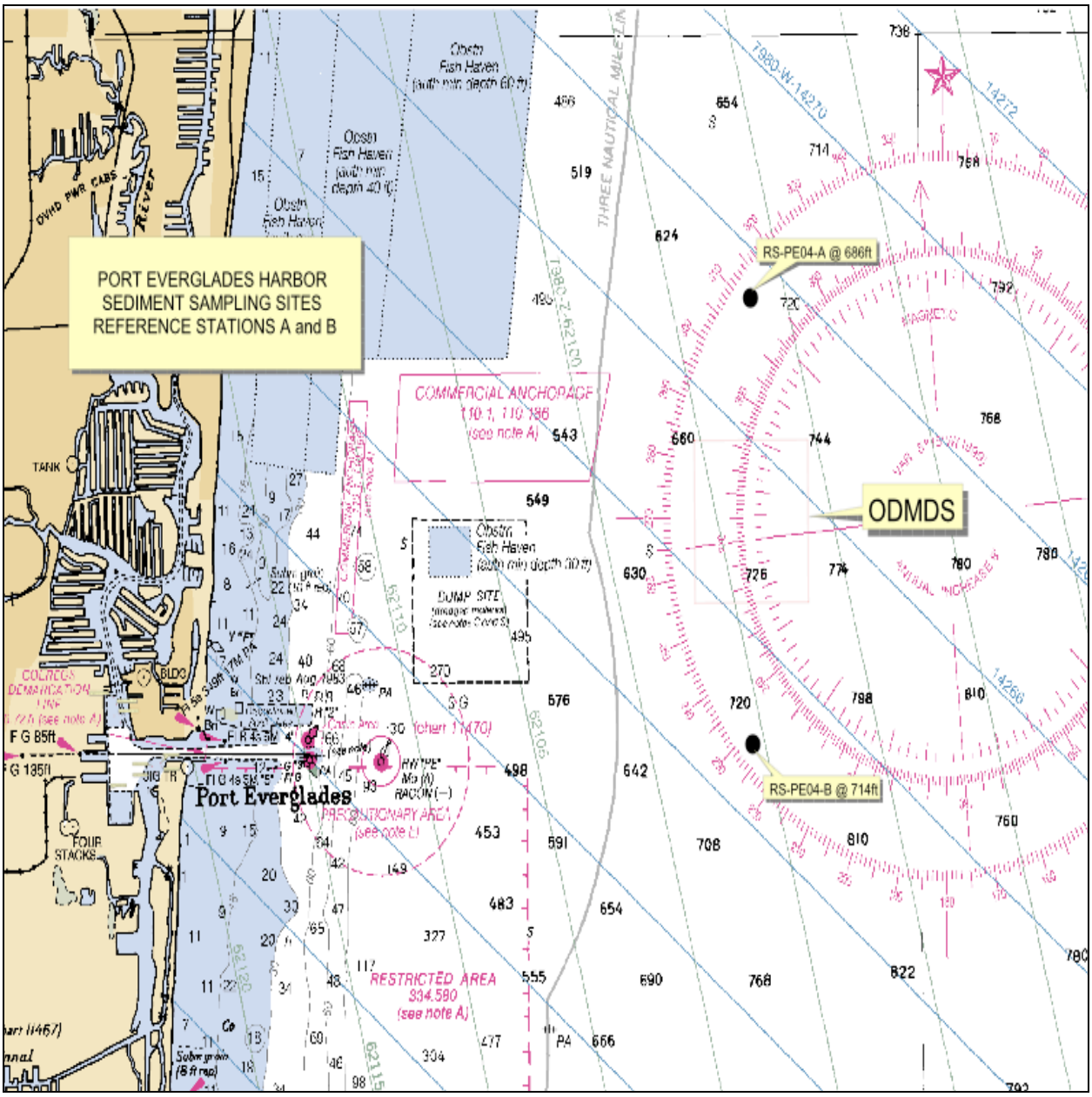


Figure 2. Port Everglades Ocean Dredged Material Disposal Site (ODMDS) Sampling Locations for Evaluation of Dredged Material for Ocean Disposal



2 Materials and Methods

Before sampling procedures could be determined, the USACE Jacksonville District developed a list of chemical constituents and physical parameters of interest. A Tier I investigation was performed to identify site specific chemicals of interest and these were merged with the list of chemical analytes and physical parameters suggested in the Regional Implementation Manual (USACE and USEPA 1992). The final list includes regulated as well as other common, unregulated contaminants.

After identifying the chemicals and physical parameters of interest, a sampling plan was developed and approved by EPA Region IV. To reference this document, "Port Everglades 103 Evaluation – 2004 Sampling Plan and Protocol" see Appendix A.

2.1 Physical Parameters, Chemicals of Interest and Toxicity Testing

The following physical parameters, chemical constituents, and analytical groups were identified as important for this project.

PHYSICAL PARAMETERS
Grain Size Distribution
Percent Solids
Specific Gravity
Atterburg Limits
Settling Rates

CHEMICALS OF INTEREST
Metals

Aluminum (sediment only)	Iron (sediment only)
Antimony	Lead
Arsenic	Mercury
Cadmium	Nickel
Chromium	Silver
Copper	Zinc

Total Ammonia
Total Organic Carbon (TOC)
Cyanide
Oil and Grease
Total Sulfide
Chlorinated Hydrocarbon Pesticides
Polychlorinated Biphenyls (PCBs) Aroclors and Congeners
Polynuclear Aromatic Hydrocarbons (PAHs)
Total Organic Tin

In addition to physical and chemical testing, toxicity testing was performed as described in the "Green Book". Because of the unavailability of *Crassostrea virginica*, *Leptocheirus plumulosus* was used in the benthic bioassays. Brief toxicity testing summaries follow:

TOXICITY TESTING

Organism	Test
Water Column/Elutriate Bioassays	
Mysidopsis bahia	96 hours, static, non-renewal
Crassostrea virginica	48 hours, static, non-renewal
Menidia beryllina	96 hours, static, non-renewal
Benthic Bioassays	
Mysidopsis bahia	10-day, static renewal (every other day)
Leptocheirus plumulosus	10-day, static renewal (every other day)
Bioaccumulation	
Nereis virens	28 days, static renewal (every other day)
Macoma nasuta	28 days, static renewal (every other day)

After water and sediment test results had been reported, it was determined by the USACE Jacksonville District that Metals, Pesticides, PCB Aroclors and Congeners, Organotins and PAHs were the chemicals of interest to be analyzed in the 28-day bioaccumulated tissues. This data can be referenced in Tables 18 through 24.

2.2 Field Methods and Procedures

Field procedures for sample and in-situ data collection are described in detail in Appendix C. Chain of Custodies appear in Appendix B. The following text summarizes the methods and procedures used.

2.2.1 Field Equipment

CSA personnel transported field-sampling equipment to the Port Everglades area using containers that protected the items from damage. To the extent practical, critical items were duplicated so that failure of any one item would not stop the fieldwork. Similarly, spare parts and replacement items were included to prevent avoidable down time. When practical, sampling equipment was pre-cleaned before transport to the field. All sample containers were supplied by PPB Environmental Laboratories and the integrity of all containers was maintained during shipment to and from the Port Everglades area and while in storage awaiting use.

2.2.2 Decontamination and Clean Area Procedures

All equipment surfaces with the potential to contact sample material, such as stainless steel spoons and bowls, were decontaminated using a de-ionized water/Liqui-nox® solution, followed by a tap water rinse, de-ionized water rinse, isopropanol rinse, and then air-dried. If not immediately used after cleaning, decontaminated equipment was wrapped in food-grade aluminum foil with the shiny side contacting the equipment.

Field personnel wore Nitrile gloves that were non-powdered, talc- and phthalate-free, and were changed between sampling stations and when decontaminating equipment. Gloves were changed when torn or possibly contaminated.

The deck area where sampling occurred was scrubbed with a dilute Liqui-nox® solution to remove petroleum residues, loose debris, and any other materials that might contaminate collected sediment.

Care was taken to prevent wash water that potentially contained oil or petroleum compounds from entering the surface water. Sediment debris was removed from the sample collection area before departing each station.

Hydraulic and petroleum-fueled equipment were maintained in an area away from the vibracoring or grab sampling area, and any drips or leaks of hydraulic fluids, fuels, or lubricants were cleaned up immediately. Gasoline and diesel fueled equipment was positioned downwind to minimize the potential for sample contamination.

2.2.3 Sediment Sample Collection and Handling

All samples were collected using appropriately cleaned, non-contaminating equipment (e.g., constructed of stainless steel or coated with Teflon®) as required for the analyses of interest, with the exception of the vibracore tubes, which were constructed of ridged acetyl butyrate plastic. A stainless-steel cutting nose cone was affixed to the end of the tubes.

Harbor sediments were collected to approximately the projected dredging depth. A vibracore sampling devise was used to collect sediment from the sediment surface to the approximate dredging depth or refusal.

After collecting sediment in the vibracore tube, the sampling devise was withdrawn from the sediment and placed over a Teflon® coated stainless steel collection vessel where the sediment was released. The sediment was placed into pre-cleaned and pre-labeled one-gallon glass sample containers using stainless steel spoons and stainless steel funnels. The volume of sediment was recorded on the chain of custody to ensure that there would be sufficient volume for generating the composited sample.

Reference sediment samples, A and B, were collected using a stainless steel box corer. Collected sediments were placed into a stainless steel vessel with a protective coating of Teflon®. Excess water was decanted before transferring the sample into the laboratory supplied pre-cleaned and pre-labeled one-gallon glass sample containers.

After containerizing, all sediment and water samples were immediately placed on ice in Rubbermaid® coolers.

CSA personnel delivered the samples to PPB's Gainesville, Florida laboratory in ice chests, which were chilled with ice and maintained at approximately four degrees Celsius. Custody seals were secured to each ice chest in a manner to disclose if the ice chest had been opened before delivery to the laboratory. There was no evidence of tampering of the samples upon arrival at PPB Laboratories.

Control sediment was provided by MACTEC in sufficient quantity for all specified physical, chemical, and biological tests. Control sediment was collected from the Matanzas River, which is a brackish estuary, approximately 100 meters north of the University of Florida's Whitney

Center and west of US A1A. This location is approximately at N 29.6719° and W -081.2148° (NAD 83). Sediment from this location has proven to be reliably free of contaminants with regard to success of past control groups for test organisms.

PPB laboratory personnel received all sample containers in good condition.

2.2.4 Site Water Collection and Handling

Site water used in elutriate generation for chemistry and in bioassay studies, was collected directly into pre-cleaned one-gallon amber glass containers with Teflon® lid-liners. Sample containers were inverted and submerged at least 0.5 feet below the water surface before they were turned upright and allowed to fill. Water sample containers were placed in ice chests with wet ice and transported to PPB in a manner similar to the sediment samples. The site water was collected from a central location in the Port Everglades area.

2.2.5 Hydrographic Measurements

Collection of sediment and water from Port Everglades and the reference stations included the following general ancillary observations and hydrographic measurements made on water from mid-depth, or, for the reference stations, near the water surface:

Sea State	Water Temperature	Dissolved Oxygen
Tidal Cycle	Water Depth	Turbidity
pH	Conductivity	Salinity
Sampling Depth	Weather Conditions	

2.3 Physical and Chemical Laboratory Methods and Procedures

Analytical procedures followed those prescribed in the document “Port Everglades 103 Evaluation – 2004 Sampling Plan and Protocol” and in the "Green Book" ("Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual"). Target detection limits were defined to meet EPA Region IV guidelines.

2.4 Biological Testing

Biological testing included elutriate bioassays with *Mysidopsis bahia, arbacia punctulata,* and *Menidia beryllina*; benthic bioassays using *Mysidopsis bahia* and *Leptocheirus plumulosus*; and bioaccumulation by exposing *Nereis virens* and *Macoma nasuta. Leptocheirus plumulosus* was substituted for *crassostrea virginica* because the latter was not unavailable.

The supplier of these test organisms was:

Aquatic Research Organisms
P.O. Box 1271
One Lafayette Road
Hampton, NH 03842
Phone (603) 926-1650

Water used during the bioaccumulation testing was provided by MACTEC and came from the University of Florida's Whitney Center saltwater storage tank. The Whitney Center is located along US A1A and is north of and adjacent to Marineland, Florida. Water from this source has proven to be reliably free of contaminants with regard to success of past control groups for test organisms. Routine chemical testing is performed on this source and analytical data can be obtained upon request.

3 Locations of Sampling Areas

The proposed disposal site, the Port Everglades ODMDS, is located approximately five nautical miles offshore from the coast of Fort Lauderdale, and is designated for the disposal of dredged material. The site is one nautical mile square with approximate center coordinates of 26°07'00" latitude, 80°01'34" longitude, and is in water that averages 750 feet deep. Using the NAD 83 datum, the approximate corners of the ODMDS are located at:

Northwest Corner:	26°07'30" lat; 80°02'00" long
Northeast Corner:	26°07'30" lat; 80°01'00" long
Southwest Corner:	26°06'30" lat; 80°02'00" long
Southeast Corner:	26°06'30" lat; 80°01'00" long

Four harbor zones were selected, that included existing channel areas for maintenance dredging, as well as areas where dredging would occur for the first time, i.e., new work areas. Each zone was divided into sub-zone sampling stations, varying between two to five sampling stations. The sub-zone sampling locations within the harbor area are shown in Figure 1.

Two reference stations were sampled from water 680 to 720 feet deep, approximately one nautical mile north and one nautical mile south, respectively, of the northern and southern edges of the ODMDS. The locations sampled appear on Figure 2.

Positioning of the sampling equipment at the predetermined sampling stations was accomplished using a Magnavox Model 412 DGPS receiver coupled with a Starlink Model MRB-2A beacon receiver. Differential corrections were acquired using the Coast Guard beacon from Miami, Florida from which real-time GPS differential corrections are broadcast at 295 KHz. This system has a proven accuracy of ±5 m (1 m to 3 m is typical) because of the high quality of the GPS and beacon receivers and the use of an "H-field" antenna.

Table 1 lists the coordinates for the reference and the harbor sample locations. This table also includes the method of sampling (ie. Vibracore or Van Veen grab).

Copies of completed field sheets developed for this sampling effort appear in Appendix D.

4 Description of Testing Approach

Selecting four zones throughout the harbor was believed adequate to provide a representative set of samples. Within each zone, sub-zone sampling stations were picked at random, but with consideration to shoals, sediment types, and areas near point source discharges, or areas likely to be affected by non-point source discharges. Also considered were the influence of currents and geographical variations. Areas of distribution of the sub-zone sampling stations are described in the document "Port Everglades 103 Evaluation - 2004 sampling Plan and Protocol" under section "Sample Plan Design". This document can be referenced in Appendix A.

Two reference station locations were selected for generating a composite sample by combining equal proportions from each station. Coordinates are recorded on the field sampling data sheets in Appendix D and can be referenced on Table 1.

The four composited harbor samples, including the field duplicate, reference composite sample and the control sample and were tested for metals, pesticides, PCB Aroclors, PCB congeners, PAHs, total ammonia, cyanide, oil and grease, total organic carbon, total sulfide, total organic tin, specific gravity, grain size, Atterburg limits, settling rates, and total solids.

Elutriate samples were generated from the four composited harbor zone samples, including the field duplicate, reference composite sample and the control sample, and were tested for metals, pesticides, PCB Aroclors, PCB congeners, PAHs, total ammonia, cyanide, oil and grease, total organic carbon, total sulfide and total organic tin and the results were used in the STFATE model.

A list of chemicals of interest was developed, which was based on the results of the sediment analyses, for the testing of the tissues generated during the 28-day bioaccumulation study.

5 Final Results

Prior to the initiation of fieldwork, preprinted field sheets were designed specifically for this project. Completed field documentation appears in Appendix D. All laboratory reports of analyses for the Port Everglades harbor sediments, elutriates and background water sample, including the reference composite sediment and elutriate results, and bioaccumulated tissues appear in Appendix G.

5.1 Field Measurement Data and Sediment Descriptions

The weather during the field effort was generally sunny with 10 to 15 knot winds from the southeast in the mornings and throughout the afternoon. Tidal height ranged from 1 to 2 feet above mean low water during the sampling period. Appendix C presents the water quality data measured at mid-depth for each harbor station and near the surface for the reference stations.

Zone E-PE04-1 was sampled using a vibracore sampler, except for sub-zone E-PE04-1-2, which the field team was unable to collect a vibracored sample, due to a rock and gravel bottom type. It was noted on the field sheet that the vessel was “relocated numerous times to attempt to find suitable bottom, but with no success”. Zone E-PE04 sediment profile and descriptions are recorded on the field sheets and can be referenced in Appendix D. Zone E-PE04-1 was chosen by the field team to be sampled in duplicate.

Zones E-PE04-2, E-PE04-3, and E-PE04-4 were collected using a Van Veen grab sampler. It was recorded that the collected sediment in zone E-PE04-2 to be of fine sand to a silty sand consistency. Sediment collected in zone E-PE04-3 had a consistency of silt to silty sand, while in Zone E-PE04-4 the collected sediment was described as silty sand. Sub-zone E-PE04-4-2 was noted to have a noticeable odor. It was not recorded if the odor was of sulfur like origin.

Reference station sediments were collected using a Van Veen sampler, and was described in the field notes as "fine compacted sand". It should be noted that repeated attempts to collect sediment at the predetermined location for Reference Stations RS-PE04-A and RS-PE04-B failed due to rough sea conditions. Sampling crew demobilized from the Port Everglades area on April 23, 2004. The Reference Station sampling effort was successful on May 26th, 2004.

Sediment descriptions have been consolidated and are presented in Section 5.2.

5.2 Sediment Physical and Organic Carbon Data

Sediment samples from the composited harbor stations and the composited reference station were sieved to determined grain size distribution and tested to determine the content of organic carbon and moisture. The composited samples were also tested for specific gravity, settling rates, and Atterburg limits. Physical testing data and soil descriptions can be referenced in Table 3 and Table 40.

For all harbor zone samples it was determined that the major particle size component was of sand. Zone E-PE04-4 had the lowest sand content at 60.7%, while zone composite E-PE04-1 had the highest content of sand at 73.0%. On average, the four harbor zone samples had a consistency of 65.4% sand.

Zones E-PE04-3 and E-PE04-4 was not composed of any gravel, while zones E-PE04-1 and E-PE04-2 had 8.3% and 0.2% gravel, respectively. Percent silt/clay ranged from 18.7% to 39.3%, averaging 32.5% for the four zones. Percent solids content ranged from 55.9% to 65.0%, and averaged 61.0%.

The reference station composited sediment contained a courser material than the harbor zone sediments, on average, with approximately 20.6 percent more sand and approximately 18.5 percent less silt/clay. Gravel was not found in the reference sample. Percent solids content was 66.0 percent.

Control sediment used for toxicity testing was coarser than the composited harbor zone sediments and slightly courser than the reference sediment, with sand comprising 86.9 percent and gravel 0.5 percent. Percent solids content in the control sediment was 73.7 percent, and had approximately 12.7 percent more solids than that of the harbor zone sediments, on average.

Total organic carbon ranged from 0.93 to 1.88 percent in the harbor zone sediment samples. The control sediment had a total organic content of 0.5 percent and the reference sediment contained 0.34 percent total organic carbon.

Sediment physical testing reports are presented in Table 40 and in Appendix F.

5.3 Sediment Chemical Data

Harbor zone composites, the control sediment, and the reference composite were analyzed for metals, pesticides, PCB aroclors and congeners, PAHs, organotins, total ammonia, cyanide, oil and grease, and total sulfide. Quantifiable values have been bolded on the tables to facilitate locating them.

All chemical laboratory reports, complete with laboratory quality assurance narratives, appear in Appendix G.

5.3.1 Sediment Metals

Antimony, cadmium, chromium, and iron concentrations were greater in the reference sediment than that in the harbor zone composites. Silver in sediment yielded concentrations less than the requested detection limits listed in the Sampling Plan and Protocol document. Mercury was detected in slight concentrations in three of the zone composite sediments. Aluminum was detected in all sediment samples with the control sediment having the highest concentration at 1,730 ppm. Antimony was detected in the reference sediment sample, but in a low concentration. Arsenic was found in all sediment samples in low amounts ranging from 2.7 to 5.1 ppm in the harbor zone composites, and 1.8 and 2.3 ppm in the control sediment and the reference composite, respectively. Cadmium was detected in the control sediment and in the reference sediment composites, but in trace amounts. Chromium, copper, iron, lead, nickel, and zinc were found in all sediments in various concentrations. The control sediment had an elevated amount of nickel, approximately four times greater than the averaged values of the zone composites.

Table 5 presents the metals in sediments and percent solids data.

5.3.2 Sediment Pesticides and PCBs

Pesticides were not detected in the zone sediment samples, reference sediment or the control sediment.

Only one elevated PCB aroclor, PCB-1254, was detected in the sediment composite samples, which was harbor zone composite E-PE04-2 in the amount of 0.060 ppm.

PCB congeners (PCBs: 118, 138, and 153) were detected in zone sediment sample E-PE04-2, but in trace amounts., ranging from 1.4 to 1.6 ppb.

Tables 6 through 8 presents the pesticide, PCB aroclor, and PCB congener data for the harbor zone composite sediments, reference sediment, and the control sediments.

5.3.3 Sediment PAHs

Unlike pesticide, PCB aroclor, and PCB congener values, four zone composite samples had detectable measurements of PAH compounds. Harbor zone E-PE04-1-dup had PAH values slightly above the requested Sampling Plan and Protocol document's reporting limit of 20 ppb. Harbor zones E-PE04-2 through E-PE04-4 had PAH values ranging from 0.51 to 120 ppb. PAH data are shown on Table 9.

5.3.4 Sediment Total Organic Tins

Monobutyltin was not detected in the harbor, reference or the control sediment samples.
Dibutyltin was found in concentrations ranging from 0.019 mg/kg to 0.038 mg/kg in harbor samples 2 through 4.
Tributyltin had detectable values in all of the harbor samples, ranging from 0.016 mg/kg to 0.24 mg/kg.
No organotin compounds were found in the offshore reference sediment or the control sediment. Table 10 presents the organotin values in sediment.

5.3.5 Sediment Total Ammonia

All sediments had detectable values of ammonia ranging from 1.59 ppm in the reference sediment to 18.6 ppm in harbor zone E-PE04-3. The control sediment had an ammonia result of 13.3 ppm. Ammonia data are shown on Table 4.

5.3.6 Sediment Total Sulfide

Reference sediment RS-PE04 did not have a detectable amount of sulfide (<2.4 ppm), while the remaining samples had detectable sulfide values ranging from 34.3 to 322 ppm. The control sediment had a sulfide value of 66 ppm. Sulfide data are shown on Table 4.

5.3.7 Sediment Total Cyanide

No cyanide was detected in the sediment samples. Cyanide data are shown on Table 4.

5.3.8 Sediment Oil and Grease

The reference sediment and harbor zone sample E-PE04-1 did not have detectable oil and grease values. The control sediment and harbor zone duplicate sample E-PE04-1 dup had detectable values, but were less than the reporting limit. Harbor zone samples E-PE04-2 through E-PE04-4 had elevated oil and grease results from 200 ppm to 350 ppm. Oil and grease data are shown on Table 4.

5.4 Water and Elutriate Chemical Data

The harbor zone sediment samples, reference sediment and the control sediment were subjected to standard elutriation testing, using site water collected from a central location in the Port Everglades area. Background water and elutriates were tested for the same parameters as of the sediment composite samples. Quantifiable values have been bolded on the tables to facilitate locating them.

All chemical laboratory reports, complete with chain of custody forms and laboratory quality assurance narratives, appear in Appendix G.

5.4.1 Aqueous Metals

Antimony, cadmium, chromium, lead, mercury, and silver were undetected in all of the elutriated samples including the background water.

Arsenic, nickel, and zinc were found in all of the elutriate samples and background water sample. Arsenic ranged from 8.02 to 10.4 ppb in the zone elutriate samples, and from 1.21 to 3.07 ppb in the background water, control and reference elutriates.

Trace amounts of copper were detected in the background water sample and in zone sample E-PE04-1.

Table 12 shows the metals data in the background water and the control, reference and zone elutriates.

5.4.2 Aqueous Pesticides and PCB Congeners

Pesticides were not detected above the Sampling Plan and Protocol requested detection limits in any of the elutriate zone samples or in the background water. PCB Aroclors and PCB congeners were not detected either in these samples.

Tables 13 through 15 show pesticide, PCB Aroclor and PCB congener data in the background water and the control, reference and zone elutriates.

5.4.3 Aqueous PAHs

Naphthalene was the only PAH compound detected in the elutriate samples, which included the reference sample, control sample, and zone samples E-PE04-1 through E-PE04-3.

Table 16 shows PAH data in the background water and the control, reference and zone elutriates.

5.4.4 Aqueous Organotins

No organotin compounds were detected in the harbor zone, control or reference elutriates. Table 17 presents the organotin elutriate values.

5.5 Bioassay Results

Toxicity testing, which consisted of elutriate bioassays and sediment bioassays, was conducted in accordance with requirements of Section 103 of Public Law 92-532 (the Marine Protection, Research, and Sanctuaries Act of 1972); implementing regulations published by the Environmental Protection Agency (EPA) in Title 40 of the Code of Federal Regulations, Parts 220-228 (40 CFR 220-228); and guidance prepared by USACE and USEPA.

5.5.1 Elutriate Bioassays

Elutriate bioassays were conducted on sediments collected from the Port Everglades area to determine the potential impact of dissolved and suspended contaminants on organisms exposed to the elutriate after conducting an initial mixing period. Elutriate bioassay test conditions, including temperature, DO, pH, and salinity were maintained at acceptable levels throughout the testing period. Sample chain-of-custody and other traffic information are provided in Appendix B.

Static, non-renewal elutriate bioassays were performed using *Mysidopsis bahia* and *Menidia beryllina* in 96-hour tests and *Arbacia punctulata* for 48-hour tests. *Mysidopsis bahia* and *Leptocheirus plumulosus* were used in 10-day, static renewal tests. *L. plumulosus* was a substitution for *Ampelisca sp.,* which was unavailable for use. *M. beryllina* were 13 days old and *M. bahia* were 4 days old at test initiation. The complete toxicity testing report appears in Appendix E.

Salinity levels for two samples (100% exposure for samples E-PE04-1 and E-PE04-2) containing *M. bahia* exceeded 22 ppt during the test (23 ppt). The salinity deviation from recommended test conditions (18-22 ppt) for *M. bahia* did not appear to have any significant effect on the reported test endpoints.

Elutriate Bioassays with *Mysidopsis bahia*

M. bahia survivorship was 96 percent in the laboratory control seawater. Survivorship in the laboratory control sediment was 100 percent (10 % and 50 % concentrations), and 92 percent (100 % concentration). Sample survivorship ranged from 92 percent (100% exposure for sample E-PE04-3 and 50% exposure for sample E-PE04-4) to 100 percent (10 % exposure for sample E-PE04-3). *M. bahia* survivorship among replicates was uniform.

The 100% elutriate survival dataset was found to be both normal and with homogeneity of variance. Analysis of variance followed by Dunnett's comparison indicated that the survival of *M. bahia* in the laboratory control seawater was not significantly different from the 100% control sediment elutriate exposure or the zone samples. Results for the ANOVA followed by Dunnett's between the 100% elutriate exposures for the control sediment and the zone samples showed no statistically significant differences. LC_{50}s were greater than 100%.

Elutriate bioassay data for *Mysidopsis bahia* is presented in Table 25.

Elutriate Bioassays with *Menidia beryllina*

M. beryllina survivorship was 100 percent in laboratory control seawater. Survivorship for laboratory control sediment was 100 percent (10%, 50%, and 100% exposures). Sample survivorship ranged from 100 percent (10%, 50%, 100% exposures in samples E-PE04-1 and EPE04-2 and 50% and 100% exposures in sample E-PE04-3) to 96 percent (10% and 50% exposures in sample E-PE04-4). *M. beryllina* survivorship among replicates was uniform.

This 100% elutriate survival dataset did not meet the assumptions for a parametric test, and a suitable transformation was not found. The non-parametric comparison showed no statistically significant differences between the survival in the control seawater or the control sediment 100% elutriate and the 100% elutriates. LC_{50}s were greater than 100%.

Elutriate bioassay data for *Menidia beryllina* is presented in Table 27.

Elutriate Bioassays with *A. punctulata*

A. punctulata fertilization data from the elutriate bioassays of control seawater, control sediment, zone sample stations are presented in Table 29. Fertilization of *A. punctulata* gametes was 83 % in the control water (0% elutriate) and 73% in the 100% elutriate control sediment. Fertilization of *A. punctulata* gametes in the zone samples ranged from 76% (100% elutriate from sample station E-PE04-1) to 88% (10% elutriate from sample stations E-PE04-3 and E-PE04-Dupe).

There were no significant differences (P=0.05) in the fertilization of *A. punctulata* between the control water (0% elutriate) or control sediment (100% elutriate) when compared to the Port Everglades zone samples. EC_{50}s were greater than 100%.

Elutriate Reference Toxicant Test

Concurrent reference toxicant tests were conducted to determine the general health of each test species. The reference toxicant for the *M. bahia* and *M. beryllina* tests was sodium dodecyl sulfate (SDS) with a test duration of 48 hours. The reference toxicant for the *A. punctulata* test was copper sulfate (CuSO4), and was performed concurrently (duration of 80 minutes) with the fertilization tests. The 48-hour LC50 result for *M. bahia* was 12.31 mg SDS/L (95% confidence limits of 8.80 to 17.22 mg SDS/L) and for *M. beryllina* was 7.07 mg SDS/L (95% confidence limits of 87 to 8.52 mg SDS/L). The reference toxicant EC50 for the sea urchin was 90.70 mg CuSO4/L (95% confidence limits of 84.99 to 96.79 mg CuSO4/L). The current LC 50 or EC50 values were within the upper and lower control limits (±2S) of the MACTEC control charts running average LC50 EC50, and indicated that the test organisms were within their normal sensitivity ranges (USEPA, 1994). The reference toxicant data sheets and the LC 50 and EC50 calculations for the elutriate tests are presented in Table 31. Sediment bioassay test conditions, including temperature, DO, pH, and salinity were maintained at acceptable levels throughout the testing period for *M. bahia*. Salinity, DO, and pH were maintained within range throughout the testing period for *L. plumulosus*. Temperature levels for replicate C containing *L. plumulosus* ranged from 22.9 to 23.1°C during the test on June 22, 2004 for all samples. Temperature was 23.1 °C on June 20, 2004 (sample E-PE04-Control replicate A) and 22.8 °C on June 23, 2004 (sample RS-PE04 replicate D). The temperature deviation from recommended test conditions (18-22°C) for *L. plumulosus* did not appear to have any significant effect on the reported test endpoints. Ammonia in the overlying water was determined for each concentration and recorded at the beginning and the end of the test.

5.5.2 Sediment Bioassay

Sediment Bioassay test conditions, including temperature, DO, pH, and salinity were maintained at acceptable levels throughout the testing period.

Two test species were used for the sediment bioassays, *Leptocheirus plumulosus* and *Mysidopsis bahia*. Juvenile *L. plumulosus* (3-5 mm in length, with no mature males) were obtained from Aquatic Research Organisms, Hampton, New Hampshire. *M. bahia* (4 days old at test initiation) were received from Aquatic Indicators Inc., St. Augustine, Florida.

Sediment Bioassays with *Mysidopsis bahia*

M. bahia survivorship was 92 percent in the laboratory control sediment and 88 percent in the reference sediment, RS-PE04. Survivorship of *M. bahia* in the site sediments ranged from 84 percent in sample E-PE04-3 to 92 percent in samples E-PE04-4. Surviving *M. bahia* appeared healthy at the termination of the tests.

Statistical analysis indicated that the survival of *M. bahia* in the laboratory control sediment and reference sample were not significantly different (P=0.05) from survival in the zone samples.

Sediment bioassay data with *Mysidopsis bahia* is presented in Table 32.

Sediment Bioassays with *Leptocheirus plumulosus*

L. plumulosus survivorship was 94 percent in the laboratory control sediment and 91 percent in the reference sediment, RS-PE04. Survivorship of *L. plumulosus* in the zone sediments ranged from 67 percent in sample E-PE04-1 to 94 percent in sample E-PE04-2. Surviving *L. plumulosus* appeared healthy at test termination. *L. plumulosus* survivorship among replicates was relatively uniform.

Statistical analysis using ANOVA with Dunnett's test indicated that the survival of *L. plumulosus* in the laboratory control sediment was not significantly different (P=0.05) from survival in the reference sediment or the Port Everglades zone samples with the exception of E-PE04-1. In addition, survival of *L. plumulosus* in the reference sediment was also statistically different from sample E-PE04-1.

Sediment bioassay data with *Leptocheirus plumulosus* is presented in Table 34.

Sediment Reference Toxicant Test

Reference toxicant tests were conducted on each species tested in the sediment study. The reference toxicant used for *M. bahia* was SDS, and the duration of the test was 48 hours. The reference toxicant used for *L. plumulosus* was cadmium chloride ($CdCl_2$), measured as Cd, for a test duration of 96 hours. The 48-hour LC50 result for *M. bahia* was 22.97 mg SDS/L (95% confidence limits of 18.29 to 28.85 mg SDS/L). The LC50 value for *M. bahia* was within the current control limits of the MACTEC control charts and indicated the test organisms were within their expected sensitivity ranges (USEPA, 1994). The 96-hour LC50 result for L. plumulosus was 1.33 mg $CdCl_2$ (95% confidence limits of 1.03 to 1.70 mg $CdCl_2$). The LC50 value was within the current control limits of the MACTEC control charts, and indicated the test organisms were within their expected sensitivity ranges (USEPA, 1994).

5.6 Bioaccumulation Results

The bioaccumulation test conditions, including temperature, DO, pH, and salinity were maintained at acceptable levels throughout the 28-day testing period for *M. nasuta* (samples E-PE04-Control, E-PE04-1, E-PE04-2, E-PE04-3, E-PE04-4, and E-PE04-Dupe). DO, salinity, and pH were maintained within range throughout the 28-day testing period for *M. nasuta* for sample RS-PE04, but the temperature levels were occasionally slightly below recommended testing conditions for some replicates during the testing period. Salinity, DO, and pH were maintained within range for all samples throughout the testing period for *N. virens*. Temperature levels for vessels containing *N. virens* were occasionally slightly below recommended testing conditions in some replicates in samples E-PE04-Control, E-PE04-1, E-PE04-2, E-PE04-3, E-PE04-4, and E-PE04-Dupe during the test. The temperature deviation from recommended test conditions for *M. nasuta* and *N. virens* did not appear to have any significant effect on the replicates. The laboratory data are provided in Appendix E.

5.6.1 Organism Survival Rates

An adequate number of *Macoma nasuta* and *Nereis virens* were exposed to control, reference, and harbor sediment to provide sufficient quantities of tissue for subsequent chemical testing.

Bioaccumulation using *Macoma nasuta*

Data for the survival of *M. nasuta* in the bioaccumulation tests are presented in Table 36. *M. nasuta* survivorship in the laboratory control sediments was 91 percent. Survival of *M. nasuta* in the zone sediments ranged from 65 percent (E-PE04-1) to 78 percent (E-PE04-Dupe). Survival of *M. nasuta* in the reference sediment was 65%. Adequate mass of *M. nasuta* tissue was available for chemical analyses.

Bioaccumulation using *Nereis virens*

Data for the survival of *N. virens* in the bioaccumulation tests are also presented in Table 36. *N. virens* survivorship in the laboratory control sediments was 91 percent. Survival of *N. virens* in the zone sediments ranged from 66 percent (E-PE04-Dupe) to 84 percent (E-PE04-3). Survival of *N. virens* in the reference sediment was 96%. Adequate mass of *N. virens* tissue was available for chemical analyses.

Reference Toxicant Tests

Concurrent reference toxicant tests were conducted to determine the general health of each test species. The reference toxicant for the *M. nasuta* and *N. virens* tests was copper sulfate ($CuSO_4$) with a test duration of 96 hours. The 96-hour LC_{50} result for *M. nasuta* received on 5/11/04 was 673.96 mg $CuSO_4$/L (95% confidence limits of 420.45 to 1080.31 mg $CuSO_4$/L) and the 96-hour LC_{50} result for *M. nasuta* received on 6/3/04 was 1714.69 mg $CuSO_4$/L (95% confidence limits of 1202.23 to 2445.60 mg CuSO4/L). The 96-hour LC50 result for *N. virens* received on 5/12/04 was 809.23 mg $CuSO_4$/L (95% confidence limits of 438.53 to 1493.30 mg $CuSO_4$/L) and for *N. virens* received on 6/3/04 was 1013.69 mg $CuSO_4$/L (95% confidence limits of 762.99 to 1346.76 mg $CuSO_4$/L). These results are within the current control limits at the laboratory.

5.7 Tissue Chemical Data

After review of the chemical testing results for the sediment samples, it was decided that the bioaccumulated tissue samples (*Macoma nasuta* and *Nereis virens*), which were exposed to the harbor zone sediments and reference sediment, would be analyzed for metals, pesticides, PCB aroclors and congeners, and PAHs. The harbor zone bioaccumulated tissues analyzed were E-PE04-2, E-PE04-3, and E-PE04-4, which were composited into one sample per set of replicates. For example, station E-PE04-2a *Macoma* tissues, E-PE04-3a *Macoma* tissues, and E-PE04-4a *Macoma* tissues (letter "a" represents a replicate group of 20 organisms from the bioaccumulation study) were shucked, combined together, homogenized, containerized, and renamed as sample E-PE04-2,3,4-a.

Tissue analytical data is presented in Tables 18 through 24.

The composited samples were tested for the requested analyses. Laboratory reports for tissue analyses appear in their entirety in Appendix G.

5.7.1 Metals in Tissues

Macoma nasuta

All requested metals were detected in the harbor tissue samples slightly above the reference tissues and pretest organism tissues, except for cadmium.

Cadmium was found in the pretest organisms in higher concentrations than the harbor tissue samples and the reference tissue samples. The averaged values ranged between 0.0280 ppm in the reference tissues to 0.0431 ppm in the pretest tissues. The harbor tissue samples averaged 0.0387 ppm.

Antimony, arsenic, mercury and silver were detected in the composited harbor tissues slightly above the reference tissues. The range was between 0.001 mg/kg (for mercury) and 0.017 mg/kg (for silver).

Chromium was detected in the harbor tissue samples approximately 0.12 mg/kg above the reference samples, and 0.22 mg/kg above the pretest organisms.

Lead was found in the harbor tissue samples at 0.148 ppm greater than the reference tissues.

Copper was present in the harbor tissue samples approximately 1.0 ppm greater than the pretest and references samples.

Zinc yielded the greatest difference between the harbor tissue concentrations and the reference tissue concentrations in the amount of 6.4 ppm.

Nereis virens

Arsenic and zinc in the harbor tissue samples were the only two metals with higher values than the reference tissue samples.

Arsenic was detected in the harbor tissues approximately 0.25 ppm greater than in the reference tissues.

Zinc was found to be 4.0 ppm greater than the zinc concentrations in the reference tissues.

5.7.2 Pesticides and PCB Congeners in Tissues

Pesticides were not detected in the harbor tissue samples, reference tissue samples or in the pretest tissue samples.

Only one slightly elevated PCB aroclor, PCB-1260, was detected in the *Nereis* pretest samples. The averaged value was 0.001 mg/kg above the method detection limit.

PCB congeners were not detected in the harbor tissue samples, reference tissue samples or in the pretest tissue samples.

5.7.3 PAHs in Tissues

Fluoranthene and pyrene were detected in the pretest *Nereis* tissues in concentrations slightly above the method detection limits. The amounts were 0.021 ppm and 0.022 ppm respectively.

5.7.4 Butyltins in Tissues

No monobutyltin was detected the tissue samples.

Dibutyltin was found in the all of the tissue samples except for the pretest *Nereis* tissues. Dibutyltin values ranged between 0.012 ppm in the pretest *Macoma* tissues to 0.029 ppm in the harbor *Nereis* tissues.

Tributyltin was detected in the *Macoma* harbor tissue samples at 0.064 ppm. Tributyltin was also yielded in the *Nereis* harbor tissues at 0.012 ppm.

5.8 Tissue Statistical Comparison

Replicate results from both the reference and site-related samples were tested for normality using the Lillefors test. If both the reference and site-related samples exhibited normally distributed replicates, the two-sample t-test with pooled variances was used to evaluate whether the average concentration in tissues from the site-related sample was significantly elevated above the average concentration in the replicate sample. Whereas results for several constituents were tested simultaneously, the Bonferroni adjustment was used to adjust for multiple comparisons.

If either the reference or site-related sample replicate results were not normally distributed, the nonparametric Kruskal Wallis test was used to determine if the average concentrations in the replicates were significantly different. SYSTAT version 10 (SPSS, Inc., 2000) was used for statistical testing, and SYSTAT outputs are provided in Appendix I. The results are summarized in Table 38, for *M. nasuta* and Table 39 for *N. virens*. Table 38 shows that *M. nasuta* exposed to site-related samples were significantly elevated when compared with exposures to reference sediments for antimony, cadmium, copper, lead, silver, zinc, and tri-n-butyltin. Table 39 shows that di-n-butyltin and tri-n-butyltin were significantly elevated in *N. virens* tissue exposed to site sediments, when compared with reference sediments.

6 Quality Assurance and Control

Chemical data quality was monitored and assured within PPB Environmental Laboratories, Gainesville, Florida laboratory and Columbia Analytical Laboratories, Kelso, Washington laboratory.

The offshore reference sample was collected at a later date from the other samples due to unsafe weather conditions. However, all other field and laboratory data, that were planned to be collected, were collected.

Pre-designated sampling stations were located using differentially corrected global positioning system receivers.

Review of the field data and sample collection process and laboratory data and quality assurance reports show that all data are usable for project purposes of this Section 103 pre-dredging sediment evaluation.

6.1 Field Quality Assurance Audit Summary

A quality assurance audit was not required for this project.

Before field activities began, the project goals and approach for field activities were described in a US Army Corps of Engineers approved Sampling Plan and Protocol. These were provided to field team members prior to traveling to Port Everglades. The field team was staffed with personnel with appropriate training and experience for the tasks they were assigned. These individuals followed the procedures and methods described in the Sampling Plan and Protocol for sample collection, preservation, storage, and transport.

Field sampling personnel noted any deficiencies on the preprinted field sheets. All information was properly documented on field sheets, sample labels, and chain of custody forms. There was no sampling problems encountered, which would require corrective action documentation.

All sample containers were received in good condition by PPB and CAS laboratory personnel.

All samples and collected field data were judged acceptable for project needs.

6.2 Chemical Laboratory Quality Assurance and Control

Columbia Analytical Laboratories quality assurance case narrative reports appear in Appendix G with the laboratory data reports that they describe. All routine problems encountered during analyses were reported during analyses were successfully addressed. Detection limits presented in the US Army Corps of Engineers Work plan were successfully achieved.

The data set for these analyses meets the data quality objectives for the project. All analytical holding times were met.

Harbor field duplicates E-PE04-1 and E-PE04-1 Dupe data set was found to compare reasonably well. Most exceptions occurred where analytical results for the native sample (original sample) and duplicate sample were very close to or less than the method reporting limits. As the laboratory attempts to quantify results approaching the method-reporting limit (MRL) the

variability of accuracy and precision become greater. This is because the MRL is derived from a statistical model where uncertainty is greater a lower levels. For instance two samples, which differ by 2 ppb, will experience much greater variability at low levels, such as 2 ppb and 4 ppb, than at higher levels with values, such as 10 ppb and 12ppb where less uncertainty is experienced. The concentration where issue is most prevalent is between the method detection limit (MDL) and the MRL and assigned a "J" qualifier.

Some matrix spike exceedences occurred mainly due to matrix interference, or when the spiking level was low relative to the analyte concentration. This was the case for aluminum and iron in the Harbor zone sediment sample E-PE04-1, as well with Tri-n-butyltin and n-Butyltin in sample E-PE04-3. Insufficient sample was provided to prepare laboratory matrix spike or duplicate samples for the reductive precipitation procedure used in the method for metals analyses. Two Laboratory control samples were analyzed as to offer accuracy and precision data.

Some detection limits were elevated for Organochlorine pesticides and PCB congeners due to contributions of interfering compounds from the sample matrix. Methods which employ Gas Chromatography, with the exception of Gas chromatography/Mass spectrometry, are required to be confirmed on a dissimilar second analytical chromatographic column. Agreement between the concentrations on the primary and confirmation should be less than 40% and a P qualifier assign to the result. However, when the analyte is at very low levels where the variability is greatest the 40% may be exceeded. Due to the low levels found in these samples this is often the case. Where the laboratory found evidence on matrix interference, which might contribute to the difference the lower of the two values, was reported.

No anomalies were found for metals for Harbor sediments or elutriates except for Fe and Al in the harbor sediments. The matrix spike control criterion was exceeded because of the high analyte levels relative to the spiking levels. The laboratory control sample (LCS) was prepared in the laboratory with all reagents used in the analyses but in de-ionized water. The sample was prepared to evaluate if the analytical system was in control. When the matrix spike and matrix spike duplicate has one or more analytes which exceed control limits and the laboratory control sample meets control criteria it strongly suggest the matrix spike and matrix spike duplicate contained something in the sample which affected instrument response.

The matrix spike recovery for sulfide for the elutriate sample RS-PE04 was outside control criteria because of a suspected matrix interference. The distillate turned yellow upon addition of the color reagent instead of the normal blue color associated with this method. As a result of this interference the result for sulfide may be biased low.

The case narratives and data tables for this narrative may be found in Appendix G.

7 Conclusions

All data were collected as planned for the chemical, physical, and toxicological characterization of sediment from Port Everglades along with similar data from the ODMDS reference site for comparison. It was necessary to collect the reference sample at a later date due to unsafe weather related sampling conditions. Appropriate methods and procedures were employed to collect and deliver sediment samples to the analytical laboratory in a condition that was representative of the site at the time of collection. All of the achieved detection limits were met or were lower than those specified by the Sampling Plan and Protocol submitted to PPB Environmental Services by the US Army Corps of Engineers. All data are judged to be of acceptable quality for project needs.

8 References

The following references were cited in this report or were consulted for technical guidance during the planning and implementation of this project.

American Public Health Association, American Water Works Association, and Water Environmental Federation. 1998, 20th Edition. Standard Methods for the Examination of Water and Wastewater.

Eisler, R. 1981. Trace Metal Concentrations in Marine Organisms. Pergomon Press, New York.

Plumb, R.H., Jr. 1981. "Procedure for Handling and Chemical Analysis of Sediment and Water Samples." Technical Report EPA/CE-81-1.

TrophicTrace, 2003. A Management Guide for a Tiered Risk Assessment Procedure for Evaluating Bioaccumulation Data Collected During Regulatory Evaluations of Dredged Materials. US Army Engineer Research and Development Center, Waterways Experiment Station, EP-R, Vicksburg, Mississippi.

US Army Corps of Engineers and USEPA. August 1992. Regional Implementation Manual.

USEPA Region II. July 27, 1988. Determination of Total Organic Carbon in Sediment (Lloyd Kahn Method).

USEPA and USACE. February 1991. "Evaluation of Dredged Material Proposed for Ocean Disposal." EPA 503/8-91/001.

USEPA, Region II and USACE, New York District. Draft dated December 1992 (undated updates attached). "Guidance for Performing Tests on Dredged Material Proposed for Ocean Disposal."

USEPA. 1994. Methods for Assessing the Toxicity of Sediment-Associated Contaminants with Estuarine and Marine Amphipods. EPA/600/R-94/025. Office of Research and Development. Washington, DC

USEPA and USACE. April 1995. "QA/QC Guidance for Sampling and Analysis of Sediments, Water, and Tissues for Dredged Material Evaluations - Chemical Evaluations." EPA 823-B-95-001.

USEPA. December 1996. "Test Methods for Evaluating Solid Waste Physical/Chemical Methods." SW-846, Third Edition.

Table 1

Sampling Locations and Sampling Technique for Port Everglades (Florida) Samples Collected May 2004

Station Location	Sediment Collection Technique	Coordinates
RS-PE04-A	Van Veen	**N** 26°08.3732' **W** 080°01.5002'
RS-PE04-B	Van Veen	**N** 26°05.6283' **W** 080°01.4996'
E-PE04-1-1	Vibracore	**N** 26°05.541' **W** 080°06.720'
E-PE04-1-1 Duplicate	Vibracore	**N** 26°05.541' **W** 080°06.720'
E-PE04-1-2	Vibracore	**N** 26°05.523' **W** 080°06.707'
E-PE04-1-2 Duplicate	Vibracore	**N** 26°05.523' **W** 080°06.707'
E-PE04-1-3	Vibracore	**N** 26°05.480' **W** 080°06.765'
E-PE04-1-3 Duplicate	Vibracore	**N** 26°05.480' **W** 080°06.765'
E-PE04-2-1	Van Veen	**N** 26°05.9481' **W** 080°07.1372'
E-PE04-2-2	Van Veen	**N** 26°05.9015' **W** 080°07.1083'
E-PE04-2-3	Van Veen	**N** 26°05.8362' **W** 080°07.1258'
E-PE04-2-4	Van Veen	**N** 26°05.8468' **W** 080°07.0874'
E-PE04-2-5	Van Veen	**N** 26°05.7907' **W** 080°07.0720'
E-PE04-3-1	Van Veen	**N** 26°05.' 7907 **W** 080°07.' 0720
E-PE04-3-2	Van Veen	**N** 26°05.7063' **W** 080°07.0048'
E-PE04-4-1	Van Veen	**N** 26°05.3846' **W** 080°07.1709'
E-PE04-4-2	Van Veen	**N** 26°05.5218' **W** 080°06.7954'

Table 2

Sediment, Elutriate and Tissue - Method Numbers and Detection Limits for Port Everglades (Florida) Samples Collected May 2004

Analyte	Sediment Method Number	Laboratory SOPs	Units	Sediment Requested Detection Limit	Sediment Achieved Detection Limit	Elutriate Method Number	Laboratory SOPs	Units	Elutriate Requested Detection Limit	Elutriate Achieved Detection Limit	Tissue Method Number	Laboratory SOPs	Units	Tissue Requested Detection Limit	Tissue Achieved Detection Limit
Aluminum	EPA 6010B	CAS	mg/kg	0.5	8.0	--	--	--	--	--	--	--	--	--	--
Antimony	EPA 6020	CAS MET-6020	mg/kg	0.3	0.02	EPA 200.8	CAS MET-ICP.MS	µg/L	3.5	0.12	EPA 200.8	CAS MET-ICP.MS	µg/kg	3.5	5.0
Arsenic	EPA 6021	CAS MET 6021	mg/kg	0.5	0.05	EPA 200.8	CAS MET-ICP.MS	µg/L	1.0	0.02	EPA 200.8	CAS MET-ICP.MS	µg/kg	1.0	30
Cadmium	EPA 6022	CAS MET 6022	mg/kg	0.1	0.007	EPA 200.8	CAS MET-ICP.MS	µg/L	0.5	0.003	EPA 200.8	CAS MET-ICP.MS	µg/kg	0.5	5.0
Chromium	EPA 6010B	CAS MET 6010 B	mg/kg	0.2	0.5	EPA 200.8	CAS MET-ICP.MS	µg/L	0.5	0.02	EPA 6010B	CAS MET 6010 B	µg/kg	0.5	300
Copper	EPA 6020	CAS MET-6020	mg/kg	0.1	0.02	EPA 200.8	CAS MET-ICP.MS	µg/L	2.5	0.01	EPA 200.8	CAS MET-ICP.MS	µg/kg	2.5	70
Iron	EPA 6010B	CAS MET 6010 B	mg/kg	1.5	0.6	--	--	--	--	--	--	--	--	--	--
Lead	EPA 6020	CAS MET-6020	mg/kg	0.1	0.02	EPA 200.8	CAS MET-ICP.MS	µg/L	2.5	0.009	EPA 200.8	CAS MET-ICP.MS	µg/kg	2.5	7.0
Mercury	EPA 7471A	CAS MET 7471A	mg/kg	0.05	0.008	EPA 7470A	CAS MET 7470A	µg/L	0.2	0.1	EPA 7471A	CAS MET 7471A	µg/kg	0.2	20
Nickel	EPA 6020	CAS MET-6020	mg/kg	0.2	0.04	EPA 200.8	CAS MET-ICP.MS	µg/L	0.2	0.02	EPA 200.8	CAS MET-ICP.MS	µg/kg	0.2	30
Silver	EPA 6020	CAS MET-6020	mg/kg	0.1	0.003	EPA 200.8	CAS MET-ICP.MS	µg/L	1.0	0.005	EPA 200.8	CAS MET-ICP.MS	µg/kg	1.0	4.0
Zinc	EPA 6020	CAS MET-6020	mg/kg	0.2	0.2	EPA 200.8	CAS MET-ICP.MS	µg/L	1.5	0.020	EPA 200.8	CAS MET-ICP.MS	µg/kg	1.5	60
Aldrin	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Chlordane	EPA 3540C	CAS SOC-8081	mg/kg	0.025	0.004	EPA 8081A	CAS SOC-8081	µg/L	25	0.20	EPA 8081A	CAS SOC-8081	µg/kg	20	2.7
4,4 DDT	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
4,4 DDE	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
4,4 DDD	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Dieldrin	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Endosulfan I	EPA 3540C	CAS SOC-8081	mg/kg	0.025	0.0004	EPA 8081A	CAS SOC-8081	µg/L	25	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Endosulfan II	EPA 3540C	CAS SOC-8081	mg/kg	0.025	0.0004	EPA 8081A	CAS SOC-8081	µg/L	25	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Endosulfan sulfate	EPA 3540C	CAS SOC-8081	mg/kg	0.025	0.0004	EPA 8081A	CAS SOC-8081	µg/L	25	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Endrin	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Endrin Aldehyde	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Heptachlor	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Heptachlor Epoxide	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Alpha-BHC	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Beta-BHC	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Gamma-BHC (Lindane)	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Delta-BHC	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Methoxychlor	EPA 3540C	CAS SOC-8081	mg/kg	0.020	0.0004	EPA 8081A	CAS SOC-8081	µg/L	20	0.010	EPA 8081A	CAS SOC-8081	µg/kg	20	1.0
Toxaphene	EPA 3540C	CAS SOC-8081	mg/kg	0.030	0.02	EPA 8081A	CAS SOC-8081	µg/L	30	0.50	EPA 8081A	CAS SOC-8081	µg/kg	20	6.6
PCB 1248	EPA 8082	CAS SOC-8082A	mg/kg	0.010	0.004	EPA 8082	CAS SOC-8082A	µg/L	10	0.20	EPA 8082	CAS SOC-8082A	µg/kg	10	0.76
PCB 1254	EPA 8082	CAS SOC-8082A	mg/kg	0.010	0.004	EPA 8082	CAS SOC-8082A	µg/L	10	0.20	EPA 8082	CAS SOC-8082A	µg/kg	10	1.5
PCB 1016	EPA 8082	CAS SOC-8082A	mg/kg	0.010	0.004	EPA 8082	CAS SOC-8082A	µg/L	10	0.20	EPA 8082	CAS SOC-8082A	µg/kg	10	2.0
PCB 1221	EPA 8082	CAS SOC-8082A	mg/kg	0.010	0.004	EPA 8082	CAS SOC-8082A	µg/L	10	0.40	EPA 8082	CAS SOC-8082A	µg/kg	10	3.1
PCB 1232	EPA 8082	CAS SOC-8082A	mg/kg	0.010	0.004	EPA 8082	CAS SOC-8082A	µg/L	10	0.20	EPA 8082	CAS SOC-8082A	µg/kg	10	2.0
PCB 1242	EPA 8082	CAS SOC-8082A	mg/kg	0.010	0.004	EPA 8082	CAS SOC-8082A	µg/L	10	0.20	EPA 8082	CAS SOC-8082A	µg/kg	10	3.5
PCB 1260	EPA 8082	CAS SOC-8082A	mg/kg	0.010	0.004	EPA 8082	CAS SOC-8082A	µg/L	10	0.20	EPA 8082	CAS SOC-8082A	µg/kg	10	4.7
PCB Congeners	EPA 8082	CAS SOC-8082C	mg/kg	0.001	0.0002	EPA 8082	CAS SOC-8082C	µg/L	--	0.005	EPA 8082	CAS SOC-8082C	µg/kg	--	0.50
Polynuclear Aromatic Hydrocarbons (PAHs)	8270C SIM	CAS SOC-8270P	mg/kg	0.020	0.005	EPA 8270C SIM	CAS SOC-8270P	µg/L	20	0.02	EPA 8270C SIM	CAS SOC-8270P	µg/kg	2	1.0
Butyltins	Krone	SOC-OSWT SOC-BUTYL	mg/kg	0.01	0.001	EPA 3520C	SOC-OSWT SOC-BUTYL	µg/L	100	0.05	GC-FPD	SOC-OSWT SOC-BUTYL	µg/kg	10	1.0
Ammonia	EPA 350.1	PPB AN0015	mg/kg	0.10	0.5	EPA 350.1	PPB AN0015	mg/L	0.10	0.01	--	--	--	--	--
Cyanide	EPA 335.2	PPB AN0011	mg/kg	1.0	1.0	EPA 335.2	PPB AN0011	mg/L	1.0	0.004	--	--	--	--	--
Oil and Grease	EPA 1664	CAS 1664	mg/kg	1.0	60	EPA 1664	CAS 1664	mg/L	1.0	0.64	--	--	--	--	--
Total Organic Carbon (TOC)	EPA 9060 - PSEP	CAS GEN-ASTM	%	0.1	0.02	EPA 415.1	PPB AN0004	mg/L	0.1	1.0	--	--	--	--	--
Total Sulfides	EPA 9030M	CAS GEN-AVS	mg/kg	0.20	0.4	EPA 376.1	PPB AN0032	mg/L	0.20	1.0	--	--	--	--	--
Percent Solids	EPA 160.3M	CAS GEN-160.3	%	1.0	0.1	--	--	--	--	--	EPA 160.3M	CAS GEN-160.3	%	0.1	0.1
Percent Lipids	--	--	--	--	--	--	--	--	--	--	NOAA	CAS SOC-LIPID	%	0.1	0.025
Grain Size	ASTM D422	ASTM D422	%	1.0	0.1	--	--	--	--	--	--	--	--	--	--
Specific Gravity	ASTM D854	ASTM D854	--	--	--	--	--	--	--	--	--	--	--	--	--
Atterburg Limits	ASTM D4318	ASTM D4318	--	--	--	--	--	--	--	--	--	--	--	--	--
Settling Rates	Corps SAD Lab Methods	Corps SAD	g/L	--	--	--	--	--	--	--	--	--	--	--	--

Note:
Sediment Requested Detection Limits are based on the USACE Port Everglades 103 Evaluation - 2004 Sampling Plan and Protocol

Table 3

Physical Analysis and Total Organic Carbon Data for Port Everglades (Florida) Sediment Samples Collected May 2004

Physical Analysis and Total Organic Carbon Data for Port Everglades Sediments Collected May 2004						
Sample ID	**Grain Size Distribution (percent)**					
	Gravel >2.00 mm	**Sand 2.00 - 0.0625 mm**	**Silt 0.0625 - 0.0039 mm**	**Clay <0.0039 mm**	**TOC (dry weight) percent**	**Percent Solids**
RS-PE04	na	86	14		0.34	66
E-PE04-Control	0.5	86.9	12.6		0.5	73.7
E-PE04-1	8.3	73	18.7		1.05	65
E-PE04-1 Dupe	Not requested	Not requested	Not requested		Not requested	Not requested
E-PE04-2	0.2	61.4	38.4		1.24	59.8
E-PE04-3	na	66.5	33.5		0.93	63.4
E-PE04-4	na	60.7	39.3		1.88	55.9

Sample ID	Specific Gravity	Plastic Limit	Liquid Limit	Plasticity Index
RS-PE04	2.708	Non-Plastic	Non-Plastic	Non-Plastic
E-PE04-Control	2.696	Non-Plastic	Non-Plastic	Non-Plastic
E-PE04-1	2.688	Non-Plastic	Non-Plastic	Non-Plastic
E-PE04-1 Dupe	Not requested	Not requested	Not requested	Not requested
E-PE04-2	2.717	32	38	6
E-PE04-3	2.701	28	31	3
E-PE04-4	2.71	35	37	2

Table 4

Sediment Oil Grease, Total Organic Carbon, Total Sulfide, Cyanide and Ammonia Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Oil and Grease * mg/Kg (ppm)				Total Organic Carbon Percent (%)				Total Sulfide * mg/Kg (ppm)			
		Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
E-PE04-Control	73.7%	100	U	73.7	U	**0.34%**	--	**0.25%**	--	2.4	U	1.8	U
RS-PE04	66.0%	100	U	66.0	U	**0.50%**	--	**0.33%**	--	**66.0**	--	**43.6**	--
E-PE04-1	65.0%	100	U	65.0	U	**1.05%**	--	**0.68%**	--	**34.3**	--	**22.3**	--
E-PE04-1 Dupe	64.4%	100	U	64.4	U	**0.97%**	--	**0.62%**	--	**72.2**	--	**46.5**	--
E-PE04-2	59.8%	**210**	--	**130**	--	**1.24%**	--	**0.74%**	--	**231**	--	**138**	--
E-PE04-3	63.4%	**200**	--	**130**	--	**0.93%**	--	**0.59%**	--	**159**	--	**101**	--
E-PE04-4	55.9%	**350**	--	**200**	--	**1.88%**	--	**1.05%**	--	**322**	--	**180**	--

Sample ID	Percent Solids (%)	Cyanide mg/Kg (ppm)				Ammonia mg/Kg (ppm)			
		Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
E-PE04-Control	73.7%	1.0	U	0.74	U	**1.59**	--	**1.17**	--
RS-PE04	66.0%	1.0	U	0.66	U	**13.3**	--	**8.78**	--
E-PE04-1	65.0%	1.0	U	0.65	U	**3.08**	--	**2.00**	--
E-PE04-1 Dupe	64.4%	1.0	U	0.64	U	**3.37**	--	**2.17**	--
E-PE04-2	59.8%	1.0	U	0.60	U	**6.67**	--	**3.99**	--
E-PE04-3	63.4%	1.0	U	0.63	U	**18.6**	--	**11.8**	--
E-PE04-4	55.9%	1.0	U	0.56	U	**18.4**	--	**10.3**	--

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit

-- = No qualifier needed

* = The method reporting limit (MRL) was greater than the requested Sampling Plan and Protocol MRL

Table 5

Sediment Metals Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Aluminum mg/Kg (ppm)				Antimony mg/Kg (ppm)				Arsenic mg/Kg (ppm)				Cadmium mg/Kg (ppm)				Chromium mg/Kg (ppm)				Copper mg/Kg (ppm)			
		Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
E-PE04-Control	73.7%	**1730**	--	**1275**	--	0.30	U	0.22	U	**1.8**	--	**1.3**	--	**0.10**	--	**0.07**	--	**3.8**	--	**2.8**	--	**3.9**	--	**2.8**	--
RS-PE04	66.0%	**1360**	N	**898**	N	**0.31**	N	**0.20**	N	**2.3**	--	**1.5**	--	**0.14**	--	**0.09**	--	**13.8**	--	**9.1**	--	**4.3**	--	**2.8**	--
E-PE04-1	65.0%	**449**	--	**292**	--	0.30	U	0.20	U	**4.7**	--	**3.1**	--	0.10	U	0.07	U	**3.5**	--	**2.3**	--	**7.6**	--	**4.9**	--
E-PE04-1 Dupe	64.4%	**585**	N	**377**	N	0.30	U	0.19	U	**5.1**	--	**3.3**	--	0.10	U	0.06	U	**4.0**	--	**2.6**	--	**7.0**	--	**4.5**	--
E-PE04-2	59.8%	**1650**	N	**987**	N	0.30	U	0.18	U	**3.3**	--	**2.0**	--	0.10	U	0.06	U	**11.2**	--	**6.7**	--	**35.5**	--	**21.2**	--
E-PE04-3	63.4%	**1080**	N	**685**	N	0.30	U	0.19	U	**2.7**	--	**1.7**	--	0.10	U	0.06	U	**8.6**	--	**5.4**	--	**23.7**	--	**15.0**	--
E-PE04-4	55.9%	**1010**	N	**565**	N	0.30	U	0.17	U	**3.4**	--	**1.9**	--	0.10	U	0.06	U	**10.7**	--	**6.0**	--	**34.6**	--	**19.3**	--

Sample ID	Percent Solids (%)	Iron mg/Kg (ppm)				Lead mg/Kg (ppm)				Mercury mg/Kg (ppm)				Nickel mg/Kg (ppm)				Silver mg/Kg (ppm)				Zinc mg/Kg (ppm)			
		Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
E-PE04-Control	73.7%	**2390**	--	**1761**	--	**2.3**	--	**1.7**	--	0.05	U	0.04	U	**13.7**	--	**10.1**	--	0.10	U	0.07	U	**5.8**	--	**4.3**	--
RS-PE04	66.0%	**3130**	--	**2066**	--	**2.1**	--	**1.4**	--	0.05	U	0.03	U	**2.2**	--	**1.5**	--	0.10	U	0.07	U	**5.5**	--	**3.6**	--
E-PE04-1	65.0%	**2780**	--	**1807**	--	**2.6**	--	**1.7**	--	0.05	U	0.03	U	**1.7**	--	**1.1**	--	0.10	U	0.07	U	**10.1**	--	**6.6**	--
E-PE04-1 Dupe	64.4%	**3040**	--	**1958**	--	**2.6**	--	**1.7**	--	0.05	U	0.03	U	**1.8**	--	**1.1**	--	0.10	U	0.06	U	**9.4**	--	**6.1**	--
E-PE04-2	59.8%	**2630**	--	**1573**	--	**11.8**	--	**7.1**	--	**0.10**	--	**0.06**	--	**3.4**	--	**2.1**	--	0.10	U	0.06	U	**33.9**	--	**20.3**	--
E-PE04-3	63.4%	**1740**	--	**1103**	--	**7.1**	--	**4.5**	--	**0.05**	--	**0.03**	--	**3.4**	--	**2.1**	--	0.10	U	0.06	U	**22.5**	--	**14.3**	--
E-PE04-4	55.9%	**2510**	--	**1403**	--	**9.2**	--	**5.1**	--	**0.07**	--	**0.04**	--	**3.5**	--	**2.0**	--	0.10	U	0.06	U	**28.5**	--	**15.9**	--

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit

N = The matrix spike recovery is not within control limits. See laboratory report for case narrative in Appendix G

-- = No qualifier needed

Sediment Pesticide Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Aldrin mg/Kg (ppm)				Chlordane mg/Kg (ppm)				4,4 DDT mg/Kg (ppm)				4,4 DDD mg/Kg (ppm)				4,4 DDE mg/Kg (ppm)				Dieldrin mg/Kg (ppm)				Endosulfan I mg/Kg (ppm)				Endosulfan II mg/Kg (ppm)				Endosulfan sulfate mg/Kg (ppm)				Endrin mg/Kg (ppm)			
		Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
E-PE04-Control	73.7%	0.020 U		0.015 U		0.025 U		0.018 U		0.020 U		0.015 U		0.020 U		0.015 U		0.020 U		0.015 U		0.020 U		0.015 U		0.025 U		0.018 U		0.025 U		0.018 U		0.025 U		0.018 U		0.020 U		0.015 U	
RS-PE04	66.0%	0.020 U		0.013 U		0.025 U		0.017 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.025 U		0.017 U		0.025 U		0.017 U		0.025 U		0.017 U		0.020 U		0.013 U	
E-PE04-1	65.0%	0.020 U		0.013 U		0.025 U		0.016 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.025 U		0.016 U		0.025 U		0.016 U		0.025 U		0.016 U		0.020 U		0.013 U	
E-PE04-1 Dupe	64.4%	0.020 U		0.013 U		0.025 U		0.016 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.025 U		0.016 U		0.025 U		0.016 U		0.025 U		0.016 U		0.020 U		0.013 U	
E-PE04-2	59.8%	0.020 U		0.012 U		0.025 U		0.015 U		0.020 U		0.012 U		0.020 U		0.012 U		0.020 U		0.012 U		0.020 U		0.012 U		0.025 U		0.015 U		0.025 U		0.015 U		0.025 U		0.015 U		0.020 U		0.012 U	
E-PE04-3	63.4%	0.020 U		0.013 U		0.025 U		0.016 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.025 U		0.016 U		0.025 U		0.016 U		0.025 U		0.016 U		0.020 U		0.013 U	
E-PE04-4	55.9%	0.020 U		0.011 U		0.025 U		0.014 U		0.020 U		0.011 U		0.020 U		0.011 U		0.020 U		0.011 U		0.020 U		0.011 U		0.025 U		0.014 U		0.025 U		0.014 U		0.025 U		0.014 U		0.020 U		0.011 U	

Sample ID	Percent Solids (%)	Endrin Aldehyde mg/Kg (ppm)				Heptachlor mg/Kg (ppm)				Heptachlor Epoxide mg/Kg (ppm)				Alpha-BHC mg/Kg (ppm)				Beta-BHC mg/Kg (ppm)				Gamma-BHC (Lindane) mg/Kg (ppm)				Delta-BHC mg/Kg (ppm)				Methoxychlor mg/Kg (ppm)				Toxaphene mg/Kg (ppm)			
		Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
E-PE04-Control	73.7%	0.020 U		0.015 U		0.020 U		0.015 U		0.020 U		0.015 U		0.020 U		0.015 U		0.020 U		0.015 U		0.020 U		0.015 U		0.020 U		0.015 U		0.025 U		0.018 U		0.044 U*		0.032 U*	
RS-PE04	66.0%	0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.025 U		0.017 U		0.050 U*		0.033 U*	
E-PE04-1	65.0%	0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.025 U		0.016 U		0.037 U*		0.024 U*	
E-PE04-1 Dupe	64.4%	0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.025 U		0.016 U		0.039 U*		0.025 U*	
E-PE04-2	59.8%	0.020 U		0.012 U		0.020 U		0.012 U		0.020 U		0.012 U		0.020 U		0.012 U		0.020 U		0.012 U		0.020 U		0.012 U		0.020 U		0.012 U		0.025 U		0.015 U		0.052 U*		0.031 U*	
E-PE04-3	63.4%	0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.020 U		0.013 U		0.025 U		0.016 U		0.040 U*		0.025 U*	
E-PE04-4	55.9%	0.020 U		0.011 U		0.020 U		0.011 U		0.020 U		0.011 U		0.020 U		0.011 U		0.020 U		0.011 U		0.020 U		0.011 U		0.020 U		0.011 U		0.025 U		0.014 U		0.045 U*		0.025 U*	

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit

* = The method reporting limit was greater than the requested Sampling Plan and Protocol method reporting limit

-- = No qualifier needed

Table 7

Sediment PCB Aroclor Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	PCB 1248 mg/Kg (ppm)				**PCB 1254** mg/Kg (ppm)				PCB 1016 mg/Kg (ppm)				PCB 1221 mg/Kg (ppm)			
		Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes
E-PE04-Control	73.7%	0.010	U	0.007	U	0.010	U	0.007	U	0.010	U	0.007	U	0.020	U	0.015	U
RS-PE04	66.0%	0.010	U	0.007	U	0.010	U	0.007	U	0.010	U	0.007	U	0.020	U	0.013	U
E-PE04-1	65.0%	0.010	U	0.007	U	0.010	U	0.007	U	0.010	U	0.007	U	0.020	U	0.013	U
E-PE04-1 Dupe	64.4%	0.010	U	0.006	U	0.010	U	0.006	U	0.010	U	0.006	U	0.020	U	0.013	U
E-PE04-2	59.8%	0.010	U	0.006	U	**0.060**	--	**0.036**	--	0.010	U	0.006	U	0.020	U	0.012	U
E-PE04-3	63.4%	0.010	U	0.006	U	0.010	U	0.006	U	0.010	U	0.006	U	0.020	U	0.013	U
E-PE04-4	55.9%	0.010	U	0.006	U	0.010	U	0.006	U	0.010	U	0.006	U	0.020	U	0.011	U

Sample ID	Percent Solids (%)	PCB 1232 mg/Kg (ppm)				PCB 1242 mg/Kg (ppm)				PCB 1260 mg/Kg (ppm)			
		Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes
E-PE04-Control	73.7%	0.010	U	0.007	U	0.010	U	0.007	U	0.010	U	0.007	U
RS-PE04	66.0%	0.010	U	0.007	U	0.010	U	0.007	U	0.010	U	0.007	U
E-PE04-1	65.0%	0.010	U	0.007	U	0.010	U	0.007	U	0.010	U	0.007	U
E-PE04-1 Dupe	64.4%	0.010	U	0.006	U	0.010	U	0.006	U	0.010	U	0.006	U
E-PE04-2	59.8%	0.010	U	0.006	U	0.010	U	0.006	U	0.010	U	0.006	U
E-PE04-3	63.4%	0.010	U	0.006	U	0.010	U	0.006	U	0.010	U	0.006	U
E-PE04-4	55.9%	0.010	U	0.006	U	0.010	U	0.006	U	0.010	U	0.006	U

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit

-- = No qualifier needed

Sediment PCB Congener Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	PCB 08 mg/Kg (ppm)				PCB 18 mg/Kg (ppm)				PCB 28 mg/Kg (ppm)				PCB 44 mg/Kg (ppm)				PCB 52 mg/Kg (ppm)				PCB 66 mg/Kg (ppm)				PCB 77 mg/Kg (ppm)				PCB 87 mg/Kg (ppm)				PCB 49 mg/Kg (ppm)				PCB 101 mg/Kg (ppm)				PCB 105 mg/Kg (ppm)				**PCB 118** mg/Kg (ppm)				PCB 126 mg/Kg (ppm)			
		Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
E-PE04-Control	73.7%	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U
RS-PE04	66.0%	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U
E-PE04-1	65.0%	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U
E-PE04-1 Dupe	64.4%	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U
E-PE04-2	59.8%	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	**0.0013**	--	**0.0008**	--	0.0010	U	0.0006	U
E-PE04-3	63.4%	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U
E-PE04-4	55.9%	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U

Sample ID	Percent Solids (%)	PCB 128 mg/Kg (ppm)				**PCB 138** mg/Kg (ppm)				**PCB 153** mg/Kg (ppm)				PCB 156 mg/Kg (ppm)				PCB 169 mg/Kg (ppm)				PCB 170 mg/Kg (ppm)				PCB 180 mg/Kg (ppm)				PCB 183 mg/Kg (ppm)				PCB 184 mg/Kg (ppm)				PCB 187 mg/Kg (ppm)				PCB 195 mg/Kg (ppm)				PCB 206 mg/Kg (ppm)				PCB 209 mg/Kg (ppm)			
		Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
E-PE04-Control	73.7%	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U
RS-PE04	66.0%	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U
E-PE04-1	65.0%	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U	0.0010	U	0.0007	U
E-PE04-1 Dupe	64.4%	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U
E-PE04-2	59.8%	0.0010	U	0.0006	U	**0.0016**	--	**0.0010**	--	**0.0014**	--	**0.0008**	--	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U
E-PE04-3	63.4%	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U
E-PE04-4	55.9%	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U	0.0010	U	0.0006	U

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit

-- = No qualifier needed

Sediment PAH Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Acenaphthene mg/Kg (ppm)				Acenaphthylene mg/Kg (ppm)				Anthracene mg/Kg (ppm)				**Benzo (a) anthracene** mg/Kg (ppm)				**Benzo (a) pyrene** mg/Kg (ppm)				**Benzo (g,h,i) perylene** mg/Kg (ppm)				**Benzo (k) fluoranthene** mg/Kg (ppm)				**Benzo (b) fluoranthene** mg/Kg (ppm)				**Chrysene** mg/Kg (ppm)			
		Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes
E-PE04-Control	73.7%	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U
RS-PE04	66.0%	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U
E-PE04-1	65.0%	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U
E-PE04-1 Dupe	64.4%	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	**0.020**	--	**0.013**	--	0.020	U	0.013	U
E-PE04-2	59.8%	0.020	U	0.012	U	0.020	U	0.012	U	0.020	U	0.012	U	**0.048**	--	**0.029**	--	**0.092**	--	**0.055**	--	**0.095**	--	**0.057**	--	**0.10**	--	**0.060**	--	**0.12**	--	**0.072**	--	**0.085**	--	**0.051**	--
E-PE04-3	63.4%	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	**0.031**	--	**0.020**	--	**0.048**	--	**0.030**	--	**0.055**	--	**0.035**	--	**0.056**	--	**0.036**	--	**0.060**	--	**0.038**	--	**0.054**	--	**0.034**	--
E-PE04-4	55.9%	0.020	U	0.011	U	0.020	U	0.011	U	0.020	U	0.011	U	**0.029**	--	**0.016**	--	**0.050**	--	**0.028**	--	**0.061**	--	**0.034**	--	**0.057**	--	**0.032**	--	**0.064**	--	**0.036**	--	**0.052**	--	**0.029**	--

Sample ID	Percent Solids (%)	Dibenzo (a,h) anthracene mg/Kg (ppm)				**Fluoranthene** mg/Kg (ppm)				Fluorene mg/Kg (ppm)				**Indeno (1,2,3-cd) pyrene** mg/Kg (ppm)				1-Methylnaphthalene mg/Kg (ppm)				2-Methylnaphthalene mg/Kg (ppm)				Naphthalene mg/Kg (ppm)				**Phenanthrene** mg/Kg (ppm)				**Pyrene** mg/Kg (ppm)			
		Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes
E-PE04-Control	73.7%	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U	0.020	U	0.015	U
RS-PE04	66.0%	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U
E-PE04-1	65.0%	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U
E-PE04-1 Dupe	64.4%	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	**0.022**	--	**0.014**	--
E-PE04-2	59.8%	0.020	U	0.012	U	**0.11**	--	**0.066**	--	0.020	U	0.012	U	**0.094**	--	**0.056**	--	0.020	U	0.012	U	0.020	U	0.012	U	0.020	U	0.012	U	**0.028**	--	**0.017**	--	**0.12**	--	**0.072**	--
E-PE04-3	63.4%	0.020	U	0.013	U	**0.082**	--	**0.052**	--	0.020	U	0.013	U	**0.053**	--	**0.034**	--	0.020	U	0.013	U	0.020	U	0.013	U	0.020	U	0.013	U	**0.027**	--	**0.017**	--	**0.065**	--	**0.041**	--
E-PE04-4	55.9%	0.020	U	0.011	U	**0.067**	--	**0.037**	--	0.020	U	0.011	U	**0.056**	--	**0.031**	--	0.020	U	0.011	U	0.020	U	0.011	U	0.020	U	0.011	U	0.020	U	0.011	U	**0.061**	--	**0.034**	--

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit

-- = No qualifier needed

Table 10

Sediment Organotin Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	n-Butyltin mg/Kg (ppm)				**Di-n-butyltin** mg/Kg (ppm)				**Tri-n-butyltin** mg/Kg (ppm)			
		Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes
E-PE04-Control	73.7%	0.010	U	0.007	U	0.010	U	0.007	U	0.010	U	0.007	U
RS-PE04	66.0%	0.010	U	0.007	U	0.010	U	0.007	U	0.010	U	0.007	U
E-PE04-1	65.0%	0.010	U	0.007	U	0.010	U	0.007	U	**0.016**	--	**0.010**	--
E-PE04-1 Dupe	64.4%	0.010	U	0.006	U	0.010	U	0.006	U	**0.023**	--	**0.015**	--
E-PE04-2	59.8%	0.010	U	0.006	U	**0.036**	--	**0.022**	--	**0.13**	--	**0.078**	--
E-PE04-3	63.4%	0.010	U	0.006	U	**0.019**	--	**0.012**	--	**0.11**	--	**0.070**	--
E-PE04-4	55.9%	0.010	U	0.006	U	**0.038**	--	**0.021**	--	**0.24**	D	**0.13**	D

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit

D = The reported result is from a dilution

-- = No qualifier needed

Table 11

Elutriate Oil and Grease, Total Organic Carbon, Total Sulfide, Cyanide and Ammonia Concentrations for Port Everglades (Florida) Samples Collected May 2004

	Oil and Grease mg/L (ppm)		**Total Organic Carbon** mg/L (ppm)		**Total Sulfide** mg/L (ppm)	
Sample ID	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	5.0	U	**3.6**	I	**2.4**	I
RS-PE04	5.0	U	**4.7**	--	**5.2**	--
E-PE04-Background Water	5.0	U	**2.8**	I	**3.8**	I
E-PE04-1	5.0	U	**6.6**	--	**3.8**	I
E-PE04-1 Dupe	5.0	U	**5.1**	--	**2.0**	I
E-PE04-2	5.0	U	**8.9**	--	**2.4**	I
E-PE04-3	5.0	U	**8.0**	--	**2.2**	I
E-PE04-4	5.0	U	**8.3**	--	**2.4**	I
Surface Class III WQS	5.0		not listed		not listed	

	Cyanide mg/L (ppm)		**Ammonia** mg/L (ppm)	
Sample ID	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.004	U	**0.101**	--
RS-PE04	**0.005**	I	**0.525**	--
E-PE04-Background Water	**0.010**	--	0.010	U
E-PE04-1	**0.007**	I	**0.236**	--
E-PE04-1 Dupe	**0.021**	--	**0.246**	--
E-PE04-2	**0.005**	I	**0.519**	--
E-PE04-3	**0.005**	I	**0.609**	--
E-PE04-4	**0.004**	I	**0.856**	--
Surface Class III WQS	0.001		not listed	

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit

I = The result is between the method detection limit and the practical quantation limit (PQL)

-- = No qualifier needed

Table 12

Elutriate Metals Concentrations for Port Everglades (Florida) Samples Collected May 2004

	Antimony µg/L (ppb)		**Arsenic** µg/L (ppb)		Cadmium µg/L (ppb)		Chromium µg/L (ppb)		**Copper** µg/L (ppb)	
Sample ID	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	3.5	U	**1.2**	--	0.5	U	2.5	U	**3.4**	--
RS-PE04	3.5	U	**3.1**	--	0.5	U	2.5	U	2.5	U
E-PE04-Background Water	3.5	U	**1.8**	--	0.5	U	2.5	U	2.5	U
E-PE04-1	3.5	U	**10.4**	--	0.5	U	2.5	U	**5.7**	--
E-PE04-1 Dupe	3.5	U	**9.6**	--	0.5	U	2.5	U	2.5	U
E-PE04-2	3.5	U	**6.5**	--	0.5	U	2.5	U	2.5	U
E-PE04-3	3.5	U	**6.4**	--	0.5	U	2.5	U	2.5	U
E-PE04-4	3.5	U	**8.0**	--	0.5	U	2.5	U	2.5	U
Surface Class III WQS	4300		50		9.3		50		2.9	

	Lead µg/L (ppb)		Mercury µg/L (ppb)		**Nickel** µg/L (ppb)		Silver µg/L (ppb)		**Zinc** µg/L (ppb)	
Sample ID	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	2.5	U	0.1	U	**1.1**	--	1.0	U	**6.6**	--
RS-PE04	2.5	U	0.1	U	**0.78**	--	1.0	U	**5.0**	--
E-PE04-Background Water	2.5	U	0.04	U	**1.1**	--	1.0	U	**3.4**	--
E-PE04-1	2.5	U	0.1	U	**6.6**	--	1.0	U	**12.3**	--
E-PE04-1 Dupe	2.5	U	0.1	U	**2.5**	--	1.0	U	**6.4**	--
E-PE04-2	2.5	U	0.1	U	**1.3**	--	1.0	U	**5.0**	--
E-PE04-3	2.5	U	0.1	U	**2.2**	--	1.0	U	**4.3**	--
E-PE04-4	2.5	U	0.1	U	**1.9**	--	1.0	U	**3.9**	--
Surface Class III WQS	5.6		0.025		8.3		0.05		86	

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit

-- = No qualifier needed

Elutriate Pesticide Concentrations for Port Everglades (Florida) Samples Collected May 2004

	Aldrin mg/L (ppm)		Chlordane mg/L (ppm)		4,4 DDT mg/L (ppm)		4,4 DDE mg/L (ppm)		4,4 DDE mg/L (ppm)		Dieldrin mg/L (ppm)		Endosulfan I mg/L (ppm)		Endosulfan II mg/L (ppm)		Endosulfan sulfate mg/L (ppm)		Endrin mg/L (ppm)	
Sample ID	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.020	U	0.025	U	0.020	U	0.020	U	0.020	U	0.020	U	0.025	U	0.025	U	0.025	U	0.020	U
RS-PE04	0.020	U	0.025	U	0.020	U	0.020	U	0.020	U	0.020	U	0.025	U	0.025	U	0.025	U	0.020	U
E-PE04-Background Water	0.020	U	0.025	U	0.020	U	0.020	U	0.020	U	0.020	U	0.025	U	0.025	U	0.025	U	0.020	U
E-PE04-1	0.020	U	0.025	U	0.020	U	0.020	U	0.020	U	0.020	U	0.025	U	0.025	U	0.025	U	0.020	U
E-PE04-1 Dupe	0.020	U	0.025	U	0.020	U	0.020	U	0.020	U	0.020	U	0.025	U	0.025	U	0.025	U	0.020	U
E-PE04-2	0.020	U	0.025	U	0.020	U	0.020	U	0.020	U	0.020	U	0.025	U	0.025	U	0.025	U	0.020	U
E-PE04-3	0.020	U	0.025	U	0.020	U	0.020	U	0.020	U	0.020	U	0.025	U	0.025	U	0.025	U	0.020	U
E-PE04-4	0.020	U	0.025	U	0.020	U	0.020	U	0.020	U	0.020	U	0.025	U	0.025	U	0.025	U	0.020	U
Surface Class III WQS	1.3 µg/L		0.004 µg/L		0.001 µg/L		0.001 µg/L		0.001 µg/L		0.0019 µg/L		0.0087 µg/L		0.0087 µg/L		0.0087 µg/L		0.0023 µg/L	

	Endrin Aldehyde mg/L (ppm)		Heptachlor mg/L (ppm)		Heptachlor Epoxide mg/L (ppm)		Alpha-BHC mg/L (ppm)		Beta-BHC mg/L (ppm)		Gamma-BHC (Lindane) mg/L (ppm)		Delta-BHC mg/L (ppm)		Methoxychlor mg/L (ppm)		Toxaphene mg/L (ppm)	
Sample ID	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.030	U
RS-PE04	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.030	U
E-PE04-Background Water	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.030	U
E-PE04-1	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.030	U
E-PE04-1 Dupe	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.030	U
E-PE04-2	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.030	U
E-PE04-3	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.030	U
E-PE04-4	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.030	U
Surface Class III WQS	0.0023 µg/L		0.0036 µg/L		0.0036 µg/L		0.16 µg/L		0.16 µg/L		0.16 µg/L		0.16 µg/L		0.03 µg/L		0.0002 µg/L	

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

Table 14

Elutriate PCB Aroclor Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	PCB 1248 mg/L (ppm)		PCB 1254 mg/L (ppm)		PCB 1016 mg/L (ppm)		PCB 1221 mg/L (ppm)	
	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.010	U	0.010	U	0.010	U	0.010	U
RS-PE04	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-Background Water	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-1	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-1 Dupe	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-2	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-3	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-4	0.010	U	0.010	U	0.010	U	0.010	U
Surface Class III WQS	0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L	

Sample ID	PCB 1232 mg/L (ppm)		PCB 1242 mg/L (ppm)		PCB 1260 mg/L (ppm)	
	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.010	U	0.010	U	0.010	U
RS-PE04	0.010	U	0.010	U	0.010	U
E-PE04-Background Water	0.010	U	0.010	U	0.010	U
E-PE04-1	0.010	U	0.010	U	0.010	U
E-PE04-1 Dupe	0.010	U	0.010	U	0.010	U
E-PE04-2	0.010	U	0.010	U	0.010	U
E-PE04-3	0.010	U	0.010	U	0.010	U
E-PE04-4	0.010	U	0.010	U	0.010	U
Surface Class III WQS	0.03 µg/L		0.03 µg/L		0.03 µg/L	

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

Elutriate PCB Congener Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	PCB 08 µg/L (ppb)		PCB 18 µg/L (ppb)		PCB 28 µg/L (ppb)		PCB 44 µg/L (ppb)		PCB 52 µg/L (ppb)		PCB 66 µg/L (ppb)		PCB 77 µg/L (ppb)		PCB 87 µg/L (ppb)		PCB 49 µg/L (ppb)		PCB 101 µg/L (ppb)		PCB 105 µg/L (ppb)		PCB 118 µg/L (ppb)		PCB 126 µg/L (ppb)	
	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
RS-PE04	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-Background Water	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-1	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-1 Dupe	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-2	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-3	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-4	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
Surface Class III WQS	0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L	

Sample ID	PCB 128 µg/L (ppb)		PCB 138 µg/L (ppb)		PCB 153 µg/L (ppb)		PCB 156 µg/L (ppb)		PCB 169 µg/L (ppb)		PCB 170 µg/L (ppb)		PCB 180 µg/L (ppb)		PCB 183 µg/L (ppb)		PCB 184 µg/L (ppb)		PCB 187 µg/L (ppb)		PCB 195 µg/L (ppb)		PCB 206 µg/L (ppb)		PCB 209 µg/L (ppb)	
	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
RS-PE04	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-Background Water	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-1	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-1 Dupe	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-2	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-3	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
E-PE04-4	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U	0.010	U
Surface Class III WQS	0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L		0.03 µg/L	

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

Elutriate PAH Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Acenaphthene mg/L (ppm)		Acenaphthylene mg/L (ppm)		Anthracene mg/L (ppm)		Benzo (a) anthracene mg/L (ppm)		Benzo (a) pyrene mg/L (ppm)		Benzo (g,h,i) perylene mg/L (ppm)		Benzo (k) fluoranthene mg/L (ppm)		Benzo (b) fluoranthene mg/L (ppm)		Chrysene mg/L (ppm)	
	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
RS-PE04	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-Background Water	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-1	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-1 Dupe	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-2	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-3	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-4	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
Surface Class III WQS	2.7 mg/L		0.031 µg/L		110 mg/L		0.031 µg/L		0.031 µg/L		0.031 µg/L		0.031 µg/L		0.031 µg/L		0.031 µg/L	

Sample ID	Dibenzo (a,h) anthracene mg/L (ppm)		Fluoranthene mg/L (ppm)		Fluorene mg/L (ppm)		Indeno (1,2,3-cd) pyrene mg/L (ppm)		1-Methylnaphthalene mg/L (ppm)		2-Methylnaphthalene mg/L (ppm)		Naphthalene mg/L (ppm)		Phenanthrene mg/L (ppm)		Pyrene mg/L (ppm)	
	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
RS-PE04	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-Background Water	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-1	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-1 Dupe	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-2	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-3	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
E-PE04-4	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
Surface Class III WQS	0.031 µg/L		0.370 mg/L		14 mg/L		0.031 µg/L		0.031 µg/L		0.031 µg/L		0.031 µg/L		0.031 µg/L		11 mg/L	

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

-- = No qualifier needed

Table 17

Elutriate Organotin Concentrations for Port Everglades (Florida) Samples Collected May 2004

	n-Butyltin mg/L (ppm)		Di-n-butyltin mg/L (ppm)		Tri-n-butyltin mg/L (ppm)	
Sample ID	Reported Value	Result Notes	Reported Value	Result Notes	Reported Value	Result Notes
E-PE04-Control	0.10	U	0.10	U	0.10	U
RS-PE04	0.10	U	0.10	U	0.10	U
E-PE04-Background Water	0.10	U	0.10	U	0.10	U
E-PE04-1	0.10	U	0.10	U	0.10	U
E-PE04-1 Dupe	0.10	U	0.10	U	0.10	U
E-PE04-2	0.10	U	0.10	U	0.10	U
E-PE04-3	0.10	U	0.10	U	0.10	U
E-PE04-4	0.10	U	0.10	U	0.10	U
Surface Class III WQS	not listed		not listed		not listed	

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

Tissue Metals Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Percent Lipids (%)	Antimony mg/Kg (ppm)				Arsenic mg/Kg (ppm)				Cadmium mg/Kg (ppm)				Chromium mg/Kg (ppm)				Copper mg/Kg (ppm)				Lead mg/Kg (ppm)				Mercury mg/Kg (ppm)				Nickel mg/Kg (ppm)				Silver mg/Kg (ppm)				Zinc mg/Kg (ppm)			
			Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
PE04-Pretest-A-*macoma*	10.2%	0.41%	0.118	--	0.0120	--	25.5	--	2.600	--	0.41	--	0.0422	--	1.8	--	0.18	--	22.2	--	2.260	--	1.03	--	0.1050	--	0.05	--	0.005	--	3.58	--	0.365	--	0.30	--	0.0311	--	142	--	14.5	--
PE04-Pretest-B-*macoma*	10.9%	0.59%	0.088	--	0.0096	--	17.5	--	1.910	--	0.38	--	0.0409	--	0.55	--	0.06	--	15.1	--	1.650	--	0.56	--	0.0606	--	0.05	--	0.005	--	2.41	--	0.263	--	0.13	--	0.0139	--	111	--	12.1	--
PE04-Pretest-C-*macoma*	11.1%	0.67%	0.089	--	0.0099	--	21.2	--	2.350	--	0.42	--	0.0465	--	0.45	B	0.05	B	13.7	--	1.520	--	0.64	--	0.0713	--	0.05	--	0.005	--	2.55	--	0.283	--	0.12	--	0.0128	--	135	--	15.0	--
PE04-Pretest-D-*macoma*	11.2%	0.62%	0.088	--	0.0099	--	20.1	--	2.250	--	0.30	--	0.0336	--	0.80	--	0.09	--	13.2	--	1.480	--	0.89	--	0.0995	--	0.05	--	0.006	--	2.62	--	0.293	--	0.17	--	0.0195	--	95.5	--	10.7	--
PE04-Pretest-E-*macoma*	13.0%	0.68%	0.071	--	0.0092	--	17.9	--	2.330	--	0.40	--	0.0523	--	0.54	--	0.07	--	13.2	--	1.710	--	0.77	--	0.1000	--	0.04	--	0.005	--	2.28	--	0.296	--	0.13	--	0.0173	--	97.7	--	12.7	--
PE04-Pretest-*macoma* average	11.3%	0.59%	0.091	--	0.0101	--	20.4	--	2.288	--	0.38	--	0.0431	--	0.82	--	0.09	--	15.5	--	1.724	--	0.78	--	0.0873	--	0.05	--	0.005	--	2.69	--	0.300	--	0.17	--	0.0189	--	116	--	13.0	--
PE04-Pretest-A-*nereis*	15.1%	0.83%	0.012	B	0.0018	B	12.2	--	1.840	--	0.00	--	0.0344	--	2.2	--	0.33	--	11.6	--	1.750	--	1.11	--	0.1670	--	0.12	--	0.018	--	1.46	--	0.221	--	0.18	--	0.0278	--	268	--	40.4	--
PE04-Pretest-B-*nereis*	14.6%	0.86%	0.014	B	0.0020	B	11.0	--	1.610	--	0.24	--	0.0344	--	3.0	--	0.44	--	11.4	--	1.670	--	1.38	--	0.2010	--	0.12	--	0.018	--	1.77	--	0.258	--	0.16	--	0.0239	--	82.2	--	12.0	--
PE04-Pretest-C-*nereis*	15.1%	0.93%	0.011	B	0.0017	B	11.3	--	1.710	--	0.00	--	0.0347	--	2.5	--	0.37	--	10.9	--	1.640	--	0.98	--	0.1480	--	0.13	--	0.019	--	1.48	--	0.224	--	0.17	--	0.0261	--	78.8	--	11.9	--
E-PE04-Pretest-*nereis* average	14.9%	0.87%	0.012	B	0.0050	B	11.5	--	1.720	--	0.08	--	0.0345	--	2.5	--	0.38	--	11.3	--	1.687	--	1.15	--	0.1720	--	0.12	--	0.018	--	1.57	--	0.234	--	0.17	--	0.0259	--	143	--	21.4	--
RS-PE04-A-*macoma*	10.7%	0.51%	0.014	--	0.0015	--	22.1	--	2.370	--	0.00	--	0.0305	--	1.1	--	0.12	--	14.4	--	1.540	--	1.17	--	0.1250	--	0.05	--	0.005	--	3.55	--	0.380	--	0.16	N	0.0172	N	98.1	--	10.5	--
RS-PE04-B-*macoma*	10.9%	0.47%	0.087	--	0.0095	--	20.3	--	2.210	--	0.27	--	0.0293	--	3.0	--	0.33	--	13.1	--	1.430	--	1.03	--	0.1120	--	0.05	--	0.005	--	3.64	--	0.397	--	0.15	N	0.0160	N	108	--	11.8	--
RS-PE04-C-*macoma*	9.8%	0.35%	0.091	--	0.0089	--	21.4	--	2.100	--	0.22	--	0.0220	--	1.6	--	0.16	--	12.6	--	1.230	--	0.87	--	0.0855	--	0.06	--	0.006	--	2.83	--	0.277	--	0.16	N	0.0161	N	90.3	--	8.85	--
RS-PE04-D-*macoma*	11.8%	0.56%	0.100	--	0.0118	--	20.8	--	2.460	--	0.26	--	0.0306	--	1.9	--	0.23	--	23.3	--	2.750	--	1.53	--	0.1810	--	0.05	--	0.006	--	3.39	--	0.400	--	0.21	N	0.0251	N	98.3	--	11.6	--
RS-PE04-E-*macoma*	10.5%	0.45%	0.094	--	0.0099	--	23.9	--	2.510	--	0.26	--	0.0278	--	1.1	--	0.12	--	14.5	--	1.520	--	1.13	--	0.1190	--	0.07	--	0.007	--	3.48	--	0.365	--	0.13	N	0.0140	N	93.6	--	9.83	--
RS-PE04-*macoma* average	10.7%	0.47%	0.077	--	0.0083	--	21.7	--	2.330	--	0.20	--	0.0280	--	1.8	--	0.19	--	15.6	--	1.694	--	1.15	--	0.1245	--	0.05	--	0.006	--	3.38	--	0.364	--	0.16	N	0.0177	N	97.7	--	10.5	--
RS-PE04-A-*nereis*	13.8%	1.2%	0.017	B	0.0023	B	14.6	--	2.020	--	0.25	--	0.0350	--	2.0	--	0.27	--	9.9	--	1.360	--	0.45	--	0.0615	--	0.09	--	0.013	--	1.42	N	0.196	N	0.14	--	0.0197	--	64.3	--	8.880	--
RS-PE04-B-*nereis*	12.7%	1.2%	0.014	B	0.0018	B	14.6	--	1.860	--	0.25	--	0.0323	--	0.63	--	0.08	--	9.0	--	1.140	--	0.39	--	0.0498	--	0.10	--	0.013	--	0.88	N	0.112	N	0.20	--	0.0250	--	65.3	--	8.290	--
RS-PE04-C-*nereis*	12.1%	1.0%	0.012	B	0.0014	B	14.2	--	1.720	--	0.23	--	0.0276	--	0.66	--	0.08	--	9.6	--	1.160	--	0.39	--	0.0466	--	0.09	--	0.011	--	0.83	N	0.100	N	0.20	--	0.0247	--	249	--	30.1	--
RS-PE04-D-*nereis*	13.3%	1.2%	0.018	B	0.0024	B	14.6	--	1.940	--	0.25	--	0.0335	--	1.0	--	0.13	--	10.9	--	1.450	--	0.45	--	0.0594	--	0.08	--	0.011	--	1.09	N	0.145	N	0.17	--	0.0221	--	127	--	16.9	--
RS-PE04-E-*nereis*	13.5%	1.2%	0.016	B	0.0021	B	14.4	--	1.940	--	0.25	--	0.0331	--	0.89	--	0.12	--	9.3	--	1.250	--	0.40	--	0.0539	--	0.07	--	0.010	--	0.91	N	0.123	N	0.13	N	0.0182	N	187	--	25.2	--
RS-PE04-*nereis* average	13.1%	1.2%	0.015	B	0.0020	B	14.5	--	1.896	--	0.25	--	0.0323	--	1.0	--	0.14	--	9.7	--	1.272	--	0.41	--	0.0542	--	0.09	--	0.012	--	1.03	--	0.135	--	0.17	--	0.0219	--	138	--	17.9	--
E-PE04-2,3,4-A-*macoma*	13.0%	0.81%	0.115	--	0.0149	--	18.1	--	2.350	--	0.36	--	0.0463	--	5.3	--	0.69	--	24.1	--	3.130	--	2.53	--	0.3290	--	0.05	--	0.007	--	5.34	--	0.694	--	0.24	N	0.0316	N	142	--	18.5	--
E-PE04-2,3,4-B-*macoma*	11.6%	0.68%	0.106	--	0.0123	--	19.1	--	2.210	--	0.32	--	0.0368	--	2.2	--	0.25	--	20.7	--	2.400	--	2.41	--	0.2800	--	0.04	--	0.005	--	3.26	--	0.378	--	0.30	N	0.0353	N	128	--	14.8	--
E-PE04-2,3,4-C-*macoma*	11.8%	0.87%	0.117	--	0.0138	--	21.2	--	2.500	--	0.29	--	0.0339	--	1.4	--	0.16	--	20.7	--	2.440	--	1.93	--	0.2280	--	0.05	--	0.006	--	2.92	--	0.344	--	0.34	N	0.0404	N	139	--	16.4	--
E-PE04-2,3,4-D-*macoma*	11.0%	0.85%	0.122	--	0.0134	--	20.8	--	2.290	--	0.32	--	0.0352	--	1.5	--	0.17	--	20.4	--	2.240	--	1.82	--	0.2000	--	0.07	--	0.008	--	3.24	--	0.356	--	0.20	N	0.0216	N	165	--	18.1	--
E-PE04-2,3,4-E-*macoma*	12.7%	1.0%	0.111	--	0.0141	--	20.1	--	2.550	--	0.32	--	0.0411	--	2.0	--	0.26	--	25.1	--	3.190	--	2.53	--	0.3210	--	0.06	--	0.007	--	3.31	--	0.420	--	0.36	N	0.0463	N	133	--	16.9	--
E-PE04-2,3,4-*macoma* average	12.0%	0.84%	0.114	--	0.0137	--	19.8	--	2.380	--	0.32	--	0.0387	--	2.5	--	0.31	--	22.2	--	2.680	--	2.24	--	0.2716	--	0.06	--	0.007	--	3.61	--	0.438	--	0.29	N	0.0350	N	141	--	16.9	--
E-PE04-2,3,4-A-*nereis*	13.0%	1.2%	0.011	B	0.0014	B	15.6	--	2.030	--	0.22	--	0.0280	--	1.5	--	0.20	--	17.5	--	2.270	--	0.71	--	0.0929	--	0.09	--	0.012	--	1.42	--	0.184	--	0.10	N	0.0133	N	170	N	22.1	N
E-PE04-2,3,4-B-*nereis*	12.3%	1.1%	0.011	B	0.0014	B	16.7	--	2.060	--	0.22	--	0.0266	--	0.81	--	0.10	--	11.0	--	1.350	--	0.72	--	0.0882	--	0.08	--	0.010	--	0.87	--	0.107	--	0.12	N	0.0147	N	184	N	22.6	N
E-PE04-2,3,4-C-*nereis*	13.7%	1.3%	0.013	B	0.0018	B	16.1	--	2.200	--	0.21	--	0.0281	--	1.5	--	0.20	--	11.6	--	1.590	--	2.26	--	0.3090	--	0.09	--	0.013	--	0.96	--	0.131	--	0.09	N	0.0122	N	69.1	N	9.470	N
E-PE04-2,3,4-D-*nereis*	13.0%	1.1%	0.010	B	0.0013	B	15.8	--	2.060	--	0.21	--	0.0276	--	0.92	--	0.12	--	10.2	--	1.330	--	0.74	--	0.0968	--	0.08	--	0.011	--	0.82	--	0.106	--	0.09	N	0.0123	N	169	N	22.0	N
E-PE04-2,3,4-E-*nereis*	13.8%	1.2%	0.012	B	0.0017	B	17.2	--	2.380	--	0.23	--	0.0315	--	1.1	--	0.15	--	11.2	--	1.550	--	1.65	--	0.2280	--	0.09	--	0.013	--	1.13	--	0.156	--	0.10	N	0.0137	N	244	N	33.7	N
E-PE04-2,3,4-*nereis* average	13.2%	1.2%	0.012	B	0.0015	B	16.3	--	2.146	--	0.22	--	0.0284	--	1.2	--	0.15	--	12.3	--	1.618	--	1.22	--	0.1630	--	0.09	--	0.012	--	1.04	--	0.137	--	0.10	N	0.0132	N	167	N	22.0	N

Notes:

B = The result is an estimated concentration that is less than the laboratory's Method Reporting Limit, but greater than the Method Detection Limit

N = The matrix spike recovery is not within control limits. See laboratory report for case narrative in Appendix G

-- = No qualifier needed

Tissue Pesticide Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Percent Lipids (%)	Aldrin mg/Kg (ppm)				Chlordane mg/Kg (ppm)				4,4 DDT mg/Kg (ppm)				4,4 DDD mg/Kg (ppm)				4,4 DDE mg/Kg (ppm)				Dieldrin mg/Kg (ppm)				Endosulfan I mg/Kg (ppm)				Endosulfan II mg/Kg (ppm)				Endosulfan sulfate mg/Kg (ppm)				Endrin mg/Kg (ppm)			
			Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
PE04-Pretest-A-*macoma*	10.2%	0.41%	0.20	U	0.020	U	0.25	U	0.025	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.25	U	0.025	U	0.25	U	0.025	U	0.25	U	0.025	U	0.20	U	0.020	U
PE04-Pretest-B-*macoma*	10.9%	0.59%	0.18	U	0.020	U	0.23	U	0.025	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.23	U	0.025	U	0.23	U	0.025	U	0.23	U	0.025	U	0.18	U	0.020	U
PE04-Pretest-C-*macoma*	11.1%	0.67%	0.18	U	0.020	U	0.23	U	0.025	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.23	U	0.025	U	0.23	U	0.025	U	0.23	U	0.025	U	0.18	U	0.020	U
PE04-Pretest-D-*macoma*	11.2%	0.62%	0.18	U	0.020	U	0.22	U	0.025	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.22	U	0.025	U	0.22	U	0.025	U	0.22	U	0.025	U	0.18	U	0.020	U
PE04-Pretest-E-*macoma*	13.0%	0.68%	0.15	U	0.020	U	0.19	U	0.025	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.19	U	0.025	U	0.19	U	0.025	U	0.19	U	0.025	U	0.15	U	0.020	U
PE04-Pretest-*macoma* average	11.3%	0.59%	0.18	U	0.020	U	0.22	U	0.025	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.22	U	0.025	U	0.22	U	0.025	U	0.22	U	0.025	U	0.18	U	0.020	U
PE04-Pretest-A-*nereis*	15.1%	0.83%	0.13	U	0.020	U	0.17	U	0.025	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.17	U	0.025	U	0.17	U	0.025	U	0.17	U	0.025	U	0.13	U	0.020	U
PE04-Pretest-B-*nereis*	14.6%	0.86%	0.14	U	0.020	U	0.17	U	0.025	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.17	U	0.025	U	0.17	U	0.025	U	0.17	U	0.025	U	0.14	U	0.020	U
PE04-Pretest-C-*nereis*	15.1%	0.93%	0.13	U	0.020	U	0.17	U	0.025	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.17	U	0.025	U	0.17	U	0.025	U	0.17	U	0.025	U	0.13	U	0.020	U
E-PE04-Pretest-*nereis* average	14.9%	0.87%	0.13	U	0.020	U	0.17	U	0.025	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.17	U	0.025	U	0.17	U	0.025	U	0.17	U	0.025	U	0.13	U	0.020	U
RS-PE04-A-*macoma*	10.7%	0.51%	0.19	U	0.020	U	0.23	U	0.025	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.23	U	0.025	U	0.23	U	0.025	U	0.23	U	0.025	U	0.19	U	0.020	U
RS-PE04-B-*macoma*	10.9%	0.47%	0.18	U	0.020	U	0.23	U	0.025	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.23	U	0.025	U	0.23	U	0.025	U	0.23	U	0.025	U	0.18	U	0.020	U
RS-PE04-C-*macoma*	9.8%	0.35%	0.20	U	0.020	U	0.26	U	0.025	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.26	U	0.025	U	0.26	U	0.025	U	0.26	U	0.025	U	0.20	U	0.020	U
RS-PE04-D-*macoma*	11.8%	0.56%	0.17	U	0.020	U	0.21	U	0.025	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.21	U	0.025	U	0.21	U	0.025	U	0.21	U	0.025	U	0.17	U	0.020	U
RS-PE04-E-*macoma*	10.5%	0.45%	0.19	U	0.020	U	0.24	U	0.025	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.24	U	0.025	U	0.24	U	0.025	U	0.24	U	0.025	U	0.19	U	0.020	U
RS-PE04-*macoma* average	10.7%	0.47%	0.19	U	0.020	U	0.23	U	0.025	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.23	U	0.025	U	0.23	U	0.025	U	0.23	U	0.025	U	0.19	U	0.020	U
RS-PE04-A-*nereis*	13.8%	1.2%	0.14	U	0.020	U	0.18	U	0.025	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.18	U	0.025	U	0.18	U	0.025	U	0.18	U	0.025	U	0.14	U	0.020	U
RS-PE04-B-*nereis*	12.7%	1.2%	0.16	U	0.020	U	0.20	U	0.025	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.20	U	0.025	U	0.20	U	0.025	U	0.20	U	0.025	U	0.16	U	0.020	U
RS-PE04-C-*nereis*	12.1%	1.0%	0.17	U	0.020	U	0.21	U	0.025	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.21	U	0.025	U	0.21	U	0.025	U	0.21	U	0.025	U	0.17	U	0.020	U
RS-PE04-D-*nereis*	13.3%	1.2%	0.15	U	0.020	U	0.19	U	0.025	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.19	U	0.025	U	0.19	U	0.025	U	0.19	U	0.025	U	0.15	U	0.020	U
RS-PE04-E-*nereis*	13.5%	1.2%	0.15	U	0.020	U	0.19	U	0.025	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.19	U	0.025	U	0.19	U	0.025	U	0.19	U	0.025	U	0.15	U	0.020	U
RS-PE04-*nereis* average	13.1%	1.2%	0.15	U	0.020	U	0.19	U	0.025	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.19	U	0.025	U	0.19	U	0.025	U	0.19	U	0.025	U	0.15	U	0.020	U
E-PE04-2,3,4-A-*macoma*	13.0%	0.81%	0.15	U	0.020	U	0.19	U	0.025	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.19	U	0.025	U	0.19	U	0.025	U	0.19	U	0.025	U	0.15	U	0.020	U
E-PE04-2,3,4-B-*macoma*	11.6%	0.68%	0.17	U	0.020	U	0.22	U	0.025	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.22	U	0.025	U	0.22	U	0.025	U	0.22	U	0.025	U	0.17	U	0.020	U
E-PE04-2,3,4-C-*macoma*	11.8%	0.87%	0.17	U	0.020	U	0.21	U	0.025	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.21	U	0.025	U	0.21	U	0.025	U	0.21	U	0.025	U	0.17	U	0.020	U
E-PE04-2,3,4-D-*macoma*	11.0%	0.85%	0.18	U	0.020	U	0.23	U	0.025	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.23	U	0.025	U	0.23	U	0.025	U	0.23	U	0.025	U	0.18	U	0.020	U
E-PE04-2,3,4-E-*macoma*	12.7%	1.0%	0.16	U	0.020	U	0.20	U	0.025	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.20	U	0.025	U	0.20	U	0.025	U	0.20	U	0.025	U	0.16	U	0.020	U
E-PE04-2,3,4-*macoma* average	12.0%	0.84%	0.17	U	0.020	U	0.21	U	0.025	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.21	U	0.025	U	0.21	U	0.025	U	0.21	U	0.025	U	0.17	U	0.020	U
E-PE04-2,3,4-A-*nereis*	13.0%	1.2%	0.15	U	0.020	U	0.19	U	0.025	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.19	U	0.025	U	0.19	U	0.025	U	0.19	U	0.025	U	0.15	U	0.020	U
E-PE04-2,3,4-B-*nereis*	12.3%	1.1%	0.16	U	0.020	U	0.20	U	0.025	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.20	U	0.025	U	0.20	U	0.025	U	0.20	U	0.025	U	0.16	U	0.020	U
E-PE04-2,3,4-C-*nereis*	13.7%	1.3%	0.15	U	0.020	U	0.18	U	0.025	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.18	U	0.025	U	0.18	U	0.025	U	0.18	U	0.025	U	0.15	U	0.020	U
E-PE04-2,3,4-D-*nereis*	13.0%	1.1%	0.15	U	0.020	U	0.19	U	0.025	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.19	U	0.025	U	0.19	U	0.025	U	0.19	U	0.025	U	0.15	U	0.020	U
E-PE04-2,3,4-E-*nereis*	13.8%	1.2%	0.14	U	0.020	U	0.18	U	0.025	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.18	U	0.025	U	0.18	U	0.025	U	0.18	U	0.025	U	0.14	U	0.020	U
E-PE04-2,3,4-*nereis* average	13.2%	1.2%	0.15	U	0.020	U	0.19	U	0.025	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.19	U	0.025	U	0.19	U	0.025	U	0.19	U	0.025	U	0.15	U	0.020	U

Sample ID	Percent Solids (%)	Percent Lipids (%)	Endrin Aldehyde mg/Kg (ppm)				Heptachlor mg/Kg (ppm)				Heptachlor Epoxide mg/Kg (ppm)				Alpha-BHC mg/Kg (ppm)				Beta-BHC mg/Kg (ppm)				Gamma-BHC (Lindane) mg/Kg (ppm)				Delta-BHC mg/Kg (ppm)				Methoxychlor mg/Kg (ppm)				Toxaphene mg/Kg (ppm)			
			Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
PE04-Pretest-A-*macoma*	10.2%	0.41%	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.49	U	0.050	U
PE04-Pretest-B-*macoma*	10.9%	0.59%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.46	U	0.050	U
PE04-Pretest-C-*macoma*	11.1%	0.67%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.45	U	0.050	U
PE04-Pretest-D-*macoma*	11.2%	0.62%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.45	U	0.050	U
PE04-Pretest-E-*macoma*	13.0%	0.68%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.38	U	0.050	U
PE04-Pretest-*macoma* average	11.3%	0.59%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.45	U	0.050	U
PE04-Pretest-A-*nereis*	15.1%	0.83%	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.33	U	0.050	U
PE04-Pretest-B-*nereis*	14.6%	0.86%	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.34	U	0.050	U
PE04-Pretest-C-*nereis*	15.1%	0.93%	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.33	U	0.050	U
E-PE04-Pretest-*nereis* average	14.9%	0.87%	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.33	U	0.050	U
RS-PE04-A-*macoma*	10.7%	0.51%	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.47	U	0.050	U
RS-PE04-B-*macoma*	10.9%	0.47%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.46	U	0.050	U
RS-PE04-C-*macoma*	9.8%	0.35%	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.51	U	0.050	U
RS-PE04-D-*macoma*	11.8%	0.56%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.42	U	0.050	U
RS-PE04-E-*macoma*	10.5%	0.45%	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.48	U	0.050	U
RS-PE04-*macoma* average	10.7%	0.47%	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.47	U	0.050	U
RS-PE04-A-*nereis*	13.8%	1.2%	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.36	U	0.050	U
RS-PE04-B-*nereis*	12.7%	1.2%	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.39	U	0.050	U
RS-PE04-C-*nereis*	12.1%	1.0%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.41	U	0.050	U
RS-PE04-D-*nereis*	13.3%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.38	U	0.050	U
RS-PE04-E-*nereis*	13.5%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.37	U	0.050	U
RS-PE04-*nereis* average	13.1%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.38	U	0.050	U
E-PE04-2,3,4-A-*macoma*	13.0%	0.81%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.38	U	0.050	U
E-PE04-2,3,4-B-*macoma*	11.6%	0.68%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.43	U	0.050	U
E-PE04-2,3,4-C-*macoma*	11.8%	0.87%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.42	U	0.050	U
E-PE04-2,3,4-D-*macoma*	11.0%	0.85%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.45	U	0.050	U
E-PE04-2,3,4-E-*macoma*	12.7%	1.0%	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.39	U	0.050	U
E-PE04-2,3,4-*macoma* average	12.0%	0.84%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.42	U	0.050	U
E-PE04-2,3,4-A-*nereis*	13.0%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.38	U	0.050	U
E-PE04-2,3,4-B-*nereis*	12.3%	1.1%	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.41	U	0.050	U
E-PE04-2,3,4-C-*nereis*	13.7%	1.3%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.36	U	0.050	U
E-PE04-2,3,4-D-*nereis*	13.0%	1.1%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.38	U	0.050	U
E-PE04-2,3,4-E-*nereis*	13.8%	1.2%	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.36	U	0.050	U
E-PE04-2,3,4-*nereis* average	13.2%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.38	U	0.050	U

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

Tissue PCB Aroclor Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Percent Lipids (%)	Aroclor 1016 mg/Kg (ppm)				Aroclor 1221 mg/Kg (ppm)				Aroclor 1232 mg/Kg (ppm)				Aroclor 1242 mg/Kg (ppm)				Aroclor 1248 mg/Kg (ppm)				Aroclor 1254 mg/Kg (ppm)				**Aroclor 1260** mg/Kg (ppm)			
			Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes
PE04-Pretest-A-*macoma*	10.2%	0.41%	0.098	U	0.010	U	0.098	U	0.010	U	0.098	U	0.010	U	0.098	U	0.010	U	0.098	U	0.010	U	0.098	U	0.010	U	0.098	U	0.010	U
PE04-Pretest-B-*macoma*	10.9%	0.59%	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U
PE04-Pretest-C-*macoma*	11.1%	0.67%	0.090	U	0.010	U	0.090	U	0.010	U	0.090	U	0.010	U	0.090	U	0.010	U	0.090	U	0.010	U	0.090	U	0.010	U	0.090	U	0.010	U
PE04-Pretest-D-*macoma*	11.2%	0.62%	0.088	U	0.010	U	0.088	U	0.010	U	0.088	U	0.010	U	0.088	U	0.010	U	0.088	U	0.010	U	0.088	U	0.010	U	0.088	U	0.010	U
PE04-Pretest-E-*macoma*	13.0%	0.68%	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U
PE04-Pretest-*macoma* average	11.3%	0.59%	0.089	U	0.010	U	0.089	U	0.010	U	0.089	U	0.010	U	0.089	U	0.010	U	0.089	U	0.010	U	0.089	U	0.010	U	0.089	U	0.010	U
PE04-Pretest-A-*nereis*	15.1%	0.83%	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U
PE04-Pretest-B-*nereis*	14.6%	0.86%	0.068	U	0.010	U	0.068	U	0.010	U	0.068	U	0.010	U	0.068	U	0.010	U	0.068	U	0.010	U	0.068	U	0.010	U	0.075	U	**0.011**	P
PE04-Pretest-C-*nereis*	15.1%	0.93%	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U	0.079	U	**0.012**	P
E-PE04-Pretest-*nereis* average	14.9%	0.87%	0.067	U	0.010	U	0.067	U	0.010	U	0.067	U	0.010	U	0.067	U	0.010	U	0.067	U	0.010	U	0.067	U	0.010	U	0.074	U	**0.011**	P
RS-PE04-A-*macoma*	10.7%	0.51%	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U
RS-PE04-B-*macoma*	10.9%	0.47%	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U
RS-PE04-C-*macoma*	9.8%	0.35%	0.102	U	0.010	U	0.102	U	0.010	U	0.102	U	0.010	U	0.102	U	0.010	U	0.102	U	0.010	U	0.102	U	0.010	U	0.102	U	0.010	U
RS-PE04-D-*macoma*	11.8%	0.56%	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U
RS-PE04-E-*macoma*	10.5%	0.45%	0.095	U	0.010	U	0.095	U	0.010	U	0.095	U	0.010	U	0.095	U	0.010	U	0.095	U	0.010	U	0.095	U	0.010	U	0.095	U	0.010	U
RS-PE04-*macoma* average	10.7%	0.47%	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U	0.093	U	0.010	U
RS-PE04-A-*nereis*	13.8%	1.2%	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U
RS-PE04-B-*nereis*	12.7%	1.2%	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U
RS-PE04-C-*nereis*	12.1%	1.0%	0.083	U	0.010	U	0.083	U	0.010	U	0.083	U	0.010	U	0.083	U	0.010	U	0.083	U	0.010	U	0.083	U	0.010	U	0.083	U	0.010	U
RS-PE04-D-*nereis*	13.3%	1.2%	0.075	U	0.010	U	0.075	U	0.010	U	0.075	U	0.010	U	0.075	U	0.010	U	0.075	U	0.010	U	0.075	U	0.010	U	0.075	U	0.010	U
RS-PE04-E-*nereis*	13.5%	1.2%	0.074	U	0.010	U	0.074	U	0.010	U	0.074	U	0.010	U	0.074	U	0.010	U	0.074	U	0.010	U	0.074	U	0.010	U	0.074	U	0.010	U
RS-PE04-*nereis* average	13.1%	1.2%	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U
E-PE04-2,3,4-A-*macoma*	13.0%	0.81%	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U
E-PE04-2,3,4-B-*macoma*	11.6%	0.68%	0.086	U	0.010	U	0.086	U	0.010	U	0.086	U	0.010	U	0.086	U	0.010	U	0.086	U	0.010	U	0.086	U	0.010	U	0.086	U	0.010	U
E-PE04-2,3,4-C-*macoma*	11.8%	0.87%	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U	0.085	U	0.010	U
E-PE04-2,3,4-D-*macoma*	11.0%	0.85%	0.091	U	0.010	U	0.091	U	0.010	U	0.091	U	0.010	U	0.091	U	0.010	U	0.091	U	0.010	U	0.091	U	0.010	U	0.091	U	0.010	U
E-PE04-2,3,4-E-*macoma*	12.7%	1.0%	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U	0.079	U	0.010	U
E-PE04-2,3,4-*macoma* average	12.0%	0.84%	0.084	U	0.010	U	0.084	U	0.010	U	0.084	U	0.010	U	0.084	U	0.010	U	0.084	U	0.010	U	0.084	U	0.010	U	0.084	U	0.010	U
E-PE04-2,3,4-A-*nereis*	13.0%	1.2%	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U
E-PE04-2,3,4-B-*nereis*	12.3%	1.1%	0.081	U	0.010	U	0.081	U	0.010	U	0.081	U	0.010	U	0.081	U	0.010	U	0.081	U	0.010	U	0.081	U	0.010	U	0.081	U	0.010	U
E-PE04-2,3,4-C-*nereis*	13.7%	1.3%	0.073	U	0.010	U	0.073	U	0.010	U	0.073	U	0.010	U	0.073	U	0.010	U	0.073	U	0.010	U	0.073	U	0.010	U	0.073	U	0.010	U
E-PE04-2,3,4-D-*nereis*	13.0%	1.1%	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U
E-PE04-2,3,4-E-*nereis*	13.8%	1.2%	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U
E-PE04-2,3,4-*nereis* average	13.2%	1.2%	0.076	U	0.010	U	0.076	U	0.010	U	0.076	U	0.010	U	0.076	U	0.010	U	0.076	U	0.010	U	0.076	U	0.010	U	0.076	U	0.010	U

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

P = The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results

-- = No qualifier needed

Tissue PCB Congener Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Percent Lipids (%)	PCB 08 mg/Kg (ppm)				PCB 18 mg/Kg (ppm)				PCB 28 mg/Kg (ppm)				PCB 44 mg/Kg (ppm)				PCB 52 mg/Kg (ppm)				PCB 66 mg/Kg (ppm)				PCB 77 mg/Kg (ppm)				PCB 87 mg/Kg (ppm)				PCB 49 mg/Kg (ppm)				PCB 101 mg/Kg (ppm)				PCB 105 mg/Kg (ppm)				PCB 118 mg/Kg (ppm)				PCB 126 mg/Kg (ppm)			
			Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes
PE04-Pretest-A-*macoma*	10.2%	0.41%	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U
PE04-Pretest-B-*macoma*	10.9%	0.59%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
PE04-Pretest-C-*macoma*	11.1%	0.67%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
PE04-Pretest-D-*macoma*	11.2%	0.62%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
PE04-Pretest-E-*macoma*	13.0%	0.68%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
PE04-Pretest-*macoma* average	11.3%	0.59%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
PE04-Pretest-A-*nereis*	15.1%	0.83%	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U
PE04-Pretest-B-*nereis*	14.6%	0.86%	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U
PE04-Pretest-C-*nereis*	15.1%	0.93%	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U
E-PE04-Pretest-*nereis* average	14.9%	0.87%	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U
RS-PE04-A-*macoma*	10.7%	0.51%	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U
RS-PE04-B-*macoma*	10.9%	0.47%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
RS-PE04-C-*macoma*	9.8%	0.35%	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U
RS-PE04-D-*macoma*	11.8%	0.56%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
RS-PE04-E-*macoma*	10.5%	0.45%	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U
RS-PE04-*macoma* average	10.7%	0.47%	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U
RS-PE04-A-*nereis*	13.8%	1.2%	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U
RS-PE04-B-*nereis*	12.7%	1.2%	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U
RS-PE04-C-*nereis*	12.1%	1.0%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
RS-PE04-D-*nereis*	13.3%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
RS-PE04-E-*nereis*	13.5%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
RS-PE04-*nereis* average	13.1%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-A-*macoma*	13.0%	0.81%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-B-*macoma*	11.6%	0.68%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
E-PE04-2,3,4-C-*macoma*	11.8%	0.87%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
E-PE04-2,3,4-D-*macoma*	11.0%	0.85%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
E-PE04-2,3,4-E-*macoma*	12.7%	1.0%	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U
E-PE04-2,3,4-*macoma* average	12.0%	0.84%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
E-PE04-2,3,4-A-*nereis*	13.0%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-B-*nereis*	12.3%	1.1%	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U
E-PE04-2,3,4-C-*nereis*	13.7%	1.3%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-D-*nereis*	13.0%	1.1%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-E-*nereis*	13.8%	1.2%	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U
E-PE04-2,3,4-*nereis* average	13.2%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U

Sample ID	Percent Solids (%)	Percent Lipids (%)	PCB 128 mg/Kg (ppm)				PCB 138 mg/Kg (ppm)				PCB 153 mg/Kg (ppm)				PCB 156 mg/Kg (ppm)				PCB 169 mg/Kg (ppm)				PCB 170 mg/Kg (ppm)				PCB 180 mg/Kg (ppm)				PCB 183 mg/Kg (ppm)				PCB 184 mg/Kg (ppm)				PCB 187 mg/Kg (ppm)				PCB 195 mg/Kg (ppm)				PCB 206 mg/Kg (ppm)				PCB 209 mg/Kg (ppm)			
			Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes
PE04-Pretest-A-*macoma*	10.2%	0.41%	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U
PE04-Pretest-B-*macoma*	10.9%	0.59%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
PE04-Pretest-C-*macoma*	11.1%	0.67%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
PE04-Pretest-D-*macoma*	11.2%	0.62%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
PE04-Pretest-E-*macoma*	13.0%	0.68%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
PE04-Pretest-*macoma* average	11.3%	0.59%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
PE04-Pretest-A-*nereis*	15.1%	0.83%	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U
PE04-Pretest-B-*nereis*	14.6%	0.86%	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U
PE04-Pretest-C-*nereis*	15.1%	0.93%	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U
E-PE04-Pretest-*nereis* average	14.9%	0.87%	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U	0.013	U	0.002	U
RS-PE04-A-*macoma*	10.7%	0.51%	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U
RS-PE04-B-*macoma*	10.9%	0.47%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
RS-PE04-C-*macoma*	9.8%	0.35%	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U	0.020	U	0.002	U
RS-PE04-D-*macoma*	11.8%	0.56%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
RS-PE04-E-*macoma*	10.5%	0.45%	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U
RS-PE04-*macoma* average	10.7%	0.47%	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U	0.019	U	0.002	U
RS-PE04-A-*nereis*	13.8%	1.2%	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U
RS-PE04-B-*nereis*	12.7%	1.2%	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U
RS-PE04-C-*nereis*	12.1%	1.0%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
RS-PE04-D-*nereis*	13.3%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
RS-PE04-E-*nereis*	13.5%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
RS-PE04-*nereis* average	13.1%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-A-*macoma*	13.0%	0.81%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-B-*macoma*	11.6%	0.68%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
E-PE04-2,3,4-C-*macoma*	11.8%	0.87%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
E-PE04-2,3,4-D-*macoma*	11.0%	0.85%	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U	0.018	U	0.002	U
E-PE04-2,3,4-E-*macoma*	12.7%	1.0%	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U
E-PE04-2,3,4-*macoma* average	12.0%	0.84%	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U	0.017	U	0.002	U
E-PE04-2,3,4-A-*nereis*	13.0%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-B-*nereis*	12.3%	1.1%	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U	0.016	U	0.002	U
E-PE04-2,3,4-C-*nereis*	13.7%	1.3%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-D-*nereis*	13.0%	1.1%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U
E-PE04-2,3,4-E-*nereis*	13.8%	1.2%	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U	0.014	U	0.002	U
E-PE04-2,3,4-*nereis* average	13.2%	1.2%	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U	0.015	U	0.002	U

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

Tissue PAH Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Percent Lipids (%)	Acenaphthene mg/Kg (ppm)				Acenaphthylene mg/Kg (ppm)				Anthracene mg/Kg (ppm)				Benzo (a) anthracene mg/Kg (ppm)				Benzo (a) pyrene mg/Kg (ppm)				Benzo (g,h,i) perylene mg/Kg (ppm)				Benzo (k) fluoranthene mg/Kg (ppm)				Benzo (b) fluoranthene mg/Kg (ppm)				Chrysene mg/Kg (ppm)			
			Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
PE04-Pretest-A-*macoma*	10.2%	0.41%	0.196	U	0.020	U	0.196	U	0.020	U	0.196	U	0.020	U	0.196	U	0.020	U	0.196	U	0.020	U	0.196	U	0.020	U	0.196	U	0.020	U	0.196	U	0.020	U	0.196	U	0.020	U
PE04-Pretest-B-*macoma*	10.9%	0.59%	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U
PE04-Pretest-C-*macoma*	11.1%	0.67%	0.180	U	0.020	U	0.180	U	0.020	U	0.180	U	0.020	U	0.180	U	0.020	U	0.180	U	0.020	U	0.180	U	0.020	U	0.180	U	0.020	U	0.180	U	0.020	U	0.180	U	0.020	U
PE04-Pretest-D-*macoma*	11.2%	0.62%	0.179	U	0.020	U	0.179	U	0.020	U	0.179	U	0.020	U	0.179	U	0.020	U	0.179	U	0.020	U	0.179	U	0.020	U	0.179	U	0.020	U	0.179	U	0.020	U	0.179	U	0.020	U
PE04-Pretest-E-*macoma*	13.0%	0.68%	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U
PE04-Pretest-*macoma* average	11.3%	0.59%	0.178	U	0.020	U	0.178	U	0.020	U	0.178	U	0.020	U	0.178	U	0.020	U	0.178	U	0.020	U	0.178	U	0.020	U	0.178	U	0.020	U	0.178	U	0.020	U	0.178	U	0.020	U
PE04-Pretest-A-*nereis*	15.1%	0.83%	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U
PE04-Pretest-B-*nereis*	14.6%	0.86%	0.137	U	0.020	U	0.137	U	0.020	U	0.137	U	0.020	U	0.137	U	0.020	U	0.137	U	0.020	U	0.137	U	0.020	U	0.137	U	0.020	U	0.137	U	0.020	U	0.137	U	0.020	U
PE04-Pretest-C-*nereis*	15.1%	0.93%	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U	0.132	U	0.020	U
E-PE04-Pretest-*nereis* average	14.9%	0.87%	0.134	U	0.020	U	0.134	U	0.020	U	0.134	U	0.020	U	0.134	U	0.020	U	0.134	U	0.020	U	0.134	U	0.020	U	0.134	U	0.020	U	0.134	U	0.020	U	0.134	U	0.020	U
RS-PE04-A-*macoma*	10.7%	0.51%	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U
RS-PE04-B-*macoma*	10.9%	0.47%	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U	0.183	U	0.020	U
RS-PE04-C-*macoma*	9.8%	0.35%	0.204	U	0.020	U	0.204	U	0.020	U	0.204	U	0.020	U	0.204	U	0.020	U	0.204	U	0.020	U	0.204	U	0.020	U	0.204	U	0.020	U	0.204	U	0.020	U	0.204	U	0.020	U
RS-PE04-D-*macoma*	11.8%	0.56%	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U
RS-PE04-E-*macoma*	10.5%	0.45%	0.190	U	0.020	U	0.190	U	0.020	U	0.190	U	0.020	U	0.190	U	0.020	U	0.190	U	0.020	U	0.190	U	0.020	U	0.190	U	0.020	U	0.190	U	0.020	U	0.190	U	0.020	U
RS-PE04-*macoma* average	10.7%	0.47%	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U	0.187	U	0.020	U
RS-PE04-A-*nereis*	13.8%	1.2%	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U
RS-PE04-B-*nereis*	12.7%	1.2%	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U
RS-PE04-C-*nereis*	12.1%	1.0%	0.165	U	0.020	U	0.165	U	0.020	U	0.165	U	0.020	U	0.165	U	0.020	U	0.165	U	0.020	U	0.165	U	0.020	U	0.165	U	0.020	U	0.165	U	0.020	U	0.165	U	0.020	U
RS-PE04-D-*nereis*	13.3%	1.2%	0.150	U	0.020	U	0.150	U	0.020	U	0.150	U	0.020	U	0.150	U	0.020	U	0.150	U	0.020	U	0.150	U	0.020	U	0.150	U	0.020	U	0.150	U	0.020	U	0.150	U	0.020	U
RS-PE04-E-*nereis*	13.5%	1.2%	0.148	U	0.020	U	0.148	U	0.020	U	0.148	U	0.020	U	0.148	U	0.020	U	0.148	U	0.020	U	0.148	U	0.020	U	0.148	U	0.020	U	0.148	U	0.020	U	0.148	U	0.020	U
RS-PE04-*nereis* average	13.1%	1.2%	0.153	U	0.020	U	0.153	U	0.020	U	0.153	U	0.020	U	0.153	U	0.020	U	0.153	U	0.020	U	0.153	U	0.020	U	0.153	U	0.020	U	0.153	U	0.020	U	0.153	U	0.020	U
E-PE04-2,3,4-A-*macoma*	13.0%	0.81%	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U
E-PE04-2,3,4-B-*macoma*	11.6%	0.68%	0.172	U	0.020	U	0.172	U	0.020	U	0.172	U	0.020	U	0.172	U	0.020	U	0.172	U	0.020	U	0.172	U	0.020	U	0.172	U	0.020	U	0.172	U	0.020	U	0.172	U	0.020	U
E-PE04-2,3,4-C-*macoma0*	11.8%	0.87%	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U	0.169	U	0.020	U
E-PE04-2,3,4-D-*macoma*	11.0%	0.85%	0.182	U	0.020	U	0.182	U	0.020	U	0.182	U	0.020	U	0.182	U	0.020	U	0.182	U	0.020	U	0.182	U	0.020	U	0.182	U	0.020	U	0.182	U	0.020	U	0.182	U	0.020	U
E-PE04-2,3,4-E-*macoma*	12.7%	1.0%	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U	0.157	U	0.020	U
E-PE04-2,3,4-*macoma* average	12.0%	0.84%	0.167	U	0.020	U	0.167	U	0.020	U	0.167	U	0.020	U	0.167	U	0.020	U	0.167	U	0.020	U	0.167	U	0.020	U	0.167	U	0.020	U	0.167	U	0.020	U	0.167	U	0.020	U
E-PE04-2,3,4-A-*nereis*	13.0%	1.2%	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U
E-PE04-2,3,4-B-*nereis*	12.3%	1.1%	0.163	U	0.020	U	0.163	U	0.020	U	0.163	U	0.020	U	0.163	U	0.020	U	0.163	U	0.020	U	0.163	U	0.020	U	0.163	U	0.020	U	0.163	U	0.020	U	0.163	U	0.020	U
E-PE04-2,3,4-C-*nereis*	13.7%	1.3%	0.146	U	0.020	U	0.146	U	0.020	U	0.146	U	0.020	U	0.146	U	0.020	U	0.146	U	0.020	U	0.146	U	0.020	U	0.146	U	0.020	U	0.146	U	0.020	U	0.146	U	0.020	U
E-PE04-2,3,4-D-*nereis*	13.0%	1.1%	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U	0.154	U	0.020	U
E-PE04-2,3,4-E-*nereis*	13.8%	1.2%	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U	0.145	U	0.020	U
E-PE04-2,3,4-*nereis* average	13.2%	1.2%	0.152	U	0.020	U	0.152	U	0.020	U	0.152	U	0.020	U	0.152	U	0.020	U	0.152	U	0.020	U	0.152	U	0.020	U	0.152	U	0.020	U	0.152	U	0.020	U	0.152	U	0.020	U

Sample ID	Percent Solids (%)	Percent Lipids (%)	Dibenzo (a,h) anthracene mg/Kg (ppm)				**Fluoranthene** mg/Kg (ppm)				Fluorene mg/Kg (ppm)				Indeno (1,2,3-cd) pyrene mg/Kg (ppm)				1-Methylnaphthalene mg/Kg (ppm)				2-Methylnaphthalene mg/Kg (ppm)				Naphthalene mg/Kg (ppm)				Phenanthrene mg/Kg (ppm)				**Pyrene** mg/Kg (ppm)			
			Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes	Reported Value (Dry)	Result Notes	Reported Value (Wet)	Result Notes
PE04-Pretest-A-*macoma*	10.2%	0.41%	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U
PE04-Pretest-B-*macoma*	10.9%	0.59%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U
PE04-Pretest-C-*macoma*	11.1%	0.67%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U
PE04-Pretest-D-*macoma*	11.2%	0.62%	0.18	U	0.020	U	**0.21**	--	**0.023**	--	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	**0.27**	--	**0.030**	--
PE04-Pretest-E-*macoma*	13.0%	0.68%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U
PE04-Pretest-*macoma* average	11.3%	0.59%	0.18	U	0.020	U	0.18	U	0.021	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	**0.20**	--	**0.022**	--
PE04-Pretest-A-*nereis*	15.1%	0.83%	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U
PE04-Pretest-B-*nereis*	14.6%	0.86%	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U
PE04-Pretest-C-*nereis*	15.1%	0.93%	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U
E-PE04-Pretest-*nereis* average	14.9%	0.87%	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U	0.13	U	0.020	U
RS-PE04-A-*macoma*	10.7%	0.51%	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U
RS-PE04-B-*macoma*	10.9%	0.47%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U
RS-PE04-C-*macoma*	9.8%	0.35%	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U	0.20	U	0.020	U
RS-PE04-D-*macoma*	11.8%	0.56%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U
RS-PE04-E-*macoma*	10.5%	0.45%	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U
RS-PE04-*macoma* average	10.7%	0.47%	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U	0.19	U	0.020	U
RS-PE04-A-*nereis*	13.8%	1.2%	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U
RS-PE04-B-*nereis*	12.7%	1.2%	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U
RS-PE04-C-*nereis*	12.1%	1.0%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U
RS-PE04-D-*nereis*	13.3%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U
RS-PE04-E-*nereis*	13.5%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U
RS-PE04-*nereis* average	13.1%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U
E-PE04-2,3,4-A-*macoma*	13.0%	0.81%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U
E-PE04-2,3,4-B-*macoma*	11.6%	0.68%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U
E-PE04-2,3,4-C-*macoma*	11.8%	0.87%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U
E-PE04-2,3,4-D-*macoma*	11.0%	0.85%	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U	0.18	U	0.020	U
E-PE04-2,3,4-E-*macoma*	12.7%	1.0%	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U
E-PE04-2,3,4-*macoma* average	12.0%	0.84%	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U	0.17	U	0.020	U
E-PE04-2,3,4-A-*nereis*	13.0%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U
E-PE04-2,3,4-B-*nereis*	12.3%	1.1%	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U	0.16	U	0.020	U
E-PE04-2,3,4-C-*nereis*	13.7%	1.3%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U
E-PE04-2,3,4-D-*nereis*	13.0%	1.1%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U
E-PE04-2,3,4-E-*nereis*	13.8%	1.2%	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U	0.14	U	0.020	U
E-PE04-2,3,4-*nereis* average	13.2%	1.2%	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U	0.15	U	0.020	U

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

-- = No qualifier needed

Table 23

Tissue Organotin Concentrations for Port Everglades (Florida) Samples Collected May 2004

Sample ID	Percent Solids (%)	Percent Lipids (%)	n-Butyltin mg/Kg (ppm)				**Di-n-butyltin** mg/Kg (ppm)				**Tri-n-butyltin** mg/Kg (ppm)			
			Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes	Reported Value **(Dry)**	Result Notes	Reported Value **(Wet)**	Result Notes
PE04-Pretest-A-*macoma*	10.2%	0.41%	0.098	U	0.010	U	0.098	U	0.010	U	0.098	U	0.010	U
PE04-Pretest-B-*macoma*	10.9%	0.59%	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U
PE04-Pretest-C-*macoma*	11.1%	0.67%	0.090	U	0.010	U	0.090	U	0.010	U	0.090	U	0.010	U
PE04-Pretest-D-*macoma*	11.2%	0.62%	0.089	U	0.010	U	**0.19**	--	**0.021**	--	0.089	U	0.010	U
PE04-Pretest-E-*macoma*	13.0%	0.68%	0.077	U	0.010	U	0.077	U	0.010	U	0.077	U	0.010	U
PE04-Pretest-*macoma* average	11.3%	0.59%	0.089	U	0.010	U	**0.11**	--	**0.012**	--	0.089	U	0.010	U
PE04-Pretest-A-*nereis*	15.1%	0.83%	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U
PE04-Pretest-B-*nereis*	14.6%	0.86%	0.068	U	0.010	U	0.068	U	0.010	U	0.068	U	0.010	U
PE04-Pretest-C-*nereis*	15.1%	0.93%	0.066	U	0.010	U	0.066	U	0.010	U	0.066	U	0.010	U
E-PE04-Pretest-*nereis* average	14.9%	0.87%	0.067	U	0.010	U	0.067	U	0.010	U	0.067	U	0.010	U
RS-PE04-A-*macoma*	10.7%	0.51%	0.093	U	0.010	U	**0.15**	--	**0.016**	--	0.093	U	0.010	U
RS-PE04-B-*macoma*	10.9%	0.47%	0.092	U	0.010	U	0.092	U	0.010	U	0.092	U	0.010	U
RS-PE04-C-*macoma*	9.8%	0.35%	0.102	U	0.010	U	**0.17**	--	**0.017**	--	0.102	U	0.010	U
RS-PE04-D-*macoma*	11.8%	0.56%	0.085	U	0.010	U	**0.12**	--	**0.014**	--	0.085	U	0.010	U
RS-PE04-E-*macoma*	10.5%	0.45%	0.095	U	0.010	U	**0.30**	--	**0.031**	--	0.095	U	0.010	U
RS-PE04-*macoma* average	10.7%	0.47%	0.093	U	0.010	U	**0.17**	--	**0.018**	--	0.093	U	0.010	U
RS-PE04-A-*nereis*	13.8%	1.2%	0.072	U	0.010	U	0.072	U	0.010	U	0.072	U	0.010	U
RS-PE04-B-*nereis*	12.7%	1.2%	0.079	U	0.010	U	**0.19**	--	**0.024**	--	0.079	U	0.010	U
RS-PE04-C-*nereis*	12.1%	1.0%	0.083	U	0.010	U	0.083	U	0.010	U	0.083	U	0.010	U
RS-PE04-D-*nereis*	13.3%	1.2%	0.075	U	0.010	U	**0.12**	--	**0.016**	--	0.075	U	0.010	U
RS-PE04-E-*nereis*	13.5%	1.2%	0.074	U	0.010	U	0.074	U	0.010	U	0.074	U	0.010	U
RS-PE04-*nereis* average	13.1%	1.2%	0.077	U	0.010	U	**0.11**	--	**0.014**	--	0.077	U	0.010	U
E-PE04-2,3,4-A-*macoma*	13.0%	0.81%	0.077	U	0.010	U	**0.15**	--	**0.019**	--	**0.50**	D	**0.065**	D
E-PE04-2,3,4-B-*macoma*	11.6%	0.68%	0.086	U	0.010	U	**0.22**	--	**0.026**	--	**0.64**	D	**0.074**	D
E-PE04-2,3,4-C-*macoma*	11.8%	0.87%	0.085	U	0.010	U	**0.14**	--	**0.017**	--	**0.47**	D	**0.056**	D
E-PE04-2,3,4-D-*macoma*	11.0%	0.85%	0.091	U	0.010	U	**0.16**	--	**0.018**	--	**0.52**	D	**0.057**	D
E-PE04-2,3,4-E-*macoma*	12.7%	1.0%	0.079	U	0.010	U	**0.15**	--	**0.019**	--	**0.55**	D	**0.070**	D
E-PE04-2,3,4-*macoma* average	12.0%	0.84%	0.084	U	0.010	U	**0.17**	--	**0.020**	--	**0.54**	D	**0.064**	D
E-PE04-2,3,4-A-*nereis*	13.0%	1.2%	0.077	U	0.010	U	**0.22**	--	**0.028**	--	**0.092**	--	**0.012**	--
E-PE04-2,3,4-B-*nereis*	12.3%	1.1%	0.081	U	0.010	U	**0.24**	--	**0.030**	--	**0.089**	--	**0.011**	--
E-PE04-2,3,4-C-*nereis*	13.7%	1.3%	0.073	U	0.010	U	**0.21**	--	**0.029**	--	**0.10**	--	**0.014**	--
E-PE04-2,3,4-D-*nereis*	13.0%	1.1%	0.077	U	0.010	U	**0.22**	--	**0.029**	--	**0.092**	--	**0.012**	--
E-PE04-2,3,4-E-*nereis*	13.8%	1.2%	0.072	U	0.010	U	**0.20**	--	**0.028**	--	**0.072**	--	**0.010**	--
E-PE04-2,3,4-*nereis* average	13.2%	1.2%	0.076	U	0.010	U	**0.22**	--	**0.029**	--	**0.090**	--	**0.012**	--

Notes:

U = The compound was analyzed for, but was not detected ("Non-detect") at or above the requested Sampling Plan and Protocol Method Reporting Limit.

D = The reported result is from a dilution

-- = No qualifier needed

Table 24

Tissue Identification for Port Everglades (Florida) Samples Collected May 2004

Port Everglades Tissue Sample IDs		
PPB Reporting ID	CAS Sample Name	CAS Lab ID
PE04-Pretest-A-clams	PE04-Pretest-A-clams	K2407003-001
PE04-Pretest-B-clams	PE04-Pretest-B-clams	K2407003-002
PE04-Pretest-C-clams	PE04-Pretest-C-clams	K2407003-003
PE04-Pretest-D-clams	PE04-Pretest-D-clams	K2407003-004
PE04-Pretest-E-clams	PE04-Pretest-E-clams	K2407003-005
PE04-Pretest-A-worms	PE04-Pretest-A-worms	K2407003-006
PE04-Pretest-B-worms	PE04-Pretest-B-worms	K2407003-007
PE04-Pretest-C-worms	PE04-Pretest-C-worms	K2407003-008
~~PE04-Pretest-D-worms~~	~~PE04-Pretest-D-worms~~	~~na~~
~~PE04-Pretest-E-worms~~	~~PE04-Pretest-E-worms~~	~~na~~
RS-PE04-A-clams	Composite Clams-1	K2407006-016
RS-PE04-B-clams	Composite Clams-2	K2407006-017
RS-PE04-C-clams	Composite Clams-3	K2407006-018
RS-PE04-D-clams	Composite Clams-4	K2407006-019
RS-PE04-E-clams	Composite Clams-5	K2407006-020
RS-PE04-A-worms	RS-PE04-A-worms	K2407006-011
RS-PE04-B-worms	RS-PE04-B-worms	K2407006-012
RS-PE04-C-worms	RS-PE04-C-worms	K2407006-013
RS-PE04-D-worms	RS-PE04-D-worms	K2407006-014
RS-PE04-E-worms	RS-PE04-E-worms	K2407006-015
E-PE04-2,3,4-A-clams	Composite 2,3,4-1's	K2407004-034
E-PE04-2,3,4-B-clams	Composite 2,3,4-2's	K2407004-035
E-PE04-2,3,4-C-clams	Composite 2,3,4-3's	K2407004-036
E-PE04-2,3,4-D-clams	Composite 2,3,4-4's	K2407004-037
E-PE04-2,3,4-E-clams	Composite 2,3,4-5's	K2407004-038
E-PE04-2,3,4-A-worms	Composite A-1	K2407005-017
E-PE04-2,3,4-B-worms	Composite B-2	K2407005-018
E-PE04-2,3,4-C-worms	Composite C-3	K2407005-019
E-PE04-2,3,4-D-worms	Composite D-4	K2407005-020
E-PE04-2,3,4-E-worms	Composite E-5	K2407005-021

Table 25 96-Hour *Mysidopsis bahia* Survival in Three Elutriate Concentrations Prepared from Sediments Collected from Port Everglades.
May 2004 (Page 1 of 3)

Sample	Replicate	Number of Survivors[a]
CONTROL SEAWATER	A	10
	B	9
	C	9
	D	10
	E	10
	Total	48
	Percent	96%

Sample	Replicate	Elutriate Concentration		
		10%	50%	100%
CONTROL SEDIMENT	A	10	10	10
	B	10	10	9
	C	10	10	9
	D	10	10	9
	E	10	10	9
	Total	50	50	46
	Percent	100%	100%	92%
E-PE04-1	A	9	10	10
	B	10	9	10
	C	10	9	9
	D	10	10	10
	E	9	10	10
	Total	48	48	49
	Percent	96%	96%	98%

a - Based upon 50 organisms exposed.

Table 25 96-Hour *Mysidopsis bahia* Survival in Three Elutriate Concentrations Prepared from Sediments Collected from Port Everglades.
May 2004 (Page 2 of 3)

Sample	Replicate	Elutriate Concentration		
		10%	50%	100%
E-PE04-2	A	9	10	8
	B	10	10	10
	C	10	10	10
	D	10	9	10
	E	10	10	10
	Total	49	49	48
	Percent	98%	98%	96%
E-PE04-3	A	10	10	9
	B	10	10	10
	C	10	10	9
	D	10	9	8
	E	10	9	10
	Total	50	48	46
	Percent	100%	96%	92%
E-PE04-4	A	9	9	9
	B	10	9	9
	C	10	10	10
	D	10	9	10
	E	8	9	9
	Total	47	46	47
	Percent	94%	92%	94%

a - Based upon 50 organisms exposed.

Table 25 96-Hour *Mysidopsis bahia* Survival in Three Elutriate Concentrations Prepared from Sediments Collected from Port Everglades.
May 2004 (Page 3 of 3)

Sample	Replicate	Elutriate Concentration		
		10%	50%	100%
E-PE04-DUPE	A	9	10	10
	B	10	10	10
	C	9	10	9
	D	10	8	9
	E	10	9	10
	Total	48	47	48
	Percent	96%	94%	96%

a - Based upon 50 organisms exposed.

Table 26 Summary of ANOVA and Dunnett's Tests of Control Seawater and Control Sediment and Test Sediment Survival for Port Everglades Elutriate of *Mysidopsis bahia*, May, 2004 (Page 1 of 2)

Mysidopsis bahia 100% Elutriates vs. Control Seawater

ANOVA for Differences Between Means

Source of Variation	df	Sum of Squares	Mean Square	F
Between Means	6	1.54	0.26	0.64
Within Means	28	11.20	0.40	
Total	34	12.74		

Critical F = 2.45 (_ = 0.05, df = 6,28)
Since F is < Critical F fail to reject H_o: all groups equal;
with _ = 0.05, and 6,28 df.

Dunnett's Test

Critical value = 2.43

Sample ID	_ = 0.05	difference between means	T Stat
CONTROL SEAWATER	–	–	–
E-PE04-1	=	-0.20	-0.50
E-PE04-2	=	0.00	0.00
E-PE04-3	=	0.40	1.00
E-PE04-4	=	0.20	0.50
E-PE04-DUPE	=	0.00	0.00
CONTROL SEDIMENT	=	0.40	1.00

= Indicates no significant difference between the sample station and the control seawater
* Indicates a significant difference exists between the sample station and the control seawater

Table 26 Summary of ANOVA and Dunnett's Tests of Control Seawater and Control Sediment and Test Sediment Survival for Port Everglades Elutriate of *Mysidopsis bahia*, May 2004 (Page 2 of 2)

Mysidopsis bahia 100% Elutriates vs. Control Sediment

ANOVA for Differences Between Means

Source of Variation	df	Sum of Squares	Mean Square	F
Between Means	5	1.47	0.29	0.70
Within Means	24	10.00	0.42	
Total	29	11.47		

Critical F = 2.62 (_ = 0.05, df = 5,24)
Since F is < Critical F Fail to reject H_o: all groups equal;
with _ = 0.05, and 5,24 df.

Dunnett's Test

Critical value = 2.36

Sample ID	_ = 0.05	difference between means	T Stat
CONTROL SEDIMENT	–	–	–
E-PE04-1	=	-0.60	-1.47
E-PE04-2	=	-0.40	-0.98
E-PE04-3	=	0.00	0.00
E-PE04-4	=	-0.20	-0.49
E-PE04-DUPE	=	-0.40	-0.98

= Indicates no significant difference between the sample station and the control sediment
* Indicates a significant difference exists between the sample station and the control sediment

Table 27 96-Hour *Menidia beryllina* Survival in Three Elutriate Concentrations Prepared from Sediments Collected from Port Everglades.
May 2004 (Page 1 of 3)

Sample	Replicate	Number of Survivors[a]
CONTROL SEAWATER	A	10
	B	10
	C	10
	D	10
	E	10
	Total	50
	Percent	100%

Sample	Replicate	Elutriate Concentration		
		10%	50%	100%
CONTROL SEDIMENT	A	10	10	10
	B	10	10	10
	C	10	10	10
	D	10	10	10
	E	10	10	10
	Total	50	50	50
	Percent	100%	100%	100%
E-PE04-1	A	10	10	10
	B	10	10	10
	C	10	10	10
	D	10	10	10
	E	10	10	10
	Total	50	50	50
	Percent	100%	100%	100%

a - Based upon 50 organisms exposed.

Table 27 96-Hour *Menidia beryllina* Survival in Three Elutriate Concentrations Prepared from Sediments Collected from Port Everglades.
May 2004 (Page 2 of 3)

Sample	Replicate	Elutriate Concentration		
		10%	50%	100%
E-PE04-2	A	10	10	10
	B	10	10	10
	C	10	10	10
	D	10	10	10
	E	10	10	10
	Total	50	50	50
	Percent	100%	100%	100%
E-PE04-3	A	10	10	10
	B	10	10	10
	C	9	10	10
	D	10	10	10
	E	10	10	10
	Total	49	50	50
	Percent	98%	100%	100%
E-PE04-4	A	10	9	10
	B	10	9	10
	C	9	10	10
	D	10	10	9
	E	9	10	10
	Total	48	48	49
	Percent	96%	96%	98%

a - Based upon 50 organisms exposed.

Table 27 96-Hour *Menidia beryllina* Survival in Three Elutriate Concentrations Prepared from Sediments Collected from Port Everglades.
May 2004 (Page 3 of 3)

Sample	Replicate	Elutriate Concentration		
		10%	50%	100%
E-PE04-DUPE	A	9	10	10
	B	10	9	10
	C	10	10	10
	D	10	10	9
	E	10	10	10
	Total	49	49	49
	Percent	98%	98%	98%

a - Based upon 50 organisms exposed.

Table 28 Summary of Steel's Many-One Rank Test of Control Water (0 percent Elutriate) or Control Sediment (100 percent Elutriate) and Test Sediment (100 percent Elutriate) on *Menidia beryllina* Survival for Port Everglades, May 2004

Menidia beryllina Control Water (0 percent Elutriate) vs. Other Sample

Sample ID	a = 0.05	Mean in Original Units	Rank Sum	Critical Value
Control Water (0 percent Elutriate)		10.0		
E-PE04-1 (100 percent)	=	10.0	27.5	16.0
E-PE04-2 (100 percent)	=	10.0	27.5	16.0
E-PE04-3 (100 percent)	=	10.0	27.5	16.0
E-PE04-4 (100 percent)	=	9.8	25.0	16.0
E-PE04-DUPE (100 percent)	=	9.8	25.0	16.0
Control Sediment (100 percent)	=	10.0	27.5	16.0

= Indicates no significant difference between the sample station and the control water
Critical values are 1 tailed (k = 6)
Degree of Freedom = 6

Menidia beryllina Control Sediment (0 percent Elutriate) vs. Other Sample

Sample ID	a = 0.05	Mean in Original Units	Rank Sum	Critical Value
Control Sediment (100 percent Elutriate)		10.0		
E-PE04-1 (100 percent)	=	10.0	27.5	16.0
E-PE04-2 (100 percent)	=	10.0	27.5	16.0
E-PE04-3 (100 percent)	=	10.0	27.5	16.0
E-PE04-4 (100 percent)	=	9.8	25.0	16.0
E-PE04-DUPE (100 percent)	=	9.8	25.0	16.0

= Indicates no significant difference between the sample station and the control water
Critical values are 1 tailed (k = 5)
Degree of Freedom = 5

Table 29 Sea Urchin, Fertilization Test Counts and Percentages in Three Elutriate Concentrations Prepared from Sediments Collected from Port Everglades June 2004 (Percent Fertilization in Parenthesis) (Page 1 of 2)

Sample	Replicate	Number Fertilized
CONTROL	A	75
	B	89
	C	86
	Total	250
	Percent	83%

Sample	Replicate	Concentrations		
		10%	50%	100%
CONTROL SEDIMENT	A	75	77	75
	B	89	92	79
	C	70	78	66
	Total	234	247	220
	Percent	78%	82%	73%
E-PE04-1	A	89	77	80
	B	78	85	71
	C	90	91	77
	Total	257	253	228
	Percent	86%	84%	76%
E-PE04-2	A	95	84	83
	B	86	72	70
	C	80	81	87
	Total	261	237	240
	Percent	87%	79%	80%
E-PE04-3	A	91	77	86
	B	88	79	77
	C	85	81	69
	Total	264	237	232
	Percent	88%	79%	77%

Table 29 Sea Urchin, Fertilization Test Counts and Percentages in Three Elutriate Concentrations Prepared from Sediments Collected from Port Everglades, June 2004 (Percent Fertilization in Parenthesis) (Page 2 of 2)

Sample	Replicate	Concentrations		
		10%	50%	100%
E-PE04-4	A	92	83	89
	B	79	91	85
	C	83	73	72
	Total	254	247	246
	Percent	85%	82%	82%
E-PE04-DUPE	A	80	78	82
	B	89	84	77
	C	96	90	80
	Total	265	252	239
	Percent	88%	84%	80%

[a]One hundred eggs counted per replicate
[b]Control: filtered natural seawater
[c]Percent concentrations of elutriate

Table 30 Summary of ANOVA and Dunnett's Tests of Control Seawater (0% Elutriate) or Control Sediment (100% Elutriate) and Test Sediment (100% Elutriate on *A. punctulata* Fertilization, Port Everglades, June, 2004 (Page 1 of 2)

A. punctulata 100% Elutriates vs. Control Seawater

ANOVA for Differences Between Means

Source of Variation	df	Sum of Squares	Mean Square	F
Between Means	6	218.57	36.43	0.72
Within Means	14	712.67	50.90	
Total	20	931.24		

Critical F = 2.85 (_ = 0.05, df = 6,14)
Since F is < Critical F fail to reject H_o: all groups equal;
with _ = 0.05, and 6,14 df.

Dunnett's Test

Critical value = 2.53

Sample ID	= 0.05	difference between means	T Stat
CONTROL SEAWATER	–	–	–
E-PE04-1	=	7.33	1.26
E-PE04-2	=	3.33	0.57
E-PE04-3	=	6.00	1.03
E-PE04-4	=	1.33	0.23
E-PE04-DUPE	=	3.67	0.63
CONTROL SEDIMENT	=	10.00	1.72

= Indicates no significant difference between the sample station and the control seawater
* Indicates a significant difference exists between the sample station and the control seawater

Table 30 Summary of ANOVA and Dunnett's Tests of Control Seawater (0% Elutriate) or Control Sediment (100% Elutriate) and Test Sediment (100% Elutriate on *A. punctulata* Fertilization, Port Everglades, June, 2004 (Page 2 of 2)

A. punctulata 100% Elutriates vs. Control Sediment

ANOVA for Differences Between Means

Source of Variation	df	Sum of Squares	Mean Square	F
Between Means	5	146.94	29.39	0.58
Within Means	12	604.00	50.33	
Total	17	750.94		

Critical F = 3.11 (_ = 0.05, df = 5,12)
Since F is < Critical F Fail to reject H_o: all groups equal;
with _ = 0.05, and 5,12 df.

Dunnett's Test

Critical value = 2.50

Sample ID	_ = 0.05	difference between means	T Stat
CONTROL SEDIMENT	–	–	–
E-PE04-1	=	-2.67	-0.46
E-PE04-2	=	-6.67	-1.15
E-PE04-3	=	-4.00	-0.69
E-PE04-4	=	-8.67	-1.50
E-PE04-DUPE	=	-6.33	-1.09

= Indicates no significant difference between the sample station and the control sediment
* Indicates a significant difference exists between the sample station and the control sediment

Table 31 LC_{50} or EC_{50} (*Mysidopsis bahia*, *Menidia beryllina* and *A. punctulata*) Values[a] for PPB/Port Everglades, May 2004, Elutriate Bioassays.

Sample ID	*Mysidopsis bahia* LC_{50}	*Menidia beryllina* LC_{50}	*Arbacia punctulata* EC_{50}
Control Seawater	>100	>100	>100
E-PE04-1	>100	>100	>100
E-PE04-2	>100	>100	>100
E-PE04-3	>100	>100	>100
E-PE04-4	>100	>100	>100
E-PE04-DUPE	>100	>100	>100
Control Sediment	>100	>100	>100

[a] LC_{50} values recorded as greater than 100% had greater than 50% survivorship. In the case of *sea urchin*, an EC_{50} value greater than 100% indicated fertilization EC_{50} greater than 100%.

Table 32 10-Day Sediment *Mysidopsis bahia* Survival, PPB/Port Everglades Sediments, June 2004 (Page 1 of 2)

Sample	Replicate	Number of Survivors[a]
CONTROL SEDIMENT	A	19
	B	19
	C	17
	D	19
	E	18
	Total	92
	Percent	92%
E-PE04-1	A	20
	B	18
	C	18
	D	15
	E	20
	Total	91
	Percent	91%
E-PE04-2	A	20
	B	18
	C	17
	D	18
	E	18
	Total	91
	Percent	91%

a - Based upon 100 organisms exposed.

Table 32 10-Day Sediment *Mysidopsis bahia* Survival, Port Everglades Sediments, June 2004 (Page 2 of 2)

Sample	Replicate	Number of Survivors[a]
E-PE04-3	A	18
	B	16
	C	20
	D	16
	E	14
	Total	84
	Percent	84%
E-PE04-4	A	17
	B	20
	C	19
	D	20
	E	16
	Total	92
	Percent	92%
E-PE04-DUPE	A	16
	B	14
	C	18
	D	18
	E	19
	Total	85
	Percent	85%
RS-PE04	A	16
	B	16
	C	20
	D	20
	E	16
	Total	88
	Percent	88%

a - Based upon 100 organisms exposed.

Table 33 Summary of ANOVA and Dunnett's Tests of Control Sediment or Reference Sediment and Test Sediment Survival for Port Everglades Sediment Bioassays of *Mysidopsis bahia*, June 2004. (Page 1 of 2)

Mysidopsis bahia Control Sediment vs. Other Samples

ANOVA for Differences Between Means

Source of Variation	df	Sum of Squares	Mean Square	F
Between Means	6	13.60	2.27	0.68
Within Means	28	94.00	3.36	
Total	34	107.60		

Critical F = 2.45 (_ = 0.05, df = 6,28)
Since F is < Critical F fail to reject H_o: all groups equal;
with _ = 0.05, and 6,28 df.

Dunnett's Test

Critical value = 2.43

Sample ID	_ = 0.05	difference between means	T Stat
Control Sediment	–	–	–
E-PE04-01	=	0.20	0.17
E-PE04-02	=	0.20	0.17
E-PE04-03	=	1.60	1.38
E-PE04-04	=	0.00	0.00
E-PE04-DUPE	=	1.40	1.21
RS-PE04	=	0.80	0.69

= Indicates no significant difference between the sample station and the control sediment
* Indicates a significant difference exists between the sample station and the control sediment

Table 33 Summary of ANOVA and Dunnett's Tests of Control Sediment or Reference Sediment and Test Sediment Survival for Port Everglades Sediment Bioassays of *Mysidopsis bahia*, June 2004 (Page 2 of 2)

Mysidopsis bahia Reference Sediment vs. Other Samples

ANOVA for Differences Between Means

Source of Variation	df	Sum of Squares	Mean Square	F
Between Means	5	11.50	2.30	0.61
Within Means	24	90.80	3.78	
Total	29	102.30		

Critical F = 2.62 (_ = 0.05, df = 5,24)
Since F is < Critical F fail to reject H_o: all groups equal;
with _ = 0.05, and 5, 24 df.

Dunnett's Test

Critical T = 2.36

Sample ID	_ = 0.05	difference between means	T Stat
RS-PE04	–	–	–
E-PE04-01	=	-0.60	-0.49
E-PE04-02	=	-0.60	-0.49
E-PE04-03	=	0.80	0.65
E-PE04-04	=	-0.80	-0.65
E-PE04-DUPE	=	0.60	0.49

= Indicates no significant difference between the sample station and the reference sediment
* Indicates a significant difference exists between the sample station and the reference sediment

Table 34 10-Day Sediment *Leptochirus plumulosus* Survival, PPB/Port Everglades Sediments, June 2004
(Page 1 of 2)

Sample	Replicate	Number of Survivors[a]
CONTROL SEDIMENT	A	18
	B	19
	C	20
	D	17
	E	20
	Total	94
	Percent	94%
E-PE04-1	A	13
	B	18
	C	11
	D	13
	E	12
	Total	67
	Percent	67%
E-PE04-2	A	17
	B	19
	C	20
	D	19
	E	19
	Total	94
	Percent	94%

a - Based upon 100 organisms exposed.

Table 34 10-Day Sediment *Leptochirus plumulosus* Survival, Port Everglades Sediments, June 2004
(Page 2 of 2)

Sample	Replicate	Number of Survivors[a]
E-PE04-3	A	18
	B	18
	C	18
	D	17
	E	16
	Total	87
	Percent	87%
E-PE04-4	A	19
	B	17
	C	19
	D	17
	E	18
	Total	90
	Percent	90%
E-PE04-DUPE	A	14
	B	19
	C	18
	D	16
	E	14
	Total	81
	Percent	81%
RS-PE04	A	20
	B	18
	C	15
	D	19
	E	19
	Total	91
	Percent	91%

a - Based upon 100 organisms exposed.

Table 35 Summary of ANOVA and Dunnett's Tests of Control Sediment or Reference Sediment and Test Sediment Survival for Port Everglades Whole Sediment of *L. plumulosus*, June 2004
(Page 1 of 2)

L. plumulosus Control Sediment vs. Other Samples

ANOVA for Differences Between Means

Source of Variation	df	Sum of Squares	Mean Square	F
Between Means	6	111.09	18.51	6.20
Within Means	28	83.60	2.99	
Total	34	194.69		

Critical F = 2.45 (_ = 0.05, df = 6,28)
Since F is > Critical F reject H_o: all groups equal;
with _ = 0.05, and 6,28 df.

Dunnett's Test

Critical value = 2.43

Sample ID	= 0.05	difference between means	T Stat
Control Sediment	–	–	–
E-PE04-01	*	5.40	4.94
E-PE04-02	=	0.00	0.00
E-PE04-03	=	1.40	1.28
E-PE04-04	=	0.80	0.73
E-PE04-DUPE	=	2.60	2.38
RS-PE04	=	0.60	0.55

= Indicates no significant difference between the sample station and the control sediment
* Indicates a significant difference exists between the sample station and the control sediment

Table 35 Summary of ANOVA and Dunnett's Tests of Control Sediment or Reference Sediment and Test Sediment Survival for Port Everglades Whole Sediment of *L. plumulosus*, June 2004 (Page 2 of 2)

L. plumulosus Reference Sediment vs. Other Samples

ANOVA for Differences Between Means

Source of Variation	df	Sum of Squares	Mean Square	F
Between Means	5	97.20	19.44	6.08
Within Means	24	76.80	3.20	
Total	29	174.00		

Critical F = 2.62 (_ = 0.05, df = 5,24)
Since F is > Critical F reject H_o: all groups equal;
with _ = 0.05, and 5,24 df.

Dunnett's Test

Critical value = 2.36

Sample ID	_ = 0.05	difference between means	T Stat
RS-PE04	–	–	–
E-PE04-01	*	4.80	4.24
E-PE04-02	=	-0.60	-0.53
E-PE04-03	=	0.80	0.71
E-PE04-04	=	0.20	0.18
E-PE04-DUPE	=	2.00	1.77

= Indicates no significant difference between the sample station and the reference sediment
* Indicates a significant difference exists between the sample station and the reference sediment

Table 36 Survivorship of *Macoma nasuta* and *Nereis virens* during 28-Day Bioaccumulation Bioassays with Sediments from Port Everglades. May 2004 (Page 1 of 3)

Sample ID	Replicate	*Macoma nasuta*[a]	*Nereis virens*[b]
CONTROL SEDIMENT	A	19	19
	B	20	17
	D	18	18
	E	17	19
	F	18	
	G	19	
	H	16	
	I	20	
	J	17	
	Total	182	91
	Percent	91%	91%
E-PE04-1	A	11	11
	B	16	11
	C	7	18
	D	11	11
	E	15	17
	F	12	
	G	11	
	H	16	
	I	15	
	J	15	
	Total	129	68
	Percent	65%	68%

Table 36 Survivorship of *Macoma nasuta* and *Nereis virens* during 28-Day Bioaccumulation Bioassays with Sediments from Port Everglades. May 2004 (Page 2 of 3)

Sample ID	Replicate	*Macoma nasuta*[a]	*Nereis virens*[b]
E-PE04-2	A	17	12
	B	14	15
	D	14	20
	E	11	14
	F	14	
	G	14	
	H	15	
	I	18	
	J	18	
	Total	150	75
	Percent	75%	75%
E-PE04-3	A	10	16
	B	18	15
	C	10	17
	D	15	16
	E	13	20
	F	17	
	G	15	
	H	12	
	I	14	
	J	16	
	Total	140	84
	Percent	70%	84%
E-PE04-4	A	11	16
	B	13	15
	C	13	11
	D	16	14
	E	17	12
	F	13	
	G	14	
	H	18	
	I	13	
	J	17	
	Total	145	68
	Percent	73%	68%

Table 36 Survivorship of *Macoma nasuta* and *Nereis virens* during 28-Day Bioaccumulation Bioassays with Sediments from Port Everglades. May 2004 (Page 3 of 3)

Sample ID	Replicate	*Macoma nasuta*[a]	*Nereis virens*[b]
E-PE04-DUPE	A	15	12
	B	13	14
	D	17	15
	E	17	13
	F	19	
	G	13	
	H	10	
	I	19	
	J	14	
	Total	155	66
	Percent	78%	66%
RS-PE04	A	15	19
	B	15	20
	C	12	19
	D	14	18
	E	14	20
	F	16	
	G	10	
	H	15	
	I	10	
	J	9	
	Total	130	96
	Percent	65%	96%

a - Based upon 200 organisms exposed.

b – Based upon 100 organisms exposed

Table 37 Water Column Evaluation of Port Everglades (Florida) Using The Short Term Fate Module (STFATE) of the Automated Dredging and Disposal Alternatives Management System (ADDAMS) (Page 1 of 2)

Summary: Section 103 Water Column Evaluation using STFATE

A Section 103 Water Column Evaluation was performed in accordance with United States Environmental Protection Agency (USEPA) and United States Army Corps of Engineers (USACE) *Evaluation of Dredged Material Proposed for Ocean Disposal*, EPA 503/8-91/001, dated 1991, using the Short Term Fate (STFATE) module of the Automated Dredging and Disposal Alternatives Management System (ADDAMS) supported by the US Army Engineers Waterways Experiment Station (WES). The most current version of the model was downloaded from the Dredging Operations Technical Support Center website. Model applications were performed in accordance with STFATE's associated guidance manual (USEPA and USACE, 1995; *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual, Appendix C*).

The first step in this evaluation was to screen the contaminants of concern to identify the chemical detected in sediments that requires the greatest dilution to achieve its water quality criterion (WQC). The applicable WQC is the Criteria Maximum Concentration (CMC) for saltwater as found in *National Recommended Water Quality Criteria – Correction*; EPA 822-Z-99-001. This step of the evaluation only addresses contaminants that have saltwater CMC values established, primarily the metals.

The screening process described in USEPA and USACE (1991) Section 10.1.1 was performed. The chemical that requires the greatest dilution was determined to be copper.

STFATE was run using the "Section 103 Regulatory Analysis for Ocean Waters" option, followed by selecting the Tier II screening menu option. Default inputs were used for all parameters with the following site-specific exceptions developed using results presented elsewhere in this report and from USACE WES (1998; *Dispersion Characteristics for Palm Beach and Port Everglades ODMDSs;* Miscellaneous Paper CHL-98-xx compiled by M.A. Cialone and L.S. Lillycrop, Coastal and Hydraulics Laboratory):

- The Port Everglades Ocean Dredged Material Disposal Site (ODMDS) was defined as a square area, one nautical mile on each side.
- The dredged material disposal equipment was assumed to be a split-hull barge.
- The water depth was 720 feet.
- Salinity and temperature as a function of depth was defined using data provided by Coastal and Hydraulics Laboratory from observations made in the ODMDS.

Table 37 Water Column Evaluation of Port Everglades (Florida) Using The Short Term Fate Module (STFATE) of the Automated Dredging and Disposal Alternatives Management System (ADDAMS) (Page 2 of 2)

- Currents were assumed to be 1.82 feet per second (ft/sec) to the north-northeast based on data provided by Coastal and Hydraulics Laboratory.
- For Tier II, Determine Need for Further Testing, the concentration of copper in dredged material was the value observed in sample PE04-2 (35.5 milligrams per kilogram [mg/kg]).
- For Tier II, Compare Water Quality, the concentration of copper in elutriate material was the value observed in sample E-PE04-1 (0.00566 milligrams per liter [mg/L]).
- For Tier II, Determine Need for Further Testing, volumetric concentrations of sediments were taken from data provided by PPB for sample PE04-2.
- For Tier II, Compare Water Quality, volumetric concentrations of sediments were taken from data provided by PPB for sample E-PE04-1.

The initial screening application of the STFATE model failed, i.e., under the assumption that all copper in the bulk sediment is released to the water column, the WQC would be exceeded. This is an unnecessarily conservative assumption, but constitutes the first step in a tiered evaluation process. This result indicated that evaluation of the elutriate data would be necessary for copper.

Application of the STFATE module based on elutriate concentrations of copper was performed, the results indicated that open water disposal of these sediments would not result in violation of any WQCs. Because there were no violations and no toxicity was observed in elutriate tests, it was not necessary to perform a Tier III evaluation of water column toxicity.

Model outputs documenting these evaluations are provided in Appendix H in this report.

Table 38

Percent Value Comparison of Reference to Harbor Composites for *Macoma nasuta* , Port Everglades, Florida, May 2004

Analyte	Basis	Units	RS-PE04 Value	E-PE04-2,3,4-*macoma* Value	% of Ref.
Lipids, Total	Wet Weight	%	0.47%	0.84%	180%
Solids, Total	na	%	10.7%	12.0%	112%
2-Methylnaphthalene	Wet Weight	mg/Kg	0.020	0.020	100%
Acenaphthene	Wet Weight	mg/Kg	0.020	0.020	100%
Acenaphthylene	Wet Weight	mg/Kg	0.020	0.020	100%
Aldrin	Wet Weight	mg/Kg	0.020	0.020	100%
Anthracene	Wet Weight	mg/Kg	0.020	0.020	100%
Antimony, Total	Wet Weight	mg/Kg	**0.008**	**0.014**	**165%**
Arsenic, Total	Wet Weight	mg/Kg	2.33	2.38	102%
Benzo (a) anthracene	Wet Weight	mg/Kg	0.020	0.020	100%
Benzo (a) pyrene	Wet Weight	mg/Kg	0.020	0.020	100%
Benzo (b) fluoranthene	Wet Weight	mg/Kg	0.020	0.020	100%
Benzo (g,h,i) perylene	Wet Weight	mg/Kg	0.020	0.020	100%
Benzo (k) fluoranthene	Wet Weight	mg/Kg	0.020	0.020	100%
Alpha-BHC	Wet Weight	mg/Kg	0.020	0.020	100%
Beta-BHC	Wet Weight	mg/Kg	0.020	0.020	100%
Gamma-BHC (Lindane)	Wet Weight	mg/Kg	0.020	0.020	100%
Delta-BHC	Wet Weight	mg/Kg	0.020	0.020	100%
Cadmium, Total	Wet Weight	mg/Kg	**0.028**	**0.039**	**138%**
Chlordane	Wet Weight	mg/Kg	0.025	0.025	100%
Chromium, Total	Wet Weight	mg/Kg	0.19	0.31	159%
Chrysene	Wet Weight	mg/Kg	0.020	0.020	100%
Copper, Total	Wet Weight	mg/Kg	**1.69**	**2.68**	**158%**
4,4 DDT	Wet Weight	mg/Kg	0.020	0.020	100%
4,4 DDD	Wet Weight	mg/Kg	0.020	0.020	100%
4,4 DDE	Wet Weight	mg/Kg	0.020	0.020	100%
Dieldrin	Wet Weight	mg/Kg	0.020	0.020	100%
Dibenzo (a,h) anthracene	Wet Weight	mg/Kg	0.020	0.020	100%
Di-n-butyltin	Wet Weight	mg/Kg	0.018	0.020	113%
Endosulfan I	Wet Weight	mg/Kg	0.025	0.025	100%
Endosulfan II	Wet Weight	mg/Kg	0.025	0.025	100%
Endosulfan Sulfate	Wet Weight	mg/Kg	0.025	0.025	100%
Endrin	Wet Weight	mg/Kg	0.020	0.020	100%
Endrin Aldehyde	Wet Weight	mg/Kg	0.020	0.020	100%
Fluoranthene	Wet Weight	mg/Kg	0.020	0.020	100%
Fluorene	Wet Weight	mg/Kg	0.020	0.020	100%
Heptachlor	Wet Weight	mg/Kg	0.020	0.020	100%
Heptachlor Epoxide	Wet Weight	mg/Kg	0.020	0.020	100%
Indeno (1,2,3-cd) pyrene	Wet Weight	mg/Kg	0.020	0.020	100%
Lead, Total	Wet Weight	mg/Kg	**0.12**	**0.27**	**218%**
Mercury, Total	Wet Weight	mg/Kg	0.006	0.007	114%
Methoxychlor	Wet Weight	mg/Kg	0.020	0.020	100%
Naphthalene	Wet Weight	mg/Kg	0.020	0.020	100%
n-Butyltin	Wet Weight	mg/Kg	0.010	0.010	100%
Nickel, Total	Wet Weight	mg/Kg	0.36	0.44	121%
Phenanthrene	Wet Weight	mg/Kg	0.020	0.020	100%
Pyrene	Wet Weight	mg/Kg	0.020	0.020	100%
Silver, Total	Wet Weight	mg/Kg	**0.018**	**0.035**	**198%**
Toxaphene	Wet Weight	mg/Kg	0.050	0.050	100%

Table 38

Percent Value Comparison of Reference to Harbor Composites for *Macoma nasuta* , Port Everglades, Florida, May 2004

Analyte	Basis	Units	RS-PE04 Value	E-PE04-2,3,4-*macoma* Value	% of Ref.
Tri-n-butyltin	Wet Weight	mg/Kg	**0.010**	**0.064**	**644%**
Zinc, Total	Wet Weight	mg/Kg	**10.5**	**16.9**	**161%**
PCB Aroclor 1016	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1221	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1232	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1242	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1248	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1254	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1260	Wet Weight	mg/Kg	0.010	0.010	100%
PCB 08	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 18	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 28	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 44	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 52	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 66	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 77	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 87	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 49	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 101	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 105	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 118	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 126	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 128	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 138	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 153	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 156	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 169	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 170	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 180	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 183	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 184	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 187	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 195	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 206	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 209	Wet Weight	mg/Kg	0.002	0.002	100%

NOTE:

Numbers in bold denote values that are statistically different from the offshore reference sample.

Table 39

Percent Value Comparison of Reference to Harbor Composites for *Nereis virens* , Port Everglades, Florida, May 2004

Analyte	Basis	Units	RS-PE04 Value	E-PE04-2,3,4-*nereis* Value	% of Ref.
Lipids, Total	Wet Weight	%	1.2%	1.2%	102%
Solids, Total	na	%	13.1%	13.2%	101%
2-Methylnaphthalene	Wet Weight	mg/Kg	0.020	0.020	100%
Acenaphthene	Wet Weight	mg/Kg	0.020	0.020	100%
Acenaphthylene	Wet Weight	mg/Kg	0.020	0.020	100%
Aldrin	Wet Weight	mg/Kg	0.020	0.020	100%
Anthracene	Wet Weight	mg/Kg	0.020	0.020	100%
Antimony, Total	Wet Weight	mg/Kg	0.002	0.002	76%
Arsenic, Total	Wet Weight	mg/Kg	1.90	2.15	113%
Benzo (a) anthracene	Wet Weight	mg/Kg	0.020	0.020	100%
Benzo (a) pyrene	Wet Weight	mg/Kg	0.020	0.020	100%
Benzo (b) fluoranthene	Wet Weight	mg/Kg	0.020	0.020	100%
Benzo (g,h,i) perylene	Wet Weight	mg/Kg	0.020	0.020	100%
Benzo (k) fluoranthene	Wet Weight	mg/Kg	0.020	0.020	100%
Alpha-BHC	Wet Weight	mg/Kg	0.020	0.020	100%
Beta-BHC	Wet Weight	mg/Kg	0.020	0.020	100%
Gamma-BHC (Lindane)	Wet Weight	mg/Kg	0.020	0.020	100%
Delta-BHC	Wet Weight	mg/Kg	0.020	0.020	100%
Cadmium, Total	Wet Weight	mg/Kg	0.032	0.028	88%
Chlordane	Wet Weight	mg/Kg	0.025	0.025	100%
Chromium, Total	Wet Weight	mg/Kg	0.14	0.15	113%
Chrysene	Wet Weight	mg/Kg	0.020	0.020	100%
Copper, Total	Wet Weight	mg/Kg	1.27	1.62	127%
4,4 DDT	Wet Weight	mg/Kg	0.020	0.020	100%
4,4 DDD	Wet Weight	mg/Kg	0.020	0.020	100%
4,4 DDE	Wet Weight	mg/Kg	0.020	0.020	100%
Dieldrin	Wet Weight	mg/Kg	0.020	0.020	100%
Dibenzo (a,h) anthracene	Wet Weight	mg/Kg	0.020	0.020	100%
Di-n-butyltin	Wet Weight	mg/Kg	**0.014**	**0.029**	**206%**
Endosulfan I	Wet Weight	mg/Kg	0.025	0.025	100%
Endosulfan II	Wet Weight	mg/Kg	0.025	0.025	100%
Endosulfan Sulfate	Wet Weight	mg/Kg	0.025	0.025	100%
Endrin	Wet Weight	mg/Kg	0.020	0.020	100%
Endrin Aldehyde	Wet Weight	mg/Kg	0.020	0.020	100%
Fluoranthene	Wet Weight	mg/Kg	0.020	0.020	100%
Fluorene	Wet Weight	mg/Kg	0.020	0.020	100%
Heptachlor	Wet Weight	mg/Kg	0.020	0.020	100%
Heptachlor Epoxide	Wet Weight	mg/Kg	0.020	0.020	100%
Indeno (1,2,3-cd) pyrene	Wet Weight	mg/Kg	0.020	0.020	100%
Lead, Total	Wet Weight	mg/Kg	0.054	0.16	300%
Mercury, Total	Wet Weight	mg/Kg	0.012	0.012	102%
Methoxychlor	Wet Weight	mg/Kg	0.020	0.020	100%
Naphthalene	Wet Weight	mg/Kg	0.020	0.020	100%
n-Butyltin	Wet Weight	mg/Kg	0.010	0.010	100%
Nickel, Total	Wet Weight	mg/Kg	0.14	0.14	101%
Phenanthrene	Wet Weight	mg/Kg	0.020	0.020	100%
Pyrene	Wet Weight	mg/Kg	0.020	0.020	100%
Silver, Total	Wet Weight	mg/Kg	0.022	0.013	60%
Toxaphene	Wet Weight	mg/Kg	0.050	0.050	100%

Table 39

Percent Value Comparison of Reference to Harbor Composites for *Nereis virens* , Port Everglades, Florida, May 2004

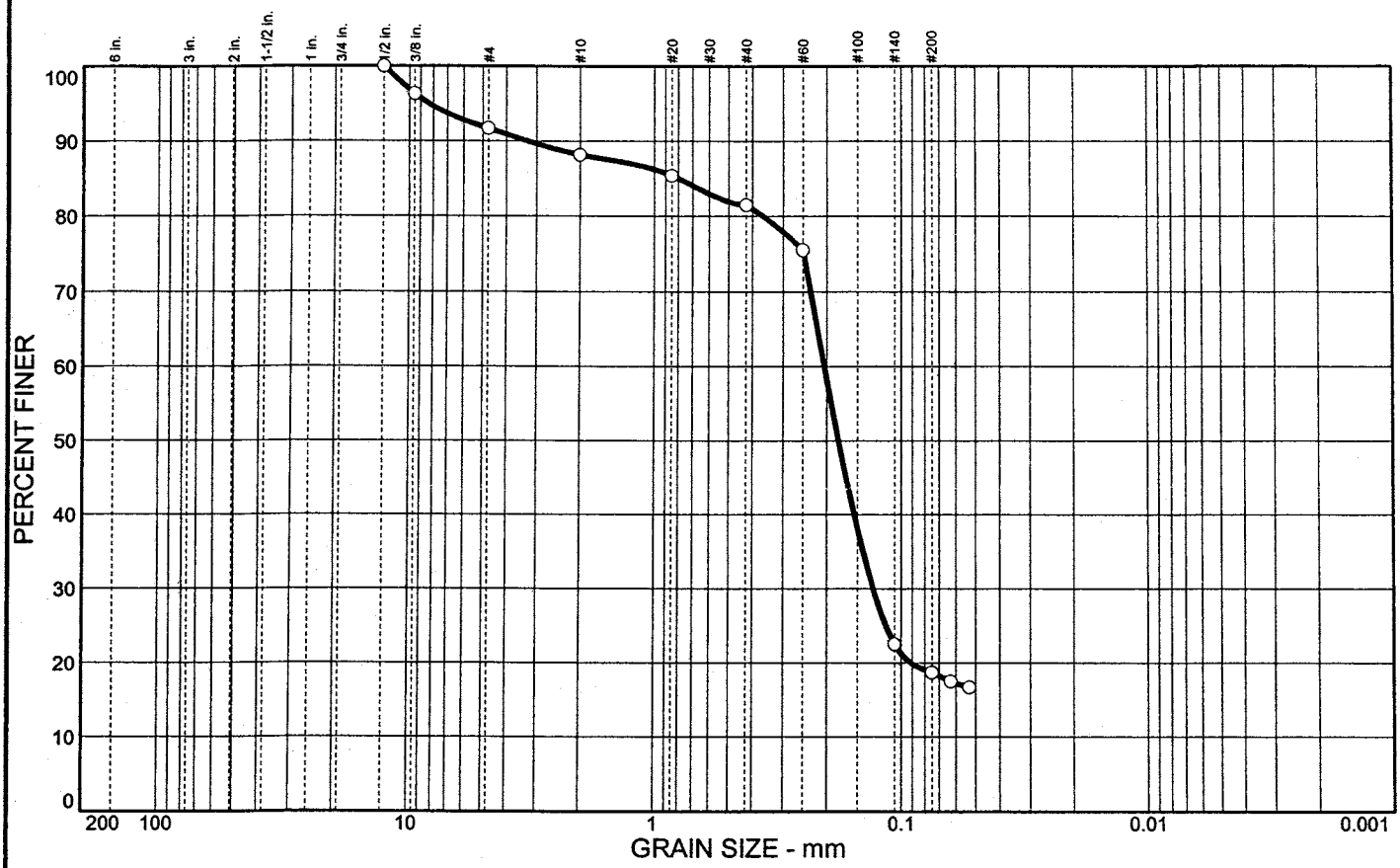
Analyte	Basis	Units	RS-PE04 Value	E-PE04-2,3,4-*nereis* Value	% of Ref.
Tri-n-butyltin	Wet Weight	mg/Kg	**0.010**	**0.012**	**118%**
Zinc, Total	Wet Weight	mg/Kg	17.9	22.0	123%
PCB Aroclor 1016	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1221	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1232	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1242	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1248	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1254	Wet Weight	mg/Kg	0.010	0.010	100%
PCB Aroclor 1260	Wet Weight	mg/Kg	0.010	0.010	100%
PCB 08	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 18	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 28	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 44	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 52	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 66	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 77	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 87	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 49	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 101	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 105	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 118	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 126	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 128	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 138	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 153	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 156	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 169	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 170	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 180	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 183	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 184	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 187	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 195	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 206	Wet Weight	mg/Kg	0.002	0.002	100%
PCB 209	Wet Weight	mg/Kg	0.002	0.002	100%

NOTE:

Numbers in bold denote values that are statistically different from the offshore reference sample.

Table 40 Physical Testing Graphs for Port Everglades (Florida) Samples Collected May 2004

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		8.3	73.0	18.7		SM	A-2-4(0)		

SIEVE inches size	PERCENT FINER ○		
.5	100.0		
.375	96.3		
	GRAIN SIZE		
D_{60}	0.205		
D_{30}	0.130		
D_{10}			
	COEFFICIENTS		
C_C			
C_U			

SIEVE number size	PERCENT FINER ○		
#4	91.7		
#10	88.2		
#20	85.4		
#40	81.5		
#60	75.5		
#140	22.5		
#200	18.7		
#230	17.5		
#270	16.7		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, little silt, few fine gravel size shlee fragments & medium sand size shell fragments, trace of coarse sand size shell fragments, dark brown

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity: 2.688

○ Source: E-PE04-1

Sample No.: 254314

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

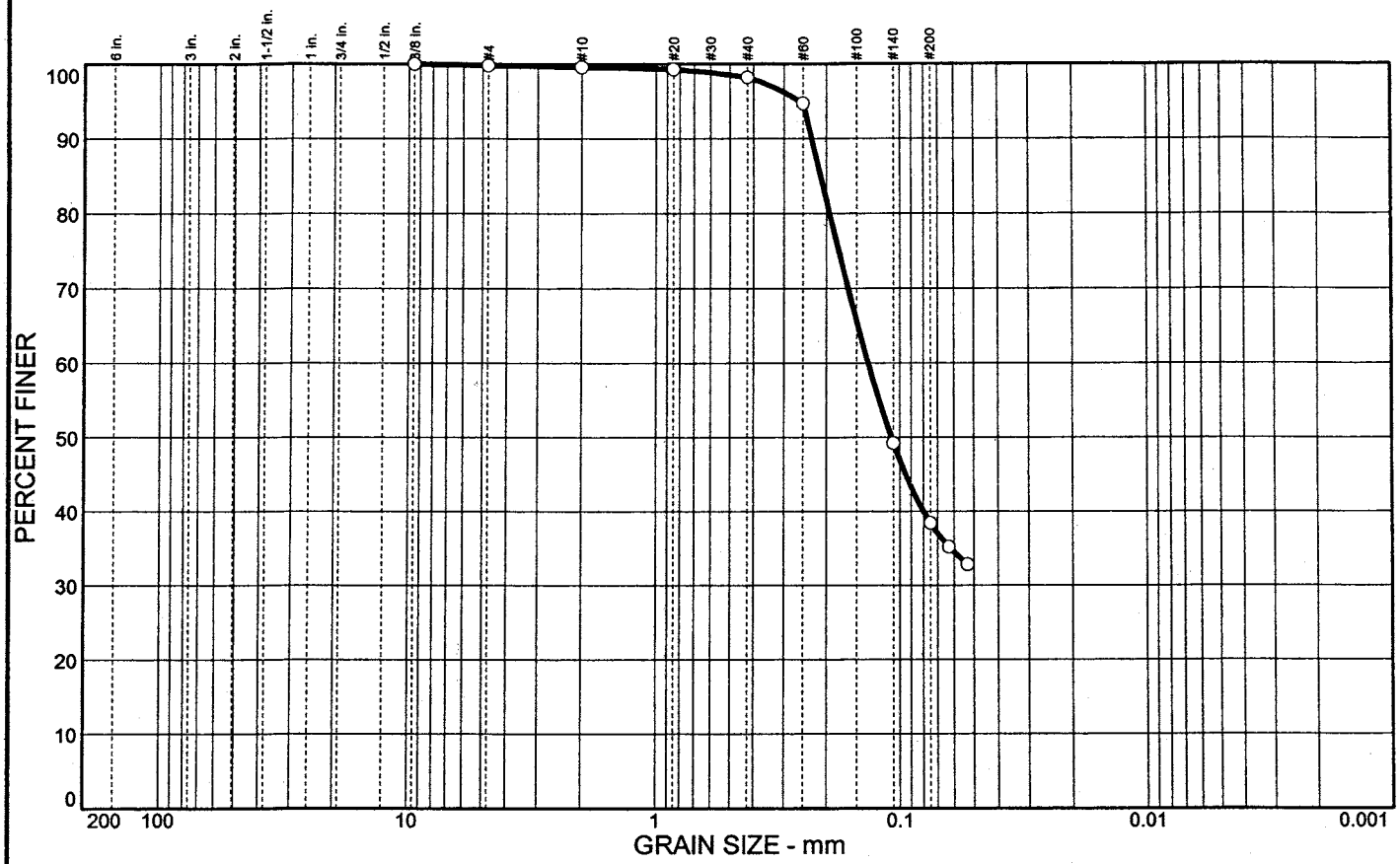
Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Jeffrey S. Samuels 5-18-04

Jeffrey S. Samuels, P.E.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		0.2	61.4	38.4		SM	A-4(0)	32	38

SIEVE inches size	PERCENT FINER ○		
.375	100.0		
	GRAIN SIZE		
D_{60}	0.135		
D_{30}			
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	99.8		
#10	99.6		
#20	99.3		
#40	98.2		
#60	94.7		
#140	49.2		
#200	38.4		
#230	35.2		
#270	32.8		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, some silt, brown-gray

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity: 2.717

○ Source: E-PE04-2

Sample No.: 254316

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

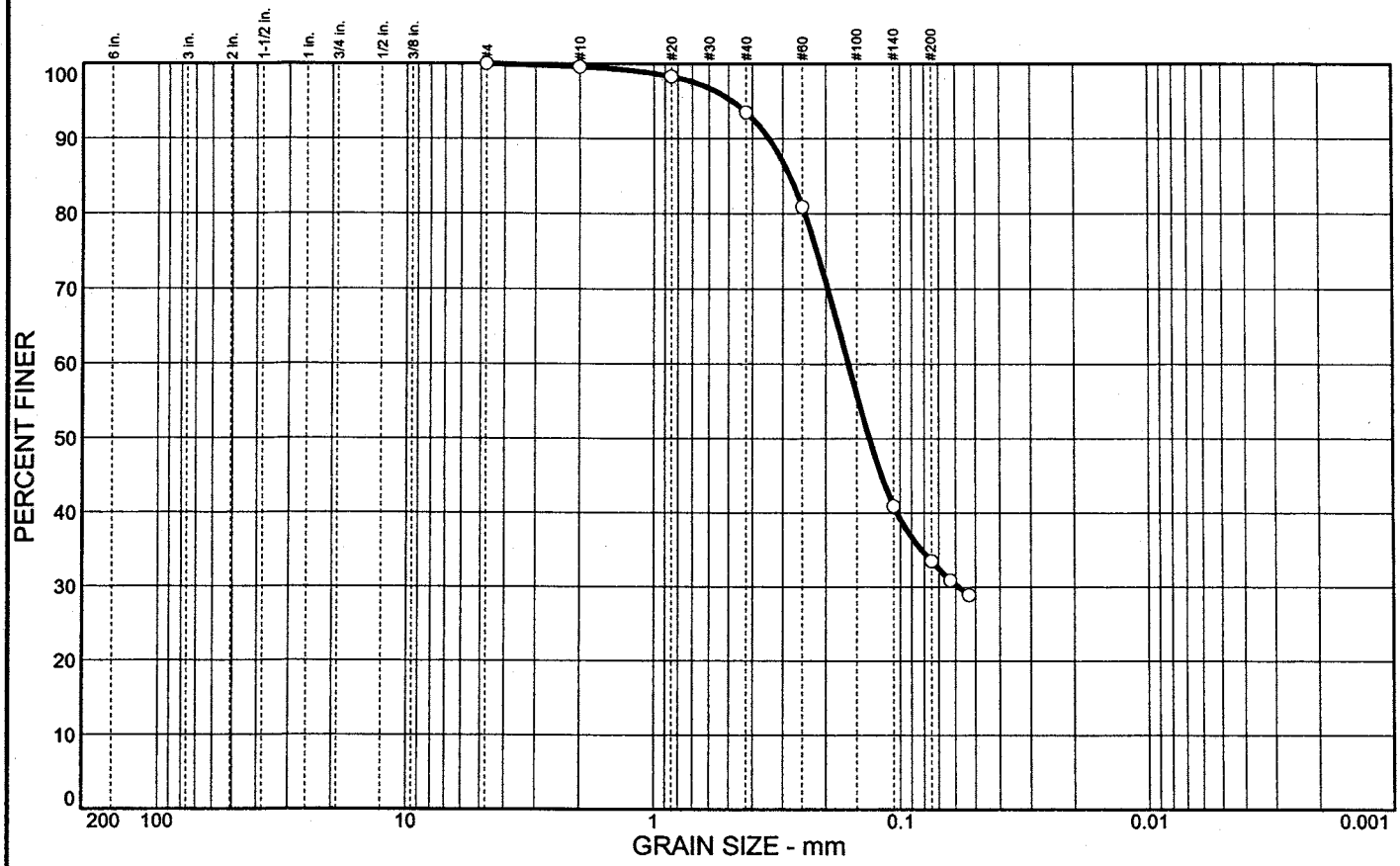
Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Jeffrey S. Samuels 5-18-04

Jeffrey S. Samuels, P.E.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			66.5	33.5		SM	A-2-4(0)	28	31

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.162		
D_{30}	0.0586		
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#10	99.6		
#20	98.3		
#40	93.5		
#60	80.9		
#140	40.9		
#200	33.5		
#230	30.9		
#270	28.9		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, some silt, few medium sand size shell fragments, brown-gray

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity 2.701

○ Source: E-PE04-3

Sample No.: 254317

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

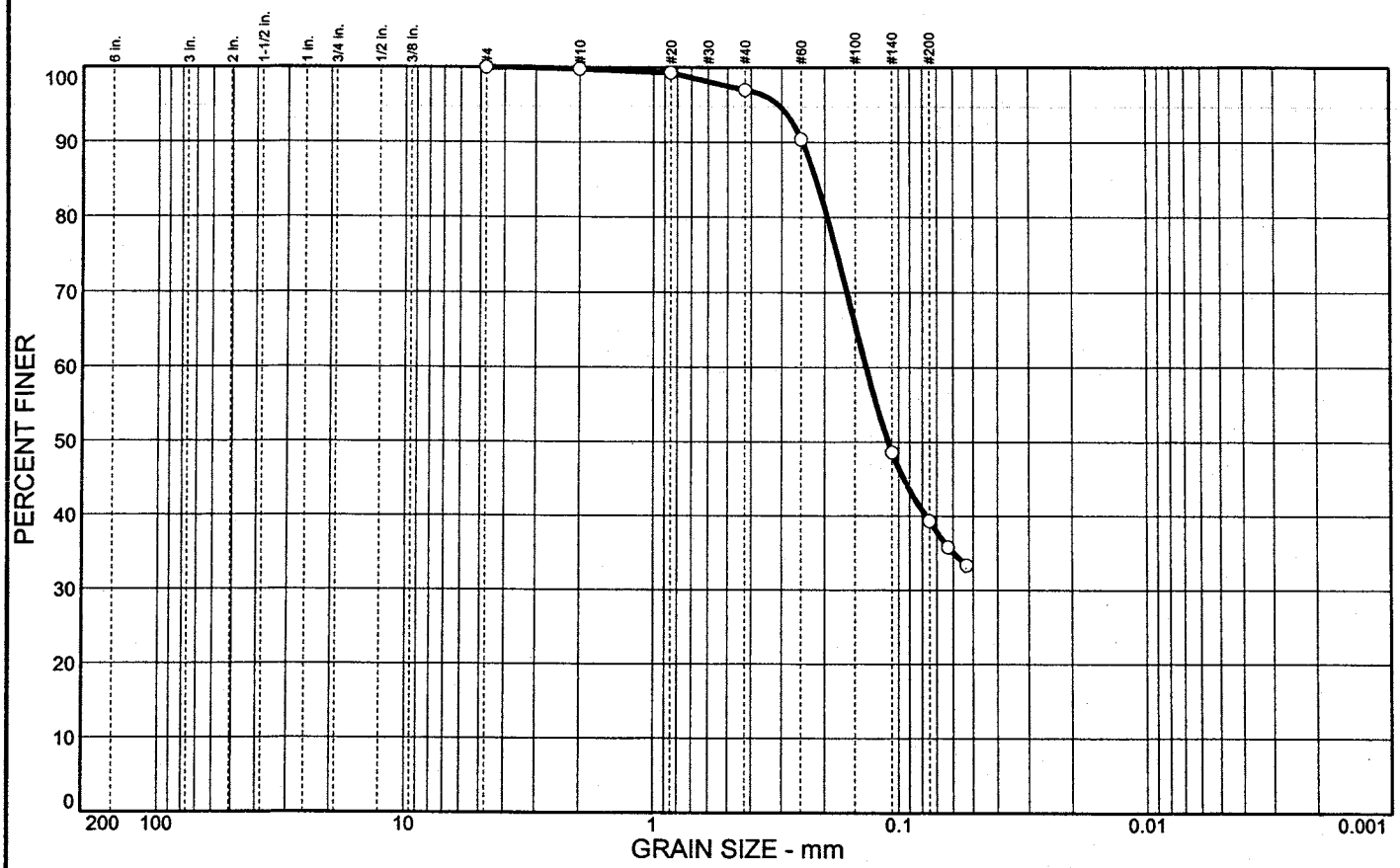
Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Jeffrey S. Samuels 5-18-09

Jeffrey S. Samuels, P.E.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			60.7	39.3		SM	A-4(0)	35	37

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.135		
D_{30}			
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#10	99.8		
#20	99.3		
#40	97.0		
#60	90.4		
#140	48.6		
#200	39.3		
#230	35.8		
#270	33.3		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, some silt, trace of medium sand size shell fragments, gray

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity: 2.710

○ Source: E-PE04-4

Sample No.: 254318

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

Project: USACE Port Everglades

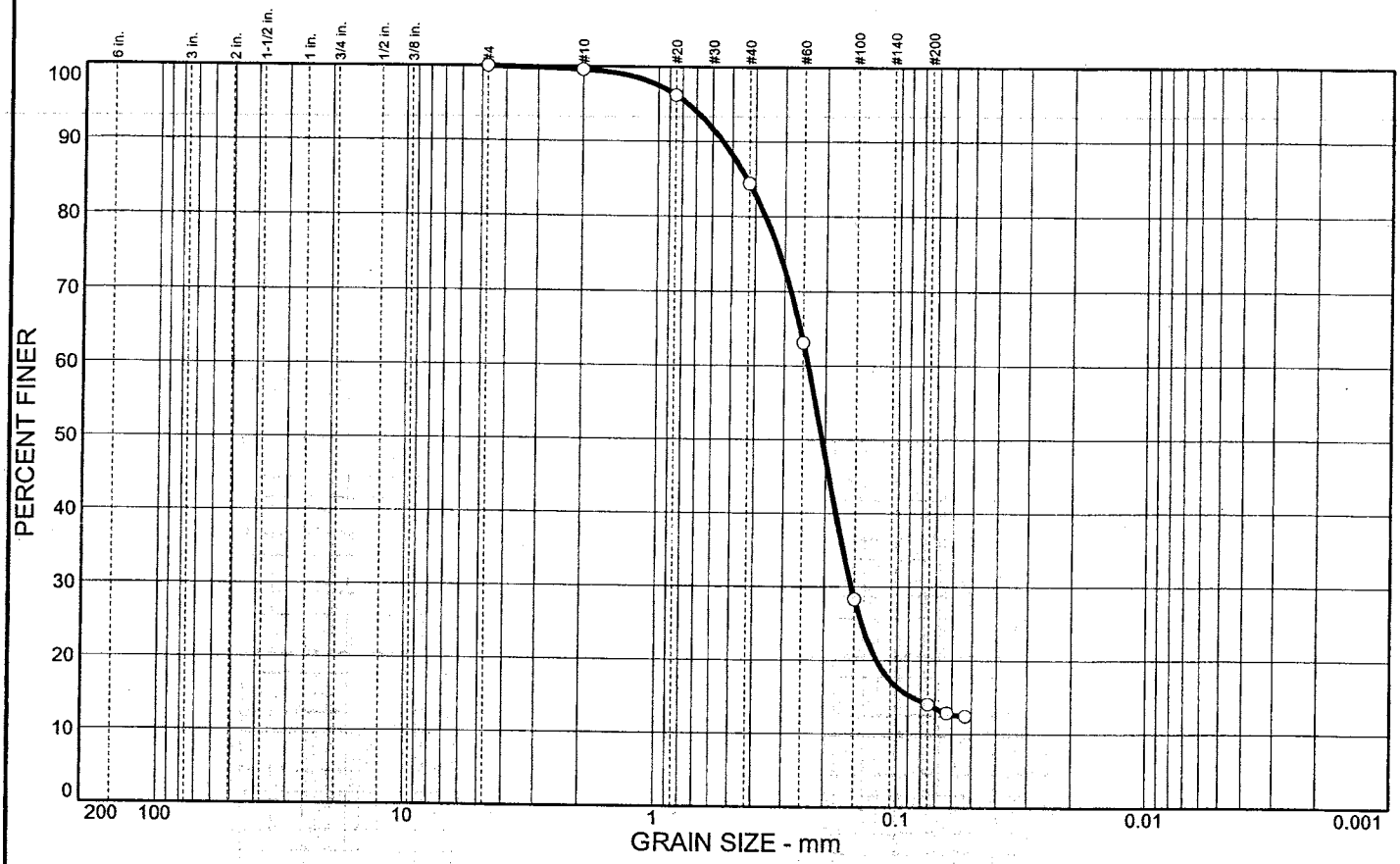
Project No.: 6738-04-4477-02

Jeffrey S. Samuels 5-18-04

Reviewed By:

Jeffrey S. Samuels, P.E.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			86.0	14.0		SM	A-2-4(0)		

SIEVE inches size	PERCENT FINER ○		
GRAIN SIZE			
D_{60}	0.238		
D_{30}	0.155		
D_{10}			
COEFFICIENTS			
C_c			
C_u			

○ Source: RS-PE04

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#10	99.6		
#20	96.2		
#40	84.4		
#60	63.1		
#100	28.3		
#200	14.0		
#230	12.8		
#270	12.4		

Sample No.: 254319

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, little medium sand size shell fragments, little silt, light brown

REMARKS:

○ Specific Gravity: 2.708; Date Tested: 6/8/04

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

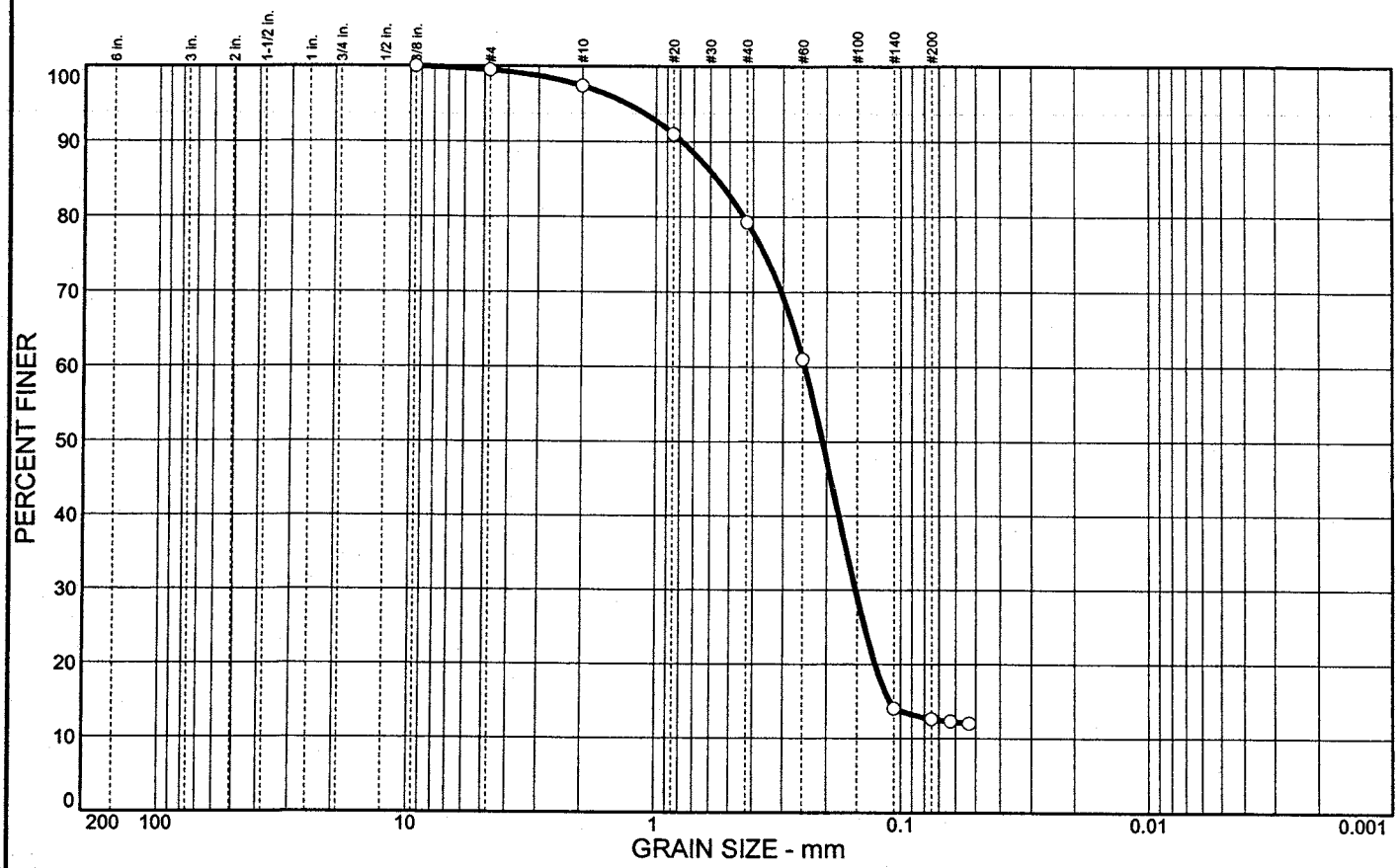
Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Michael J. Hahn

Michael J. Hahn

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		0.5	86.9	12.6		SM	A-2-4(0)		

SIEVE inches size	PERCENT FINER ○		
.375	100.0		
	GRAIN SIZE		
D_{60}	0.245		
D_{30}	0.152		
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	99.5		
#10	97.4		
#20	91.0		
#40	79.3		
#60	61.0		
#140	14.0		
#200	12.6		
#230	12.3		
#270	12.0		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, little medium sand size shell fragments & silt, trace of coarse sand size shell fragments, dark gray

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity: 2.696

○ Source: E-PE04-Control

Sample No.: 254320

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Jeffrey S. Samuels 5-18-04

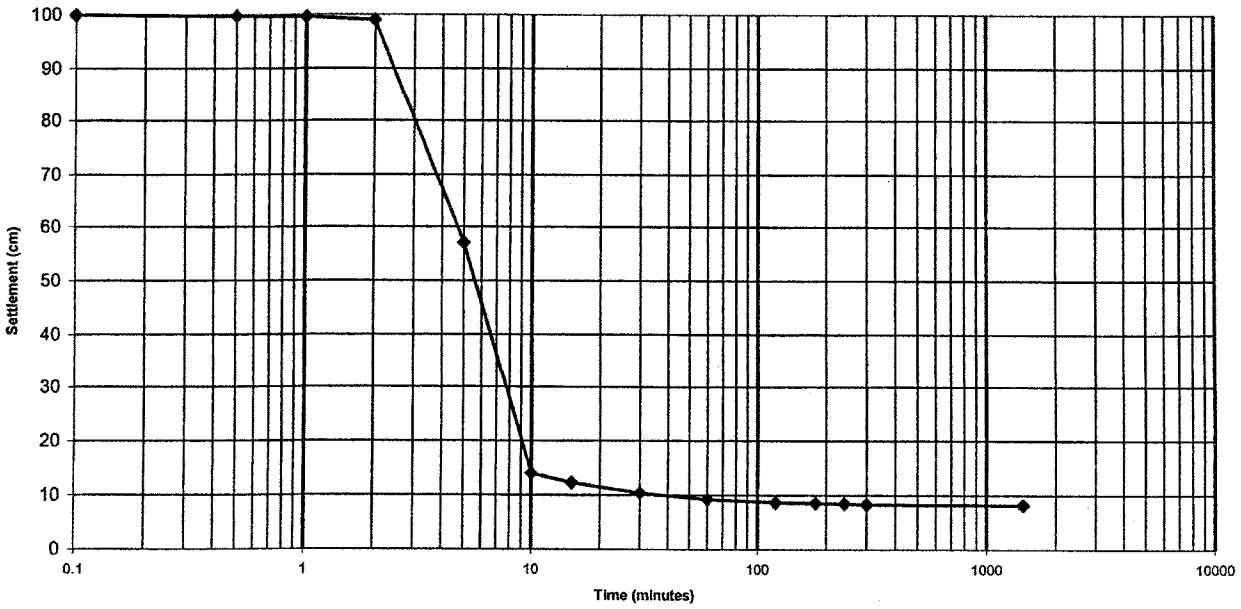
Jeffrey S. Samuels, P.E.

MACTEC

REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION E-PE04-1
SAMPLE NO: 254314
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	10.4
0.5	99.7	60	9.2
1	99.6	120	8.7
2	99.0	180	8.6
5	57.0	240	8.5
10	14.0	300	8.3
15	12.3	1440	8.2

Final Concentration: 1219.5 g/L

5-13-04

MACTEC Engineering and Consulting, Inc.
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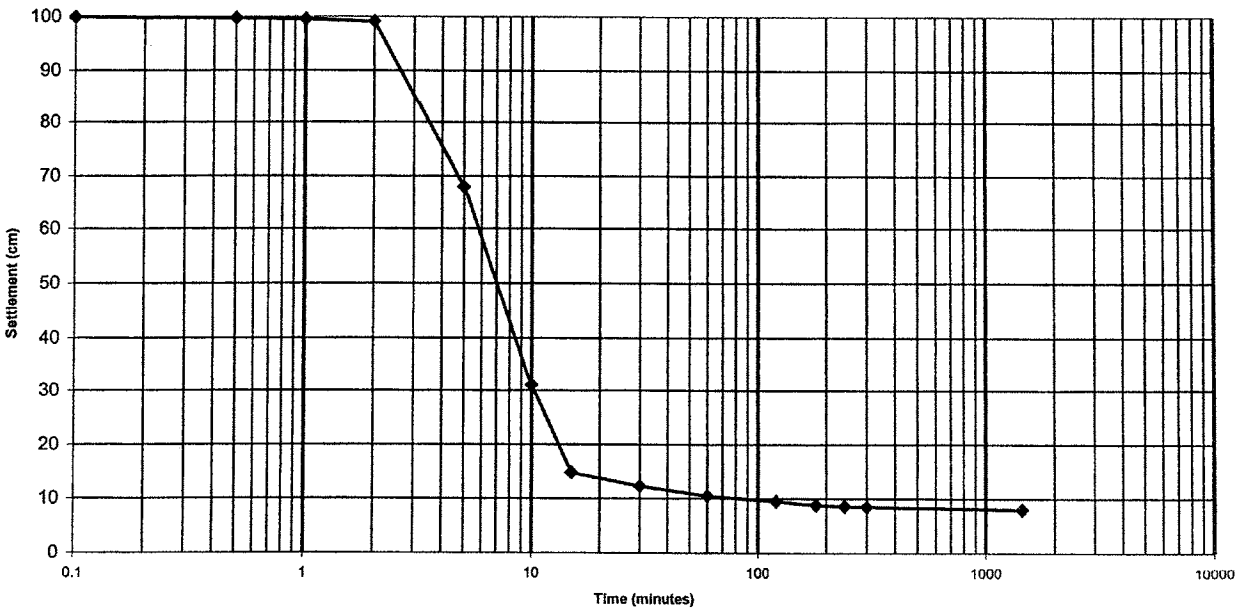
Jacksonville, Florida 32207
(904) 396-5173

MACTEC

REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION E-PE04-2
SAMPLE NO: 254316
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	12.3
0.5	99.7	60	10.5
1	99.5	120	9.5
2	99.1	180	8.8
5	68.0	240	8.6
10	31.0	300	8.5
15	14.8	1440	8.0

Final Concentration: 1250 g/L

JDL 5-18-04

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3901 Carmichael Avenue
Jacksonville, Florida 32207
(904) 396-5173

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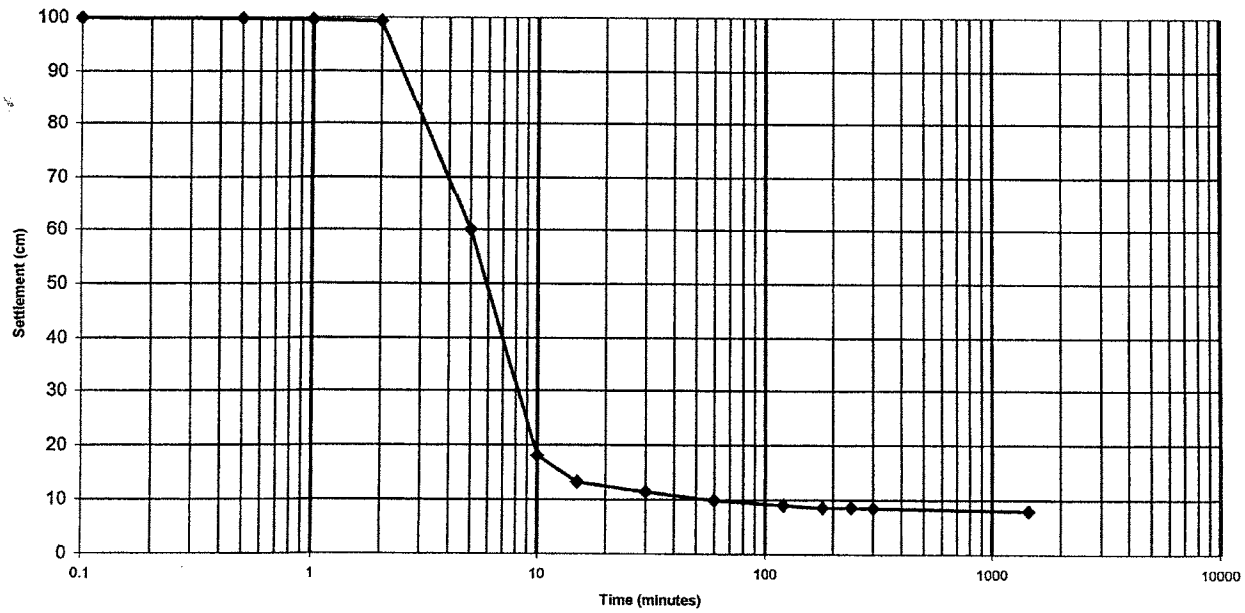
REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION E-PE04-3
SAMPLE NO: 254317
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	11.4
0.5	99.8	60	9.9
1	99.5	120	9.0
2	99.3	180	8.6
5	60.0	240	8.6
10	18.0	300	8.5
15	13.2	1440	8.0

Final Concentration: 1250 g/L

5-18-04

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3901 Carmichael Avenue
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(904) 396-5173

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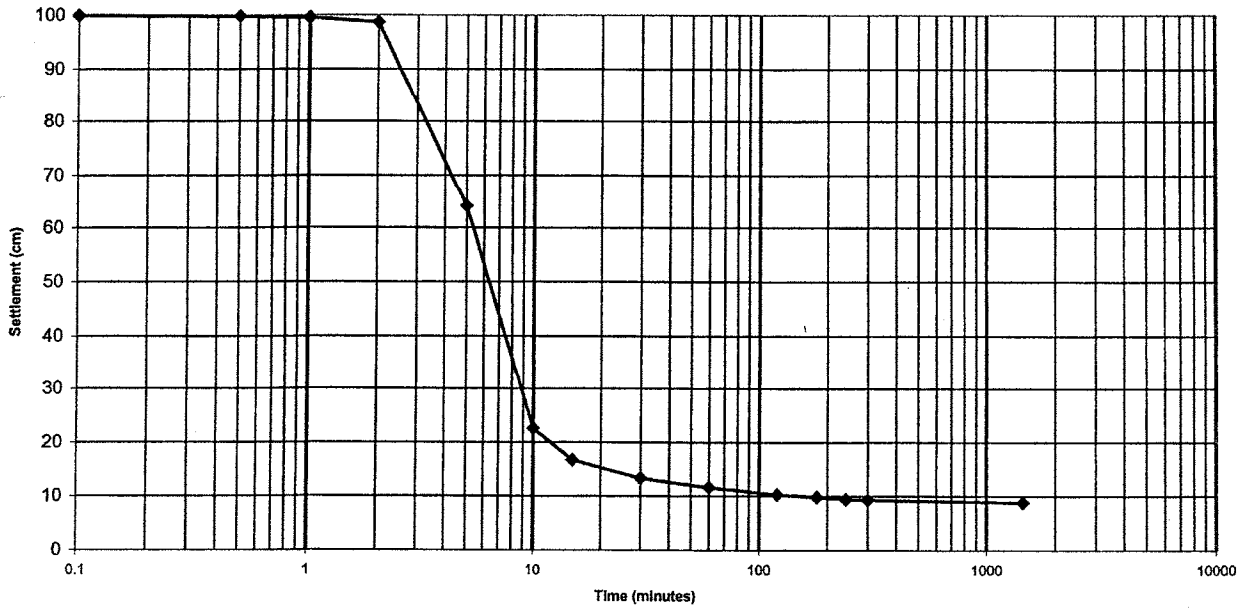
REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO:	6738-04-4477-02	STATION	E-PE04-4
PROJECT:	USACE Port Everglades	SAMPLE NO:	254318
CLIENT:	PPB Environmental	CONCENTRATION:	100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	13.3
0.5	99.8	60	11.6
1	99.5	120	10.3
2	98.7	180	9.8
5	64.0	240	9.4
10	22.5	300	9.3
15	16.7	1440	8.8

Final Concentration: 1136.4 g/L

JBL 5-18-09

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3901 Carmichael Avenue
Jacksonville, Florida 32207
(904) 396-5173

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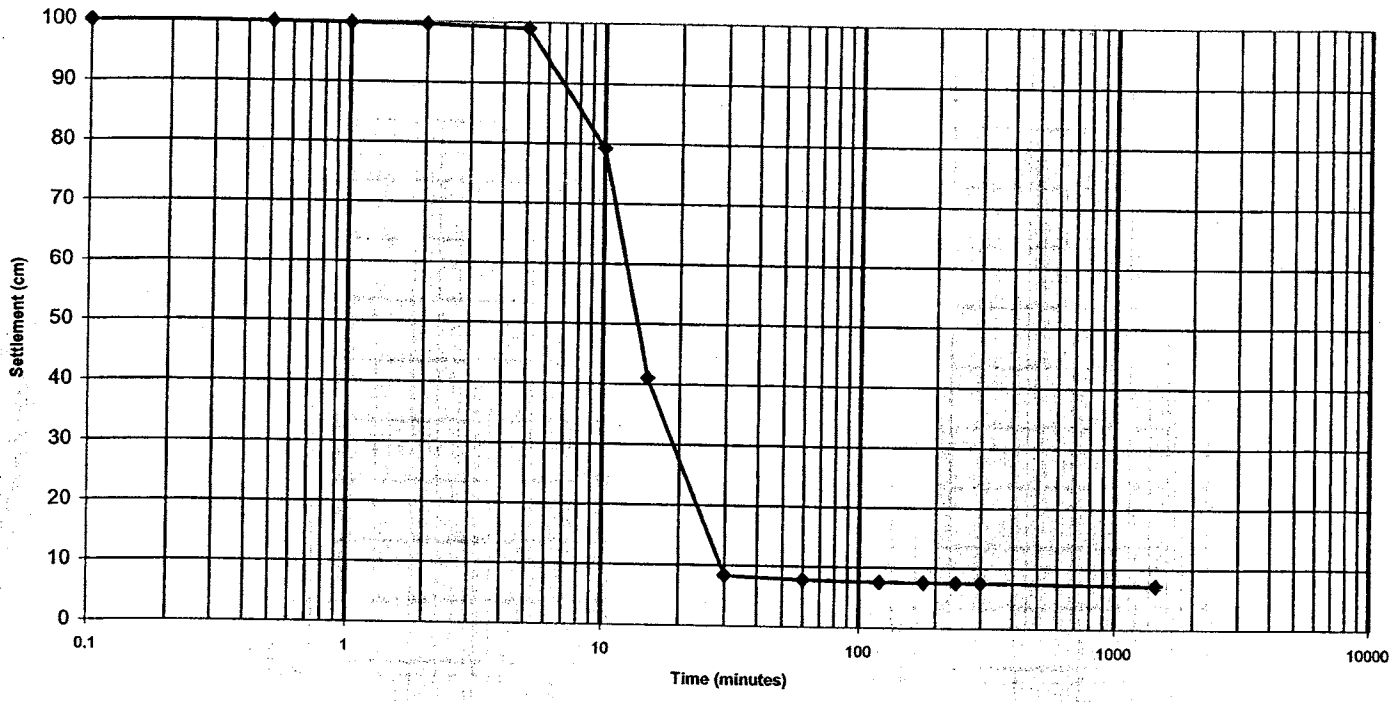
REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION RS-PE04
SAMPLE NO: 254319
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	8.3
0.5	99.8	60	7.8
1	99.7	120	7.6
2	99.6	180	7.5
5	99.0	240	7.5
10	79.3	300	7.5
15	41.0	1440	7.2

Final Concentration: 1388.9 g/L

Performed By: WV
Date: 6/8/04

Respectfully Submitted,
Michael J. Holm

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3901 Carmichael Avenue
Jacksonville, Florida 32207
(904) 396-5173

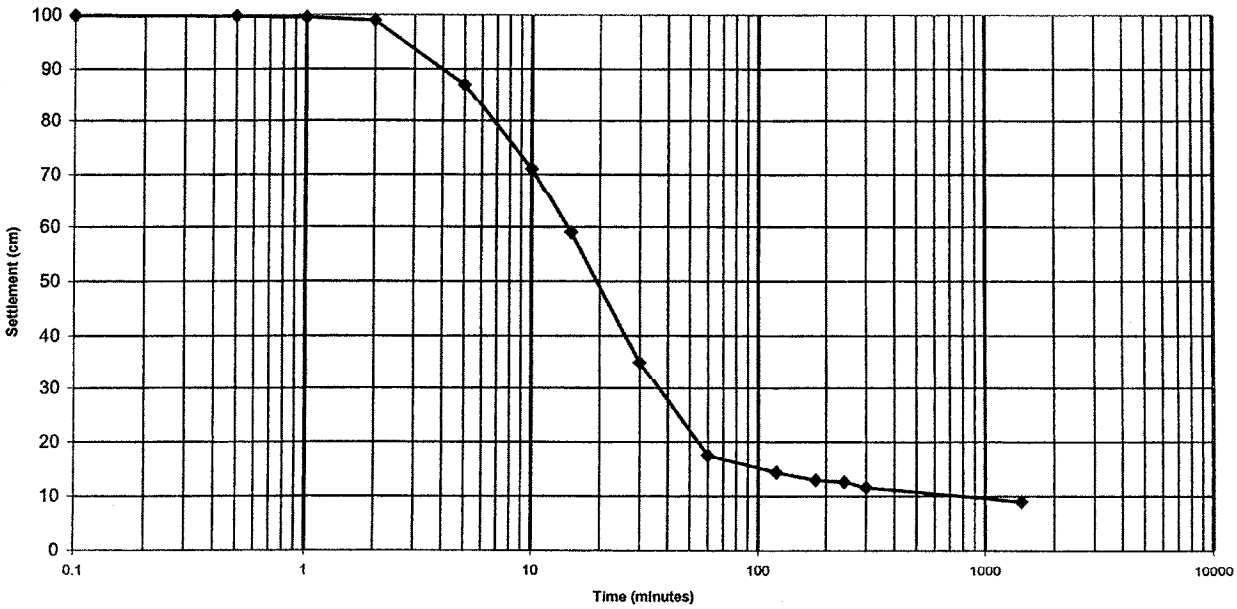
Michael J. Holm

MACTEC

REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION E-PE04-Control
SAMPLE NO: 254320
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	35.0
0.5	99.8	60	17.5
1	99.5	120	14.4
2	99.0	180	13.0
5	87.0	240	12.6
10	71.0	300	11.6
15	59.0	1440	9.0

Final Concentration: 1111.1 g/L

J.Dl 5-18-09

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APPENDIX A

Port Everglades 103 Evaluation – 2004
Sampling Plan and Protocol

PORT EVERGLADES 103 EVALUATION - 2004
SAMPLING PLAN AND PROTOCOL

Introduction

The 103 evaluation of the Port Everglades maintenance dredging and new work project considers potential dredged material (DM) from the portion of Port Everglades that are proposed for disposal in the Port Everglades Ocean Dredged Material Disposal Sites (ODMDS).

Project Description

Port Everglades is located on the east coast of Florida at the city of Ft. Lauderdale (see encl. 1). The project consists of an entrance channel 500 feet wide and 45 feet deep, main turning basin 42 feet and north turning basin 31 feet deep with an allowable overdraft of 2 foot. Material from the entrance channel is beach quality sand and will be used for beach nourishment. No testing of the entrance channel material is planned. Material from the turning basin is silty sands, silts and clays. The turning basin was evaluated for ocean disposal in 1998 and found to be generally clean and free of contamination. However after testing was completed and an upland site was found, no concurrence for ocean disposal was requested. New work consists of deepening the Navy berthing area located to the south of the east end of the entrance channel as shown on the attached drawings (encl.2).

Evaluation Needed

This sampling plan and protocol defines the work necessary to obtain an EPA concurrence for disposal of dredged material from Port Everglades. The testing will be done in accordance with the 1991 "Green Book"

A brief review of the steps leading to this decision is provided.

Tier I - Review of the available information for these projects indicates that chemical and bio-toxicity data for the turning basin are over 7 years old and considered inadequate. No data is available for the new work in the Navy berthing area. New data needs to be generated in accordance with the Green Book. Therefore the evaluation moved to Tier II.

Tier II Evaluation - The proposed contaminants of concern for this project are listed below. The list includes the minimum requirements according to the regulations as well as other common contaminants.

Metals

Aluminum (sediment only)
Antimony
Arsenic
Cadmium
Chromium
Copper
Iron (sediment only)
Lead
Mercury
Nickel
Silver
Zinc

Selenium and thallium are not considered contaminates of interest. These metals have not been found in Florida marine sediments in significant quantities. In addition there are no industrial activities in the Port Everglades area that would be likely sources of these metals.
Beryllium is not considered a contaminate of interest. Beryllium is used in highly specialized nuclear and aerospace manufacturing processes, none of which have been, or currently are located within the watershed of Port Everglades.

Organic Chemicals

Chlorinated Hydrocarbon Pesticides

Aldrin
Chlordane
4,4'-DDT
4,4'-DDD
4,4'-DDE
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan Sulfate
Endrin
Endrin Aldehyde
Heptachlor
Heptachlor Epoxide
Lindane& deriv
Methoxychlor
Toxaphene

Polychlorinated Biphenyls (PCBs)

PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1248
PCB-1254
PCB-1260
PCB Congeners (per Green Book)

Polycyclic Aromatic Hydrocarbons (PAHs)

Acenapthene
Acenaphthylene
Anthracene
Benzo (a) Anthracene
Benzo (a) Pyrene
Benzo (g,h,i) Perylene
Benzo (k) Fluoranthene
Benzo (b) Fluoranthene
Chrysene
Dibenzo (a,h) Anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd) Pyrene
1-Methylnaphthalene
2-Methylnaphthalene
Naphthalene
Phenanthrene
Pyrene

Other

Total Ammonia
Cyanide
Oil and Grease

Total Organic Carbon (T.O.C.)
Total Organic Tin
Total Sulfides

Dioxin is not considered to be a contaminant of concern because there are no sources of dioxin or data suggesting that dioxin could be a problem at this site. Therefore dioxin has not been included.

Tier III Evaluation - Because of the need to establish current test data under the 1991 Green Book, this project will evaluate sediments by bioassays and bioaccumulation studies concurrently with chemical analysis as opposed to delaying tier III evaluation until results of the tier II analysis are available. Chemical analysis of tissue will be performed under a separate contract only for those contaminants of concern identified during chemical analysis of sediment and/or water.

Testing for the Port Everglades project will be provided by PPB Environmental of Gainesville, Florida and their subcontractors under a current contract with the Jacksonville District Corps of Engineers.

A plan for sampling and testing of representative sediment samples is detailed below.

Sample Plan Design

Sample Station Selection. In selecting sample stations, consideration is given to the location of shoals, the types of sediment, and areas that are likely to be contaminated, such as areas near point source discharges, or areas likely to be affected by non-point source discharge. Also considered are the influence of currents, geographical influences on different areas of the project and so forth. These points have been considered in this review.

When appropriate, sample stations were picked at random.

Four (4) sample zones have been selected as shown on the encl 2. These zones will be numbered E-PE04-1 through 4. Zone 1 consists of the new work for the Navy located at the southwest edge of the entrance channel adjacent to the shoreline. Three (3) sub-samples will be collected in zone 1. Zone 2 consists of the northern extension of the turning basin. Five (5) sub-samples will be collected in zone 2. Zone 3 is the northern half of the turning basin above Range 525. Two (2) sub-samples will be taken in zone 3. Zone 4 consists of the southern half of the turning basin south of Range 525. Two (2) sub-samples will be taken in zone 4. The sub-samples from each zone will be homogenized and tested as a single sample. Sub-samples will be numbered E-PE04-Z-1 through x with "Z" being the zone number (i.e. in zone 1 sub-sample 1 would be identified as E-PE04-1-1).

Reference Station. An area reference will be composited from two sub-samples that will be taken from one mile north of the north edge of the ODMDS and one mile south of the south edge of the ODMDS. The reference stations will be numbered RS-PE04A and B. The sub-samples will be homogenized and tested as a single sample numbered RS-PE04

The locations of stations will be established using DGPS.

Where sediments are of sufficient depth, approximately four feet or more, samples will be taken using a Vibracore. Vibracore samples will be taken from the benthic surface to the project dredge depth or refusal. Where the depth of sediment to be sampled is insufficient to require the use of the Vibracore, or where the water is too deep to allow the use of the Vibracore, the samples will be taken with a box core, gravity core or other appropriate sampling method. Reference sub-samples will be taken by grab. The field collection contractor may change the sampling method as required by conditions in the field. Sufficient sediment and water samples will be taken during fieldwork to run sediment and water chemistry as well as bioassays for five species and bioaccumulation for two species, and to run a re-test of the reference station sediments if required.

QA/QC. One sample zone will be sampled in duplicate for all sediment chemical and bioassay analysis. The zone to be duplicated will be selected at random by the field collection contractor. In addition, the control sediments will be analyzed for all chemical parameters for water and sediment chemistry. The contractor will run spiked samples on request or provide splits of samples under a separate delivery order.

Hydrographic Measurements. Collection of sediment and water samples will include the following information on station conditions and in situ hydrographic measurements at surface, mid-water column and bottom:

Water temp.	Salinity	DO
pH	Turbidity (NTU's)	Conductivity
Water depth	Tidal Cycle	Sea State
Weather		

A list of sample stations and locations will be provided to the field collection contractor during the pre-work planning meeting. Field notes will be provided to the District upon the completion of fieldwork.

Test Parameter	Test Method	Detection Limit
1. Grain Size Analysis	Plumb 1981	1.0 % (phi and mm
2. Total Solids/ Water Content	Plumb 1981	1.0% solids
3. Specific gravity	ASTM D854	
4. Atterburg limits	ASTM D4318	
5. Settling rates	Corps SAD Lab Method	

Sediment chemical analysis. Bulk sediment tests for samples from each station will be performed for the following constituents using the methods and detection limits specified:

Test Parameter	Method to be Used	Detection Limit
1. Metals		(dry wgt basis)
a. Aluminum	ICP,	0.5 ppm
b. Antimony	6010	0.3 ppm
c. Arsenic	7061	0.5 ppm
d. Cadmium	ICP or 7131	0.1 ppm
e. Chromium	ICP or 7191	0.2 ppm
f. Copper	ICP	0.1 ppm
g. Iron	ICP	1.5 ppm
h. Lead	ICP or 7421	0.1 ppm
i. Mercury	7471	0.2 ppm
j. Nickel	ICP or 7191	0.2 ppm
k. Silver	ICP or 7761	0.1 ppm
l. Zinc	ICP	0.2 ppm

Note: Methods ending in 0 are flame atomic absorption (AA). Methods ending in 1 are Graphite furnace AA or cold vapor for mercury. 200.7 indicate inductively coupled plasma (ICP). For this work, flame AA is the least sensitive method, ICP next and furnace AA the most Testing sensitive.

2. Organics

a Pesticides and PCB's

1) Aldrin	8081	0.020 ppm
2) Chlordane	8081	0.020 ppm
3) 4,4'-DDT	8081	0.020 ppm
4) 4,4'-DDD	8081	0.020 ppm
5) 4,4'-DDE	8081	0.020 ppm
6) Dieldrin	8081	0.020 ppm
7) Endosulfan I	8081	0.025 ppm
8) Endosulfan II	8081	0.025 ppm
9) Endosulfan Sulfate	8081	0.025 ppm
10) Endrin	8081	0.020 ppm

11) Endrin Aldehyde	8081	0.020 ppm
12) Heptachlor	8081	0.020 ppm
13) Heptachlor Epoxide	8081	0.020 ppm
14) Lindane& deriv	8081	0.020 ppm
15) Methoxychlor	8081	0.020 ppm
16) Toxaphene	8081	0.030 ppm
17) PCB-1248	8081	0.010 ppm
18) PCB-1254	"	"
19) PCB-1016	"	"
20) PCB-1221	"	"
21) PCB-1232	"	"
22) PCB-1242	"	"
23) PCB-1260	"	"
24) PCB Congeners (per Green Book)		

b. Polynuclear Aromatic Hydrocarbons (PAHs) - all by 8270 SIM at 0.020 ppm

1) Acenaphthene
2) Acenaphthylene
3) Anthracene
4) Benzo (a) Anthracene
5) Benzo (a) Pyrene
6) Benzo (b) Fluoranthene
7) Benzo (k) Fluoranthene
8) Benzo (g,h,i) perylene
9) Chrysene
10) Dibenzo (a,h) Anthracene
11) Fluoranthene
12) Fluorene
13) Indeno(1,2,3-cd) Pyrene
14) 1-Methylnapthalene
15) 2-Methylnapthalene
16) Naphthalene
17) Phenanthrene
18) Pyrene

c. Total Ammonia	Plumb 1981	0.10 mg/kg
d. Cyanide	9010/9012	1.0 mg/kg
e. Oil and Grease	413.2	1.0 ppm (wet wt.)
f. Total Organic Carbon (TOC)	9060	0.1 %
g. Total Sulfides	9030, Plumb 1981	0.20 ppm

3. Total Organic Tin (run for all sample and reference stations): Mono, di and tributyltin by Stephensen and Smith, 1988 or Uhler and Durrel, 1989 at a method detection limit of 0.01 mg/kg.

Based on bulk sediment chemical results tissues will be tested for only those chemical compounds that are present at levels high enough to be of concern.

Chemical Analysis of Elutriates. Chemical analysis of elutriates from samples from each station for which chemical analysis will be performed for the compounds listed. Water for elutriate preparation will be obtained from a point in the approximate center of Port Everglades. In addition a water sample taken at the reference site will analyzed for the compounds listed. Elutriate chemical analysis results will be evaluated using the ADDAMS model in accordance with

the requirements of the Green Book. ADDAMS model results will be addressed in the executive summary of the final report and included as an appendix to the final report.

Test Parameter	EPA Method	Detection Limit
1. Metals		
a. Antimony	200.7/610	3.5 ppb
b. Arsenic	7061	1.0 ppb
c. Cadmium	7131	0.5 ppb
d. Chromium	7191	0.5 ppb
e. Copper	220.7-furnace AA	2.5 ppb
f. Lead	7421	2.5 ppb
g. Mercury	7471	0.2 ppb
h. Nickel	249.2	0.2 ppb
i. Silver	272.2-furnace AA	1.0 ppb
j. Zinc	200.7 ICP	1.5 ppb
2. Organics		
a Pesticides and PCB's		
1) Aldrin	8080	0.020 ppm
2) Chlordane	8080	0.025 ppm
3) 4,4'-DDT	8080	0.020.ppm
4) 4,4'-DDD	8080	0.020 ppm
5) 4,4'-DDE	8080	0.020 ppm
6) Dieldrin	8080	0.020 ppm
7) Endosulfan I	8080	0.025 ppm
8) Endosulfan II	8080	0.025 ppm
9) Endosulfan Sulfate	8080	0.025 ppm
10) Endrin	8080	0.020 ppm
11) Endrin Aldehyde	8080	0.020 ppm
12) Heptachlor	8080	0.020 ppm
13) Heptachlor Epoxide	8080	0.020 ppm
14) Lindane & deriv	8080	0.020 ppm
15) Methoxychlor	8080	0.020 ppm
16) Toxaphene	8080	0.030 ppm
17) PCB-1248	Tetra Tech 1986 & NOAA 1989	0.010 ppm
18) PCB-1254	"	"
19) PCB-1016	"	"
20) PCB-1221	"	"
21) PCB-1232	"	"
22) PCB-1242	"	"
23) PCB-1260	"	"
24) PCB Congeners (per Green Book)		

b. Polynuclear Aromatic Hydrocarbons (PAHs) - all by 8100 at 0.020 ppm

1) Acenapthene
2) Acenaphthylene
3) Anthracene
4) Benzo (a) Anthracene
5) Benzo (a) Pyrene
6) Benzo (b) Fluoranthene
7) Benzo (k) Fluoranthene
8) Benzo (g,h,i) perylene
9) Chrysene
10) Dibenzo (a,h) Anthracene

11) Fluoranthene
12) Fluorene
13) Indeno(1,2,3-cd) Pyrene
14) Naphthalene
15) Phenanthrene
16) Pyrene

c. Total Ammonia	Plumb 1981	0.10 ppm
d. Cyanide	9010/9012	1.0 ppm
e. Oil and Grease (wet wt.)	413.2	1.0 ppm
f. Total Organic Carbon (TOC)	9060	0.1 %
g. Total Sulfides	9030, Plumb 1981	0.20 ppm

3. Total Organic Tin: Run for mono, di and tributyltin by Stephensen and Smith, 1988 or Uhler and Durrel, 1989 at a method detection limit of 0.1 ppm.

Chemical data will be obtained and transmitted to the Jacksonville District as quickly as possible to allow for review and subsequent decision on the need for continuing with bioassays and bioaccumulation tests.

Bioassays. Water column and sediment bioassays and bioaccumulation tests will be planned for and started. If chemical data justifies, the test may be aborted on the order of the Corps project officer. Bioassays and bioaccumulation work will be performed as follows.

Water column bioassays. Water column bioassays will be performed for each sample station and a control. No reference station samples will be run. Tests will be 96 hour (48 hours for zooplankton) static bioassays on concentrations of 10%, 50%, and 100% with five replicates of 10 animals each for each concentration. In addition a 100% dilution-water test will be run for each species. The following species will be used:

1. **Crassostrea virginica**
2. **Mysidopsis bahia**
3. **Meninida beryllina**

The use of Crassostrea virginica is conditional depending on seasonal availability. If not available another species will be substituted.

Whole Sediment Bioassays. Sediment bioassays will be performed for each sample station and a control and reference station. Tests will be 10-day tests conducted in accordance with the 1991 Green Book with five replicates of 20 animals each for each station. The tests will be conducted using the following species:

1. **Leptocheirus plumulosus**
2. **Mysidopsis bahia**

The reference station test will be run on a single sample obtained by compositing the two subsamples from the reference sub-stations taken in the vicinity of the disposal area.

A reference-toxicant test will be conducted for each species used in water column and sediment bioassays.

Bioaccumulation Studies. Bioaccumulation studies will be started concurrently with the bioassays. Chemical analysis of tissue will be performed under a separate contract only for those contaminants of concern identified during chemical analysis of sediment and/or water. If no such chemicals are identified the bioaccumulation tests may be aborted on the direction of the Corps project officer.

The following species will be used for bioaccumulation studies.

1. **Nereis sp.**
2. **Macoma sp.**

Chemical Analysis of Tissues. Tissue from the bioaccumulation studies will be analyzed for the following chemicals by the methods and at the detection limits specified under a separate contract. All data will be expressed in both wet and dry weights. Detection limits are expressed here in dry weight values.

Test Parameter	EPA Method	Detection Limit
1. Tissue Characteristics		
a. Percent moisture	U. S. EPA 1986a, 1987c	0.1%
b. Lipids		
2. Metals		
a. Antimony	200.7/610	3.5 ppb
b. Arsenic	7061	1.0 ppb
c. Cadmium	7131	0.5 ppb
d. Chromium	7191	0.5 ppb
e. Copper	220.7-furnace AA	2.5 ppb
f. Lead	7421	2.5 ppb
g. Mercury	7471	0.2 ppb
h. Nickel	249.2	0.2 ppb
i. Silver	272.2-furnace AA	1.0 ppb
j. Zinc	200.7 ICP	1.5 ppb
3. Organics		
a. Pesticides and PCB's		
1) Aldrin	8080	0.020 ppm
2) Chlordane	8080	0.025 ppm
3) 4,4'-DDT	8080	0.020 ppm
4) 4,4'-DDD	8080	0.020 ppm
5) 4,4'-DDE	8080	0.020 ppm
6) Dieldrin	8080	0.020 ppm
7) Endosulfan I	8080	0.025 ppm
8) Endosulfan II	8080	0.025 ppm
9) Endosulfan Sulfate	8080	0.025 ppm
10) Endrin	8080	0.020 ppm
11) Endrin Aldehyde	8080	0.020 ppm
12) Heptachlor	8080	0.020 ppm
13) Heptachlor Epoxide	8080	0.020 ppm
14) Lindane & deriv	8080	0.020 ppm
15) Methoxychlor	8080	0.020 ppm
16) Toxaphene	8080	0.030 ppm
17) PCB-1248	Tetra Tech 1986 & NOAA 1989	0.010 ppm
18) PCB-1254	"	"
19) PCB-1016	"	"
20) PCB-1221	"	"
21) PCB-1232	"	"
22) PCB-1242	"	"
23) PCB-1260	"	"
24) PCB Congeners (per Green Book)		

b. Polynuclear Aromatic Hydrocarbons (PAHs)
(Macoma sp. only) - all by 8080 at 0.020 ppm.

1) Acenaphthene
2) Acenaphthylene
3) Anthracene
4) Benzo (a) Anthracene
5) Benzo (a) Pyrene
6) Benzo (b) Fluoranthene
7) Benzo (k) Fluoranthene
8) Benzo (g,h,i) perylene
9) Chrysene
10) Dibenzo (a,h) Anthracene
11) Fluoranthene
12) Fluorene
13) Indeno(1,2,3-cd) Pyrene
14) 1-Methylnapthalene
15) 2-Methylnapthalene
16) Naphthalene
17) Phenanthrene
18) Pyrene

4. Total Organic Tin: Mono, di and tributyltin by Stephensen and Smith, 1988 or Uhler and Durrel, 1989 at a method detection limit of 0.01 mg/kg.

Diluent for bioassays and bioaccumulation tests may be disposal-site water, clean seawater, or artificial seawater.

Results of the chemical analysis of tissues from the Port Everglades stations will be compared to the reference station, control and background tissue results in accordance with the requirements of the Green Book. The statistical analysis of the results will be discussed in the executive summary and included as an appendix to the final report.

ANALYTICAL METHODOLOGY

Laboratory analyses shall be conducted in accordance with the following:

a. Sediment and Elutriate Analysis.

(1) References.

(i) Procedures for Handling and Chemical Analysis of Sediment and Water Samples. USEPA/CE 81-1, May 1981, USACE Waterways Experiment Station, Vicksburg, Mississippi.

(ii) Standard Methods for the Examination of Water and Wastewater. 20th Edition, 1996, American Public Health Association (or latest edition).

(iii) Methods for Chemical Analysis of Water and Wastes (EPA 1983, and subsequent updated).

(iv) Test Methods for evaluating Solid Wastes (EPA 1986, and subsequent updates).

(v) Regional Implementation Manual – Requirements and Procedures for Evaluation of Ocean Disposal of Dredged Material in Southeastern Atlantic and Gulf Coastal Waters (EPA Region IV/COE South Atlantic Division 1993, and subsequent updates).

(vi) Evaluation of Dredged Material Proposed for Ocean Disposal (EPA/COE 1991, and subsequent updates).

(vii) Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual (EPA/COE 1998).

(viii) Method for Semivolatile Organic Priority Pollutants in Fish (Battelle 1985, Final Report, EPA Contract No. 68-03-1760).

QUALITY CONTROL

a. The laboratory shall maintain accreditation under the National Environmental Laboratory Accreditation Conference/Program (NELAC/P)or have FDHR certification. Bioassays and tissue analysis however are not included in State approval process.

b. Contractors shall have an established quality control program which is based on Environmental Protection Agency's quality control program as outlined in Handbook for Analytical Quality Control in Water and Wastewater Laboratories, USEPA 600/4-79-019, March 1979, EPA Office of Research and Development, Cincinnati, Ohio and complies with the requirements of the Department of Defense Quality Systems Manual for Environmental Laboratories, October, 2000.

c. Upon completion of the analyses, the laboratory shall prepare a quality control report which includes the precision and accuracy of data generated on the analyzed samples.

d. As an absolute minimum, the following quality control measures shall be taken with each group of samples analyzed:

(1) Reagent blanks shall be run.

(2) Duplicate analyses shall be made on 10% of all samples, unless replicates are already required in the work order, and precision data shall be reported in the quality control report.

(3) At least one audit or reference sample (EPA, NBS or other EPA acceptable source) shall be run and reported in the quality control report. This audit sample (water or sediment) shall be within the same concentration range as the samples that are being analyzed.

(4) Spiked samples shall be run for all parameters in order to address analytical accuracy. At least 20 percent of the samples must be spiked with an appropriate standard in order to address accuracy. The concentration of the spike shall be large enough to increase the analyst's concentration by at least 50%, but not more than 200% above the original sample concentration. If the sample concentration is less than three times that of the analyte detection limit, then a spike of two to three times that detection limit is appropriate.

(5) Printouts from all AA and GC analyses shall be kept on file in the event that any problems with the data arise.

(e) A quality control plan (QCP) shall be submitted by the Contractor with their proposal to accomplish the work described in the scope of Work. The QCP should include:

(1) Listings of all analytical equipment and sampling devices to be used in the study, methods for calibrating in the field and lab, precision and accuracy standards, maintenance schedules, record keeping methods, and personnel responsible.

(2) Field survey procedures, including boat to be used, description of field notes to be taken, and sample collection, processing, and storage techniques. Particular attention should be given to field sampling and handling procedures to avoid contamination of water and sediment samples.

(3) Labeling system to be employed to ensure proper tracking of samples from collection through analysis to listing in final report.

(4) Laboratory analytical techniques and quality control procedures. Personnel responsible for accurately processing samples.

REPORT

The Contractor shall prepare a report as set forth below:

a. Report shall consist of a discussion of methods used to collect and analyze samples, sampling conditions (date and time of sample collection, tidal stage, weather conditions) and results of analyses. This report shall also contain the quality control report specified in paragraphs above.

b. Text material shall be typed on good quality 8_ by 11 inch bond paper with a 1_ binding margin on the left side, _ inch on the right and 1 inch at the top and bottom.

c. Drawings or plates shall be no larger than 20 inches by 11 inches with sufficient margin for binding on the left side and shall include a geographical scale.

d. All Final Reports shall be typed, and one camera-ready original plus four copies shall be furnished as specified below. In addition one electronic copy shall be provided in Microsoft Word format on a CDROM. One additional electronic copy shall be provided in Adobe Acrobat pdf format on a CDROM.

e. Verbal Brief. The Contractor shall prepare a verbal brief in the form of a progress review, to be submitted by phone to Corps of Engineers, Jacksonville District Office, area code 904-232-3691, after sampling and prior to completion of laboratory work.

f. Final Report. After completion of the laboratory analyses and data reduction and analysis, the Contractor shall prepare as set forth below, a final report for the project area. The final report and findings shall be objective and fully substantiated by documentation. Where full documentation is lacking, professional opinion shall be provided and qualified as such. The final report shall include the following as a minimum:

(1) Laboratory data. A scientific report of the laboratory analyses performed shall be furnished together with appropriate figures, tables, and lists of results as specified in reference 5.b.(1) above. Additional data may be requested during review by the Jacksonville District Office, U.S. Army Corps of Engineers.

(2) Data interpretation. Based on the laboratory analyses performed under this contract, the Contractor shall prepare an interpretive report addressing Study Objectives. Report format will follow that required by reputable and scientific periodicals with introduction, methods, results, discussion, and summary sections.

(3) Estimation of initial mixing and toxicity threshold shall be made on dredged material using the method (ADDAMS model) specified in Appendix B of the Green Book using results of bioassay acute toxic concentration relationships. Values to be used in calculating initial mixing zone; width and length of disposal vessel (presumed 22 x 91.5 meters), speed of disposal vessel (presumed 2.68 meters per second), and time to dump (300 seconds). Vessel volume assumed to be 1700 cubic meters.

SCHEDULE FOR WORK

ITEM	TIME FROM CONTRACT INITIATION (DAYS)
Notice to Award	0
Submit QCP	5
Begin field sampling	15
Complete field sampling	20
Chemical analysis Complete	50
Bioassay Complete	70
Tissue analysis complete	85
Prepare and submit report	65
Final Report submitted 15 days after government review complete.	

APPENDIX B

Chain-of-Custodies

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

FOR LAB USE ONLY
Subcontractor
Shipping Method

PROJECT NAME: Port Everglades
SITE NAME & ADDRESS: Port Everglades Harbor
SAMPLERS: (Signature)
CONTACT PERSON: Frank Johnson
BATCH # (Lab Use Only)

PRESERVATION
CF Chilled-Filtered
SF Sulfuric-Filtered
NF Nitric-Filtered
C Chilled
S Sulfuric
N Nitric
B Basic/NaOH
Z Zinc
T Thiosulfate
H HCL
Ot Other (see Remarks)

SAMPLE FIELD ID. NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS	Lab I.D. Number
	4/22/04	0800			E-PE04-3-1	S	11.5		E-PE04-3 254317
	↓	0912			E-PE04-3-2	S	11.5		
	4/22/04	1104			E-PE04-4-1	S	11.5		E-PE04-4 254318
	↓	1030			E-PE04-4-2	S	11.5		
	4/23/04	0800			Harbor - Water	MW	88		

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Precleaned Containers Relinquished by: (Signature)			
Relinquished by: (Signature)			
Relinquished by: (Signature)			
Relinquished by: (Signature)	04/24/04 1320	Received by: (Signature)	04/24/04 1320

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

FOR LAB USE ONLY
Subcontractor
Shipping Method

PROJECT NAME: Port Everglades
SITE NAME & ADDRESS: Port Everglades Harbor
SAMPLERS: *(Signature)*
CONTACT PERSON: Frank Johnson
BATCH # **(Lab Use Only)**

PRESERVATION
CF Chilled-Filtered
SF Sulfuric-Filtered
NF Nitric-Filtered
C Chilled
S Sulfuric
N Nitric
B Basic/NaOH
Z Zinc
T Thiosulfate
H HCL
Ot Other (see Remarks)

SAMPLE FIELD ID. NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS								Lab I.D. Number
	4/22/04	1130			E-PE04-1-1	S	8									
	↓	1230			E-PE04-1-1 Dup	S	8									
																E-PE04-1 254314
	4/22/04	1520			E-PE04-1-2	S	7									
	↓	1700			E-PE04-1-2 Dup	S	7									E-PE04-1dup 254315
	4/22/04	0900			E-PE04-1-3	S	8									
	↓	1000			E-PE04-1-3 Dup	S	8									
	4/22/04	1240			E-PE04-2-1	S	5									
		1304			E-PE04-2-2	S	5									E-PE04-2 254316
		1320			E-PE04-2-3	S	5									
		1348			E-PE04-2-4	S	4									
	↓	1405			E-PE04-2-5	S	4									

	Date / Time		Date / Time
Precleaned Containers Relinquished by: *(Signature)*		Received by: *(Signature)*	
Relinquished by: *(Signature)*		Received by: *(Signature)*	
Relinquished by: *(Signature)*		Received by: *(Signature)*	
Relinquished by: *(Signature)*	04/24/04 1320	Received by: *(Signature)*	04/24/04 1320

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

FOR LAB USE ONLY
Subcontractor
Shipping Method

PROJECT NAME: PORT EVERGLADES
SITE NAME & ADDRESS: PORT EVERGLADES HARBOR
SAMPLERS: *(Signature)* Terry W
CONTACT PERSON: TERRY STEVENS
BATCH # **(Lab Use Only)**

SAMPLE FIELD ID. NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS								Lab I.D. Number
	5/26/04	0946			RS-PE04-B	S	23									
	↓	1734			RS-PE04-A	S	23									
	5/26/04	1750			RS-WATER (AMBER-RS)	MW	3									
	↓	1750			RS-WATER (GLASS-RS)	MW	2									
	5/26/04	1856			HARBOR WATER (AMBER-TB)	MW	8									

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Precleaned Containers Relinquished by: *(Signature)*	6/9/99 1200		5-27-04 1:06
Relinquished by: *(Signature)*		Received by: *(Signature)*	
Relinquished by: *(Signature)*		Received by: *(Signature)* BFC 6/7/04	
Relinquished by: *(Signature)* Terry W	05 6/7/04	Received by: *(Signature)*	

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor MACTEC Lab
		Shipping Method FedEx

CLIENT NAME: PPB-USACE Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Gravisize	Specific Gravity	Atterburg Limits	Settling Rates					Lab I.D. Number
254314	4/22/04	1520	✓		E-PE04-1	Sed + water	2	✓	✓	✓	✓					
254316	↓	1320	↓		-2		↓	↓	↓	↓	↓					
317	↓	0912	↓		-3		↓	↓	↓	↓	↓					
318	↓	1104	↓		-4		↓	↓	↓	↓	↓					
320	4/19/04	NA	↓		-Control		↓	↓	↓	↓	↓					

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
			5/6/04
Relinquished by: *(Signature)* [signature]	Date / Time 5/6/04 1700	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Login: Please use station location as client ID
included is site water

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

Elutriates

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor: CAS-Kelso
		Shipping Method: Fed Ex

CLIENT NAME: PPB-USACE Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per attached Scope of work

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS	Lab I.D. Number
254381	4/30/04	0800	✓		E-PE04-1 elutriate	W	11	✓	
382		0900	✓		-1dup elutriate			✓	
383		1100	✓		-2 elutriate			✓	
384		1300	✓		-3 elutriate			✓	
385		1500	✓		-4 elutriate			✓	
254388		1600	✓		E-PE04-Sitewater			✓	

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
		PC	4/30/04
Relinquished by: *(Signature)*	Date / Time 4/30/04 1600	Received by: *(Signature)* CAS Kelso	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Note to Login:
Please use Station Location as client Id.

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

Sediments

ppb
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6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor: CAS Kelso
		Shipping Method: Fed Ex

CLIENT NAME: PPB - USACE Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)* CSA

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per attached Scope of work

PRESERVATION: CF Chilled-Filtered; SF Sulfuric-Filtered; NF Nitric-Filtered; C Chilled; S Sulfuric; N Nitric; B Basic/NaOH; Z Zinc; T Thiosulfate; H HCL; Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
254314	4/22/04	1520	✓		E-PE04-1	S	3	
315		1700	✓		-1 dup		3	
316		1320	✓		-2		3	
317		0912	✓		-3		3	
318		1104	✓		-4		3	

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
		4/23/04	
Relinquished by: *(Signature)*	Date / Time 4/23/04 1600	Received by: *(Signature)* CAS Kelso	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Note to login 8

Please use Station Location as client I.d.

Matrix Types S Soil or Sediment; WW Wastewater; T Animal Tissue; SW Surface Water; SL Sludge or Solid Waste; MW Marine Water; GW Ground Water; DW Drinking Water; P Plant Tissue; F Filter; A Air; Ot Other (See Remarks)

ppb
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CHAIN-OF-CUSTODY RECORD

Bioassays

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor MACTEC
		Shipping Method client pickup

CLIENT NAME: PPB-USACE-Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per SOW

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS									Lab I.D. Number
25431 14	4/22/04	1520	✓		E-PE04-1	S	2	✓								
382 15	↓	1700	↓		-1 dup	↓	↓	✓								
383 16	↓	1320	↓		-2	↓	↓	✓								
384 17	↓	0912	↓		-3	↓	↓	✓								
385 18	↓	1104	↓		-4	↓	↓	✓								
PE 5/4/04																
					~~Sitewater~~ PE 5/4/04											

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
			PE 5/4/04
Relinquished by: *(Signature)* [signature]	Date / Time 5/4/04 1100	Received by: *(Signature)* [signature]	Date / Time 5/4/04 1100
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Sample login: Please use station location as client ID.

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

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CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor CAS Kelso
		Shipping Method FedEx

CLIENT NAME: PPB-USACE Port Everglades 2004

SITE NAME & ADDRESS:

CLIENT PROJECT:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per attached scope of work

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	As per attached scope of work							Lab I.D. Number
254320	4/19/04	---	✓		E-PE04-Control	S	3	✓							

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
			BC 5/7/04
Relinquished by: *(Signature)* [signature]	Date / Time 5/7/04 1700	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Login:
Please use ~~client~~ BC 5/7/04 station location as client ID.

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

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CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor CAS-Kelso
		Shipping Method FedEx

CLIENT NAME: PPB-USACE Port Everglades

SITE NAME & ADDRESS: 2004

CLIENT PROJECT:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per attached scope of work

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	As per attached scope of work								Lab I.D. Number
254387	5/7/04	1200	✓		E-PE04- control Elutriate	W	11	✓								

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
			5/7/04
Relinquished by: *(Signature)*	Date / Time 5/7/04 1700	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Login:
Please use station location as client ID.

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

MACTEC Engineering and Consulting, Inc.
Toxicology Laboratory
Gainesville, Florida

Port Everglades 2004

QA Form Number: 063COCt
Revised: Jan2003

SAMPLE CHAIN OF CUSTODY

Facility: Toxicology Laboratory

Location: 404 SW 140th Terrace, Newberry, Florida 32669 (just west of Gainesville)

Other: saltwater control sediment

SAMPLE IDENTIFICATION

Sample Identification	Cooler #			Observations
Control sediment				1 bags per cooler ~3 gal

Total Number of Samples:	1	

SAMPLE INFORMATION

Collected by: Craig Godman, Rebecca Duffell

Date Collected: 4/19/04

Collection Site:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
Craig Godman	[illegible] Cotter	5/6/04	1130

MACTEC Engineering and Consulting, Inc.
Toxicology Laboratory
Gainesville, Florida

QA Form Number: 063COCt
Revised: Jan2003

SAMPLE CHAIN OF CUSTODY for TISSUE SAMPLES

Facility: MACTEC

Location: Gainesville

Other: PPB/Port Everglades

SAMPLE IDENTIFICATION

Sample Identification	Organism Genus species		Replicate Bags	Observations
EPE04-3	M. nasuta		10	

Total Number of Samples:		10 bags

SAMPLE INFORMATION

Toxicity Test Type:

Exposed to Sediment from:

Observations/Remarks:

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
[illegible]	[illegible]	~~9/9/04~~ 9/10/04	
[illegible]	[illegible]	9/10/04	1420

ppb
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(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor MACTEC
		Shipping Method B/C

CLIENT NAME: PPB-USACE Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: For biomass								Lab I.D. Number
— — —	4/23/04	0800		✓	Site water	W	28	✓								

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

	Date / Time		Date / Time
Precleaned Containers Relinquished by: *(Signature)*		Received by: *(Signature)*	25 5/13/04
Relinquished by: *(Signature)*	5/13/04 1030	Received by: *(Signature)*	5/13/04 1030
Relinquished by: *(Signature)*		Received by: *(Signature)*	
Relinquished by: *(Signature)*		Received by: *(Signature)*	

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

TO MACTEL

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor
		Shipping Method

CLIENT NAME: PIB LABS

CLIENT PROJECT: CEO REF SAMPLE

SAMPLERS: *(Signature)*

SITE NAME & ADDRESS:

LAB REPORT GOES TO (Client contact person): BRIAN COTTER

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS									Lab I.D. Number
234319			X		RS-PEO 4 MUDBAGS	soil	4									

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)* Scott [signature]	Date / Time 5/25/93 1500	Received by: *(Signature)* [signature]	Date / Time 5/28/94 1573
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

TO LAW MACTEC

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor _____
		Shipping Method

CLIENT NAME: PPB LABS

CLIENT PROJECT: REF SAMPLE

SAMPLERS: *(Signature)*

SITE NAME & ADDRESS:

LAB REPORT GOES TO (Client contact person): BRIAN CUTTER

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS								Lab I.D. Number
254319			X		RS-FE04	[illegible]	1									
SITE WATER				X	SITE WATER	[illegible]	1									

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

	Date / Time		Date / Time
Precleaned Containers Relinquished by: *(Signature)*	[illegible]	Received by: *(Signature)*	
Relinquished by: *(Signature)*	[illegible]	Received by: *(Signature)*	
Relinquished by: *(Signature)*		Received by: *(Signature)*	
Relinquished by: *(Signature)*		Received by: *(Signature)*	

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

TO CAS-KELSO

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor
		Shipping Method

CLIENT NAME: PPB LABS.

CLIENT PROJECT: COE REF SAMPLE

SAMPLERS: *(Signature)*

SITE NAME & ADDRESS:

LAB REPORT GOES TO (Client contact person): BRIAN COTTER

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS									Lab I.D. Number
254319			X		PS-PE04	SOIL	3									
254386					PS-PE04 ELUTRIATE	[illegible]	11									

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)* [signature]	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

Sample: pretest

ppb
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(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor CAS Kelso
		Shipping Method Fed Ex P

CLIENT NAME: PPB - USACE - Port Everglades 2004 Tissues

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person):

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per SOW

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
	9/10/04	1200			PE04 - Pretest A - clams		1	
					B		1	
					C		1	
ref					D		1	
ref					E		1	
	9/10/04	1200			PE04 - Pretest A worms		1	
					B		1	
					C		1	

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)* [signature]	Date / Time 9/10/04 1730	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

Sample: reference

ppb
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CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor CAJ Kelso
		Shipping Method Ed Ex-P

CLIENT NAME: PPB-USACE-Port Everglades 2004

SITE NAME & ADDRESS: Tissues

CLIENT PROJECT:

SAMPLERS: (Signature)

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per SOW

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
	9/10/04	1200			RS-PE04-A clams	T	2	
					-B		2	
					-C		2	
					-D		2	
					-E		2	
					RS-PE04-A worms	T	1	
					B		1	
					C		1	
					D		1	
					E		1	

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature) [signature]	Date / Time 9/10/04 1730	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

ppb
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(352) 377-2349 · FAX (352) 395-6639

Sample: 2, 3, 4

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor: CAS Kelso
		Shipping Method: Fed-Ex

CLIENT NAME: PPB-USAE-Port Everglades 2004
CLIENT PROJECT:
SITE NAME & ADDRESS: Tissues
SAMPLERS: *(Signature)*
LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As Per SOW

PRESERVATION
CF Chilled-Filtered
SF Sulfuric-Filtered
NF Nitric-Filtered
C Chilled
S Sulfuric
N Nitric
B Basic/NaOH
Z Zinc
T Thiosulfate
H HCL
Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
	9/10/04	1200			E-PE04-2,3,4-A ~~worms~~ clams	T	6	
					-B		6	
					-C		6	
					-D		6	
					-E		6	
	9/10/04	1200			E-PE04-2,3,4-A ~~clams~~ worms		3	
					B		3	
					C		3	
					D		3	
					E		3	

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time 9/14/04 1730	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

APPENDIX C

Field Procedures for Sample and In-situ Data Collection

PPB – Port Everglades

Wednesday 04/21/04

Transit to Ft. Lauderdale

1500	DM and AS leave in Ryder. TE and FJ leave with pontoon boat. GS and TS leave with Parker.
1730	Arrive at ramp; begin setup of pontoon and Parker.
1800	Arrive at marina; begin/continue vessel setup, trailer storage, and equipment calibration.
2030	Setup complete. Operations cease!

PONTOON BOAT

Thursday 04/22/04

0730	Arrive at vessel (AS, TE, FJ); begin equipment preparation.
0830	Arrive at site E-PE04-1-3; begin anchoring.
0850	Begin Seabird cast.
0900	Seabird cast complete; begin vibracore sampling.
0955	Complete sampling (8 gal) at E-PE04-1-3; take eight 5 ft cores of sediment.
1000	Begin sampling E-PE04-1-3 Duplicate.
1100	Complete sampling E-PE04-1-3 Duplicate.
1115	Anchored at E-PE04-1-1; begin Seabird cast.
1130	Seabird cast complete; begin vibracore sampling.
1230	Vibracore sampling complete at E-PE04-1-1.
1231	Begin vibracore sampling at E-PE04-1-1 Duplicate.
1330	Vibracore sampling complete; begin transit to dock to drop off samples, re-ice, and get new coolers.
1440	Leave dock; samples iced and offloaded. Transit to E-PE04-1-2.
1503	Anchored at E-PE04-1-2; begin Seabird cast.
1515	Seabird cast complete; begin vibracore sampling at E-PE04-1-2.
1700	Complete sediment sampling at E-PE04-1-2; unable to get cores due to rock and gravel bottom type. Moved vessel numerous times to attempt to find a suitable bottom but with no success.
1705	Begin Van Veen grab sampling at E-PE04-1-2 Duplicate.
1800	Complete grab sampling at E-PE04-1-2 Duplicate; begin transit to dock to prepare samples for shipping.
1820	Arrive at dock; begin equipment and vessel breakdown and setup for morning water sampling.
2000	Demobilization and preparation complete. Operations cease!

PARKER

Thursday 04/22/04

0630	TS, GS, and DM transit to offshore REF stations.
0710	Abort REF stations - too rough; head back in to sample Zones 2 through 4.
0750	Begin hydrolab cast at E-PE04-3-1.
0800	Begin Van Veen grabs at E-PE04-3-1 (4 grabs) 11.5 gal.
0849	Complete E-PE04-3-1; head for dock to drop off coolers.
0904	Begin hydrolab cast at E-PE04-3-2.
0912	Begin Van Veen grabs at E-PE04-3-2.
0946	Complete E-PE04-3-2 (2 grabs) 11.5 gal; head for dock to drop off coolers and clean grab.
1022	Begin hydrolab cast at E-PE04-4-2.
1030	Begin Van Veen grabs at E-PE04-4-2.
1044	Complete E-PE04-4-2 (1 grab) 11.5 gal.
1056	Begin hydrolab cast at E-PE04-4-1.
1104	Begin Van Veen grabs at E-PE04-4-1.
1129	Complete E-PE04-4-1 (3 grabs) 11.5 gal; head for dock to drop off coolers.
1233	Begin hydrolab cast at E-PE04-2-1.
1240	Begin Van Veen grabs at E-PE04-2-1.
1250	Complete E-PE04-2-1 (1 grab) 5 gal.
1252	Begin hydrolab cast at E-PE04-2-2.
1304	Begin Van Veen grabs at E-PE04-2-2.
1308	Complete E-PE04-2-2 (1 grab) 5 gal.
1313	Begin hydrolab cast at E-PE04-2-3.
1320	Begin Van Veen grabs at E-PE04-2-3.
1338	Complete E-PE04-2-3 (2 grab) 5 gal.
1340	Begin hydrolab cast at E-PE04-2-4.
1348	Begin Van Veen grabs at E-PE04-2-4.
1354	Complete E-PE04-2-4 (1 grab) 4 gal.
1359	Begin hydrolab cast at E-PE04-2-5.
1405	Begin Van Veen grabs at E-PE04-2-5.
1418	Complete E-PE04-2-5 (1 grab) 4 gal.
1420	Transit to dock; offload coolers.
1425	Arrive at dock; prepare samples.
1650	Samples complete.

Friday 04/23/04

0700	Conditions too rough for offshore sampling with sample harbor water (83 gal); begin preparation of equipment and vessels for transit to Jupiter.
1200	Arrive in Jupiter; begin demobilization.

Saturday 04/24/04

0700	DM leave Jupiter with Ryder truck with all coolers; transit to Gainesville.
1700	DM arrives back in Jupiter.

Tuesday 05/25/04

0830	Arrive at CSA; mobilize van.
1215	MS and TS depart CSA for Florida Atlantic University vessel in Ft. Lauderdale.
1400	Arrive at vessel; begin mobilization.
1645	Mobilization complete; head for hotel.

Wednesday 05/26/04

0705	Head for vessel.
0825	Depart dock for southern REF site RS-PE04 B.
0940	Begin grabs at south site (15 grabs) (23 gal).
0946	2 gal
1010	2 gal
1026	1 gal
1045	1 gal
1105	0 gal (switch to box core).
1120	0 gal (switch back to Van Veen).
1145	2 gal
1202	1.5 gal
1215	2 gal
1225	1.5 gal
1240	2.5 gal
1255	2.5 gal
1310	2 gal
1325	2 gal
1340	1 gal
1355	Begin grabs at RS-PE04-A (17 grabs) (23 gal).
1405	3 gal
1420	2 gal
1435	1.5 gal
1450	2 gal
1500	0 gal
1515	2.5 gal
1530	1.5 gal
1538	0 gal
1554	2 gal
1600	0 gal
1615	1.5 gal
1630	1 gal
1645	1 gal
1655	1 gal
1710	1 gal
1721	1 gal
1734	2 gal
1750	Begin water sampling at RS-PE04-A; collect water samples at RS-PE04-A (5 gal).
1758	Transit to RS-PE04-B.
1809	Begin water sampling at RS-PE04-B.
1816	Transit to turning basin; collect water samples.
1856	Collect water samples at turning basin (8 gal).

1910	Transit to dock; begin demobilization.
2015	TS and MS leave for CSA.
2130	Arrive at CSA; re-ice samples.
2225	Samples are complete.

Thursday 05/27/04

0730	Re-ice samples.
0800	TS leave for PPB; drop off samples.
1800	Arrive at CSA.

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 1125
Water Depth (ft.) 11'
Project Depth (ft.) 31'
Weather Sunny Winds 15 knot from SE
Sea State 1-2' swell

Station # E-PE04-1-1
Tidal Cycle High Outgoing 2.4'
Coordinates: N 26° 05.541'
W 80° 06.720'
Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
2.2	24.8	8.2	6.1	33.7	51.1	3.1
~~11~~ 5.5	24.8	8.2	6.0	33.7	51.1	3.0
11.0	24.6	8.2	6.0	34.6	52.1	2.9

Comments:

Water Sampler Used: Seabird # 2680

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 1503 → 1515
Water Depth (ft.) 15'
Project Depth (ft.) 31 ft
Weather Sunny Winds East 10-15 Knots
Sea State Calm

Station # E-PE04-1-2
Tidal Cycle Low outgoing .2'
Coordinates: N 26°05.523'
W 80°06.707'
Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
2.2	25.5	8.2	6.1	34.5	53.0	3.1
6.6	25.5	8.2	6.1	34.5	53.0	2.9
12.4	25.3	8.2	6.0	34.7	52.9	2.6

Comments:

Water Sampler Used: Seabird # 2680

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 0850
Water Depth (ft.) 8.5
Project Depth (ft.) 31 ft
Weather Partly Sunny Winds 10-15 from SE
Sea State Calm

Station # E-PE04-1-3
Tidal Cycle Incoming High 2.2
Coordinates: N 26° 05.480'
W 80°06.765'
Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
2.2	24.3	8.2	5.6	32.9	49.6	2.9
3.6	24.3	8.2	5.7	32.9	49.6	2.8
8.0	24.5	8.2	5.7	33.2	50.2	2.8

Comments:

Water Sampler Used: Seabird Sevia | # 2680

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 1233
Water Depth (ft.) 29.2
Project Depth (ft.)
Weather SE 10-15 Sunny
Sea State 1'

Station # E-PE04-2-1
Tidal Cycle outgoing
Coordinates: N 26° 05.9481
W 80° 07.1372

Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
27.2	24.62	8.05	6.92	35.5	53.7	1.3
13.1	24.94	8.05	6.65	34.0	51.9	4.8
1.3	25.29	8.04	6.77	33.3	50.6	5.7

Comments: Silty Sand

Water Sampler Used: Van Veen / Hydrolab

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 1252
Water Depth (ft.) 29.3
Project Depth (ft.)
Weather SE 10-15K SUNNY
Sea State 1'

Station # E-PE 04-2-2
Tidal Cycle Outgoing
Coordinates: N 26° 05 . 9015'
W 80° 07 . 1083'
Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
27.3	24.69	8.05	6.40	35.3	53.4	1.2
13.3	25.07	8.05	6.56	33.9	51.4	1.1
1.3	25.24	8.04	6.57	33.7	51.1	6.9

Comments: SILTY SAND

Water Sampler Used: VAN VEEN / HYDROLAB

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 1313
Water Depth (ft.) 30.1
Project Depth (ft.)
Weather SE 10-15K SUNNY
Sea State 1'

Station # E-PE04-2-3
Tidal Cycle OUTGOING
Coordinates: N 26° 05. 8362'
W 80° 07. 1258'

Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (c)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
28.6	24.68	8.06	6.23	35.5	53.4	1.4
14.2	25.00	8.06	6.52	34.4	51.9	0.6
1.2	25.25	8.06	6.56	33.7	51.2	3.6

Comments: FINE SAND SURFACE, SILTY SAND BELOW

Water Sampler Used: VAN VEEN / HYDROLAB

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 1340
Water Depth (ft.) 28.2
Project Depth (ft.)
Weather SE 10-15K SUNNY
Sea State 1'

Station # E-PE04-2-4
Tidal Cycle Outgoing
Coordinates: N 26° 05.8468'
W 80° 07.0874'
Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (c)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
27.3	24.59	8.08	6.41	35.5	53.8	1.1
~~14~~ TS						
14.3	25.01	8.08	6.46	34.7	52.6	1.4
1.2	25.47	8.06	6.68	33.1	50.5	1.8

Comments: SILTY SAND

Water Sampler Used: VAN VEEN / HYDROLAB

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 1359
Water Depth (ft.) 31.1
Project Depth (ft.)
Weather SE 10-15K SUNNY
Sea State 1'

Station # E-PE04-2-5
Tidal Cycle OUTGOING
Coordinates: N 26° 05.7907'
W 80° 07.0720'

Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
30.0	24.49	8.07	6.09	35.8	54.1	1.3
15.1	25.10	8.07	6.43	34.1	51.9	1.1
1.2	25.44	8.06	6.56	33.2	50.5	1.6

Comments: SILTY SAND

Water Sampler Used: VAN VEEN / HYDROLAB

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04

Station # E-PE04-3-1

Time 0750

Tidal Cycle INCOMING

Water Depth (ft.) 41.6

Coordinates: N 26° 05

Project Depth (ft.)

W 80° 07

Weather WIND SE 10-15, SUNNY

Sea State 1FT

Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
39.0	24.65	8.03	6.38	35.8	54.0	2.3
19.1	25.11	8.01	6.29	34.8	52.7	1.6
1.2	24.42	8.00	6.34	32.2	49.2	0.0

Comments: SILTY SAND

Water Sampler Used: VAN VEEN / HYDROLAB

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04

Time 0909

Water Depth (ft.) 42.8 ~~X~~

Project Depth (ft.)

Weather SE 15 SUNNY

Sea State 1 FOOT

Station # E-PE04-3-2

Tidal Cycle INCOMING

Coordinates: N 26° 05.7063

W 80° 07.0048

Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
42.2	24.50	8.05	6.41	35.8	54.1	0.7
21.0	24.90	8.05	6.57	35.2	53.3	0.0
1.2	24.65	8.04	6.49	33.4	50.5	0.0

Comments: SILT

Water Sampler Used: VAN VEEN / HYDROLAB

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 1056
Water Depth (ft.) 44.5
Project Depth (ft.)
Weather SE 10-15, SUNNY
Sea State 1 FOOT

Station # E-PE04-4-1
Tidal Cycle High
Coordinates: N 26°05.3846
W 80°07.1709
Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
43.2	24.35	8.06	6.58	36.0	54.3	4.0
21.7	24.58	8.07	6.39	35.3	53.4	1.7
1.3	~~24~~ 25 25.10	8.05	6.58	33.5	50.9	3.2

Comments: SILTY SAND

Water Sampler Used: VAN VEEN / HYDROLAB

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 04/22/04
Time 1022
Water Depth (ft.) 42.8
Project Depth (ft.)
Weather SE 10-15 Sunny
Sea State 1 Foot

Station # E-PE04-4-2
Tidal Cycle Incoming High
Coordinates: N 26° 05 . 5218
W 80° 06 . 7954
Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
39.8	24.51	8.06	6.54	35.7	53.9	3.5
			X			
20.1	24.86	8.06	6.55	35.1	53.1	0.1
1.2	24.94	8.05	6.56	33.3	50.6	1.3

Comments: Silty Sand w/ odor

Water Sampler Used: Van Veen / Hydrolab

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 05/26/04
Time 1750
Water Depth (ft.) 686'
Project Depth (ft.)
Weather SUNNY 10K FROM THE EAST
Sea State LESS THAN 2'

Station # RS-PE04-A
Tidal Cycle
Coordinates: N 26° 08.3732'
W 80° 01.5002'
Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
1.2	27.65	8.18	6.60	37.1	55.8	1.2
25.4	26.84	8.21	6.53	37.3	56.1	0.3
50.1	26.70	8.22	6.44	37.3	56.1	0.5
76.6	26.58	8.22	6.44	37.3	56.1	0.4
100.6	25.83	8.22	6.54	37.5	56.3	0.3

Comments: FINE COMPACTED SAND

Water Sampler Used: HYDROLAB / VAN VEEN

PORT EVERGLADES 2004
PPB/COE
WATER QUALITY ASSESSMENT

Date 5/26/04

Station # RS-PE04-B

Time 1809

Tidal Cycle

Water Depth (ft.) 714'

Coordinates: N 26° 05.6283'

Project Depth (ft.)

W 80° 01.4996'

Weather SUNNY 10K FROM THE EAST

Sea State LESS THAN 2'

Field Team TS,FJ,AS,DM,TE

Sampling Depth (ft)	Temp (C)	pH	Dissolved O_2 mg/l	Salinity (ppt)	Conductivity (mmhos/cm)	Turbidity (ntu/s)
1.5	27.71	8.14	6.69	37.1	55.8	1.6
24.7	27.12	8.17	6.54	37.3	56.1	0.4
50.4	26.84	8.18	6.45	37.4	56.1	0.3
74.8	26.65	8.19	6.44	37.4	56.2	0.3
100.4	25.50	8.20	6.62	37.5	56.4	0.5

Comments: FINE COMPACTED SAND

Water Sampler Used: HYDROLAB / VAN VEEN

APPENDIX D

Field Sampling Sheets

Chemical Evaluation of Sediment Samples
PORT EVERGLADES SEDIMENT SAMPLING
Core Data Log

Date 04/22/2004

Station # E-PE04-1-1

Time 1130 → 1230

Core number 1 → 6

Water depth 11 ft

Field team AS, TE, FJ

Project Depth 45' +2' 42'+2' (31'+2')

Coordinates N 26° 05.540'

Sample Method Vibracore

W 80° 06.721'

Sediment Profile	Description
Top 0 → 48"	Dark Gray to Black Course Sand & Shell
	More Shell Rubble in top 2'
48" → 60"	Some Sand w/ clay present Dark in Color
Bottom	

Penetration length 6'

Recovered core length 4' – 6'

Sample length retained 4' -

# of containers filled 8

Water Sampler Seabird 2680

Live organisms present Y (N)

Oil present Y (N)

Organic debris present Y (N)

Achieve project depth Y (N)

Type of container Gallon glass jars

Comments

Form Completed by: [signature] Date/Time: 4/22/04 1230

This form should be signed and date and time indicated.

Chemical Evaluation of Sediment Samples
PORT EVERGLADES SEDIMENT SAMPLING
Core Data Log

Date 04/ /2004

Station # E-PE04- 1-1 Duplicate

Time 1230 → 1330

Core number 7 → 12

Water depth 11ft

Field team AS, TE, FJ

Project Depth 45' +2' 42'+2' (31'+2')

Coordinates N 26° 05.540'

Sample Method Vibracore

W 80° 06.721'

Sediment Profile	Description
Top 0 → 48"	Dark Gray To Black Coarse Sand & Shell
48" → 60"	Some Fine Grain Size Sand Porous Material
Bottom	

Penetration length 6' → 8'

Recovered core length 5'-6'

Sample length retained 5'-6'

# of containers filled 8

Water Sampler Seabird 2680

Live organisms present Y (N)

Oil present Y (N)

Organic debris present Y (N)

Achieve project depth Y (N)

Type of container Gallon glass jars

Comments

Form Completed by: [signature] Date/Time: 4/22/04 1330

This form should be signed and date and time indicated.

Chemical Evaluation of Sediment Samples
PORT EVERGLADES SEDIMENT SAMPLING
Core Data Log

Date 04/22/2004

Station # E-PE04- 1-2

Time 1520 → 1700

Core number 1 → 6 Grabs 1 → 2

Water depth 15 ft

Field team AS, TE, FJ

Project Depth 45' +2' 42'+2' (31'+2')

Coordinates N 26° 05.524'

Sample Method Vibracore / VanVeen Grab

W 80° 06.707'

Sediment Profile	Description
Top 0 → 12"	Course Grain Sand - Shelli Rock - Black Color
Bottom	

Penetration length 12"

Recovered core length n/a grab

Sample length retained n/a grab

# of containers filled 7

Water Sampler Seabird 2680

Live organisms present Y (N)

Oil present Y (N)

Organic debris present Y (N)

Achieve project depth Y (N)

Type of container Gallon glass jars

Comments Numerous core attempts & repositioning vessel unable to yield core due to coarse rock & gravel

Form Completed by: [signature] Date/Time: 4/22/04 1700

This form should be signed and date and time indicated.

Chemical Evaluation of Sediment Samples
PORT EVERGLADES SEDIMENT SAMPLING
Core Data Log

Date 04/22/2004

Station # E-PE04- 1-2 Duplicate

Time 1700 - 1800

Core number Grab

Water depth 15'

Field team AS, TE, FJ

Project Depth 45' +2' 42'+2' 31'+2'

Coordinates N 26° 05.524'

Sample Method VanVeen Grab

W 80° 06.707'

Sediment Profile	Description
Top 0 → 12"	Course Sand + Shell some brown colored mud
Bottom	

Penetration length 12"

Live organisms present Y (N)

Recovered core length na grab

Oil present Y (N)

Sample length retained na grab

Organic debris present Y (N)

# of containers filled 7

Achieve project depth Y (N)

Water Sampler Seabird

Type of container Gallon glass jars

Comments Course Rock + Gravel unable to take core Used VanVeen Grab Sampler

Form Completed by: [illegible] Date/Time: 04/22/04 1800

This form should be signed and date and time indicated.

Chemical Evaluation of Sediment Samples
PORT EVERGLADES SEDIMENT SAMPLING
Core Data Log

Date 04/22/2004

Station # E-PE04-1-3

Time 0900 → 1000

Core number 1 → 6

Water depth 5.5 ft

Field team AS, TE, FJ

Project Depth 45' +2' 42'+2' (31'+2')

Coordinates N 26° 05.481'

Sample Method Vibracore

W 80° 06.766'

Sediment Profile	Description
Top 0 → 8"	Course Sand w/ shell fragments / Dark Gray / Black in color
8" → 22"	Fine Grain Sand / Dark Brown in Color
22" → 40"	Fine Sand & Clay / Light Gray Color w/ Organic Content
40" → 52"	Clay w/ detritus Sand/Clay Dark Brown in color Non Porous
52" → 60"	Beige in color fine grain → med grain size sand
Bottom	

Penetration length 6.5'

Recovered core length 5.5'

Sample length retained 5.5'

# of containers filled 8

Water Sampler Seabird #2680

Live organisms present Y (N)

Oil present Y (N)

Organic debris present (Y) N

Achieve project depth Y (N)

Type of container Gallon glass jars

Comments

Form Completed by: [signature] Date/Time: 04/22/04 1000

This form should be signed and date and time indicated.

Chemical Evaluation of Sediment Samples
PORT EVERGLADES SEDIMENT SAMPLING
Core Data Log

Date 04/22/2004

Station # E-PE04-1-3 Duplicate

Time 1000 → 1100

Core number 7 → 12

Water depth 5.5 ft

Field team AS, TE, FJ

Project Depth 45' +2' 42'+2' (31'+2')

Coordinates N 26° 05.481'

Sample Method Vibracore

W 80° 06.766'

Sediment Profile	Description
Top 0 → 8"	Course Sand Dark Gray to Black in Color Porous material some shell
8" → 22"	Med Grain Size Sand Dark Brown Color
22" → 40"	Fine Sand & Clay / Light Gray Color / Organic Content Present w/ Some detritus
40" → 52"	Non Porous Dark Brown Sand w/ clay present large amount of detritus present non porous
52" → 60"	Beige colored fine → medium grain size sand very porous to the touch
Bottom	

Penetration length 6.5' → 7.0'

Live organisms present Y (N)

Recovered core length 5.0'

Oil present Y (N)

Sample length retained 5.0'

Organic debris present (Y) N

# of containers filled 8

Achieve project depth Y (N)

Water Sampler Seabird - 2680

Type of container Gallon glass jars

Comments

Form Completed by: [signature] Date/Time: 4/22/04 1100

This form should be signed and date and time indicated.

APPENDIX E

Toxicity Report

APPENDIX E

Toxicity Report

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

Bioassays

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor MACTEC
		Shipping Method client pick up

CLIENT NAME: PPB-USACE-Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per SOW

PRESERVATION: CF Chilled-Filtered; SF Sulfuric-Filtered; NF Nitric-Filtered; C Chilled; S Sulfuric; N Nitric; B Basic/NaOH; Z Zinc; T Thiosulfate; H HCL; Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	As per SOW							Lab I.D. Number
25438 14	4/22/04	1520	✓		E-PE04-1	S	2	✓							
38215		1700			-1 dup			✓							
38316		1320			-2			✓							
38417		0912			-3			✓							
38518		1104			-4			✓							
PC 5/4/04															
					~~Sitewater~~ PC 5/4/04										

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
			PC 5/4/04
Relinquished by: *(Signature)*	5/4/04 1100	Received by: *(Signature)*	5/4/04 1100
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Sample login: Please use Station location as client ID.

Matrix Types S Soil or Sediment; WW Wastewater; T Animal Tissue; SW Surface Water; SL Sludge or Solid Waste; MW Marine Water; GW Ground Water; DW Drinking Water; P Plant Tissue; F Filter; A Air; Ot Other (See Remarks)

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor MACTEC
		Shipping Method BFC

CLIENT NAME: PPB-USACE Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: For Dioxsays								Lab I.D. Number
— — —	4/23/04	0800		✓	Site water	W	28	✓								

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

Preclearned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
		RE	5/13/04
Relinquished by: *(Signature)*	5/13/04 1030	Received by: *(Signature)*	5/13/04 1030
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor
		Shipping Method

CLIENT NAME: PPB LABS

CLIENT PROJECT: E.E.O. REF SAMPLE

SAMPLERS: *(Signature)*

SITE NAME & ADDRESS:

LAB REPORT GOES TO (Client contact person): BRIAN COTTER

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS									Lab I.D. Number
254319			X		RS-PEO 4 MUDBAGS	SOIL	4									

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)* Scott [signature]	Date / Time 5-28-04 1500	Received by: *(Signature)* [signature]	Date / Time 5/28/04 1513
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

MACTEC Engineering and Consulting, Inc.
Toxicology Laboratory
Gainesville, Florida

QA Form Number: 063COCt
Revised: Jan2003

SAMPLE CHAIN OF CUSTODY

Facility: Toxicology Laboratory

Location: 404 SW 140th Terrace, Newberry, Florida 32669 (just west of Gainesville)

Other: saltwater control sediment

SAMPLE IDENTIFICATION

Sample Identification	Cooler #			Observations
Control sediment	1			1 bags per cooler appx. 5 gal.
Control sediment	2			1 bags per cooler
Control sediment	3			1 bags per cooler
Control sediment	4			1 bags per cooler
Control sediment	5			1 bags per cooler
Control sediment	6			1 bags per cooler
Control sediment	7			1 bags per cooler
Control sediment	8			1 bags per cooler
Total Number of Samples:				

SAMPLE INFORMATION

Collected by: Craig Godman, Rebecca Duffell

Date Collected: 4/19/04

Collection Site: Whitney Center Intercoastal

CHAIN OF CUSTODY

Relinquished By:	Received By:	Date	Time
[illegible]		4/19/04	1600

9

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0300 Client: Port Everglades Test: Elutriate Test *M. bahia* and *M. beryllina*

DAILY LOG

5/14/03 - Elutriate prepared 4:1 ratio (4 parts site water, 1 part sediment) Site water adjusted to test salinity (20 ppt.) by adding well water. Stirred/mixed for 30 minutes. Allowed to settle for 1 hour, then elutriate siphoned. Elutriate aerated until use. Concentrations prepared & pour into appropriate vessels. Organisms received & placed into holding vessels, and fed B.S. while in holding. Water quality of test concentrations monitored. Organisms loaded and observed. Data reviewed.
Photo period verified, 16 hr light, 8 hr dark.

5/15/04 - Test monitored WQ taken, organisms observed fed. Ref tox monitored organisms/vessels covered

5/16/04 - Test observed - during observation Salt ctrl rep B spilt reloaded with culture rec. 5/14/04 and salt water test organisms feed, test monitored WQ taken Ref tox taken down, final WQ taken, organisms observed test vessels covered

5/17/04 Water qualities taken, ~~organisms~~ organisms observed, both M. bahia & M. beryllina fed BS. All vessels covered. CG

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0300 Client: Port Everglades Test: Elutriate Test *M. bahia* and *M. beryllina*

DAILY LOG

5/18/04 M. bahia and M. beryllina fed BS in the morning. CG
Water qualities taken in AM and vessels covered. CG
Organisms observed and counted at 1330.
Test terminated. CG

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097G
Revised: March 2004

TOXICITY TEST SYSTEM DESCRIPTION SHEET

SPONSOR: PORT EVERGLADES | PROJECT NUMBER: 6063040017.0300

TEST MATERIAL

Test Material: Sediment Elutriate

See Page 76 of Effluent Log for Test Material Information.

PROTOCOL/GUIDELINES FOLLOWED:

SOP - S-007

Test Concentration Based On: ( ) Active Ingredient (X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Mysidopsis bahia*

Lot Number: 2004-8

Age/Life Stage: 4 days

Date Acclimation/Maintenance Began: 5/14/04

See Page 115 of Organism Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: C 1%

TEST CONDITIONS

( ) Range Finder (X) Static
( ) Screening ( ) Flow - Through
(X) Definitive

Lighting: (X) Fluorescent ( ) Incandescent
Photoperiod: 16 Hours Light
8 Hours Dark

Test Duration: 96 hours
Test Area Used: Water Bath
Test Temperature: 20 ± 2
Test Salintiy: 20 ± 2
Replicates per Concentration: 5
Organisms per Replicate: 10

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions(cm):lengthx 9.5widthx 5hieght
Test Solution Height (cm): 4
Test Vessels: ( ) Open (X) Covered
Test Container Volume: 0.34 L
Test Solution Volume: 0.20 L

TEST SOLUTION PREPARATION

Test Concentration % mg/L	CONTROL	10	50	100				
Volume of Dilution Water Added (mL)	1250	1125	625	0				
Volume of Effluent/ Stock Added (mL)	0	125	625	1250				

ADDITIONAL OBSERVATIONS: _____

DATA BY: [signature]

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 106G
Revised: March 2004

DAILY FEEDING LOG

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. bahia*

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY	COMMENTS
0	5/14/03	~~1200~~ 1100	JMR	BS	2.0mL	
1	5/15/~~03~~ 04	17:30	JH	BS	0.2mL	
2	5/16/~~03~~ 04	15:30	JH	BS	0.2mL	
3	5/17/04	1040	CG	BS	0.2mL	
4	5/18/04	0845	CG	BS	0.2mL	

BS = Brine Shrimp nauplii YTC = Yeast/Trout Chow/Cereal Leaves
Algae = Green Algae (*Selenastrum capricornutum*)

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. bahia*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		14:03				19:30				16:00				0930				1050							
INIT.		JH				JH				JH				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
Seawater Control 100%	A	20.7	8.4	8.5	20																				
	B					18.8	8.3	8.0	21																
	C									20.0	8.3	6.9	20												
	D													20.0	8.1	6.5	20								
	E																	19.6	8.2	4.6	22				
	A																								
	B																								
	C																								
	D																								
	E																								
	A																								
	B																								
	C																								
	D																								
	E																								
INST/METH		FS7	SA 2900	DO3	Ref 10	FS7	SA 2900	DO3	Ref 9	FS7	SA 2900	DO3	Ref 9	FS7	SA2900	DO3	Ref 9	FS7	SA2900	DO3	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate
METH - Method

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. bahia*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		~~1230~~ 1330				1900				16:00				0930				1052							
INIT.		JM				JM				JM				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
CONTROL SEDIMENT 10%	A	20.9	8.3	8.2	19																				
	B					18.6	8.4	8.0	20																
	C									19.6	8.3	7.0	20												
	D													20.0	8.1	5.8	20								
	E																	19.3	8.2	6.1	22				
CONTROL SEDIMENT 50%	A	~~19~~ 20.2	8.2	8.4	19.0																				
	B					18.5	8.4	7.9	20																
	C									19.7	8.3	7.3	20												
	D													20.0	8.1	6.0	20								
	E																	19.4	8.1	4.6	22				
CONTROL SEDIMENT 100%	A	19.1	7.9	7.5	20																				
	B					18.7	8.3	7.8	20																
	C									19.9	8.3	7.0	20												
	D													20.0	8.0	5.7	19								
	E																	19.7	8.2	5.8	22				
INST/METH		FS7	SA 290D	DO3	Ref 10	FS7	SA 290D	DO3	Ref 9	FS7	SA 290D	DO3	Ref 9	FS7	SA290D	DO3	Ref 9	FS7	SA290D	DO3	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate
METH - Method

CO

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. bahia*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1250				1930				1600				0940				1055							
INIT.		JMR				JM				JM				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04 - 1 10%	A	20.8	8.3	8.4	20																				
	B					18.8	8.4	7.8	20																
	C									19.9	8.3	7.3	20												
	D													19.9	8.1	6.5	20								
	E																	19.8	8.2	5.9	21				
E - PE04 - 1 50%	A	20.3	8.2	8.6	20																				
	B					18.9	8.3	7.7	20																
	C									20.0	8.3	7.2	20												
	D													20.0	8.1	6.1	20								
	E																	19.8	8.3	6.6	22				
E - PE04 - 1 100%	A	19.2	7.9	8.0	20																				
	B					18.7	8.3	7.3	20																
	C									20.1	8.3	6.1	20												
	D													20.0	8.1	6.0	20								
	E																	19.6	8.2	5.8	23				
INST/METH		FS7	SA 2900	D03	Ref 10	FS-7	SA 2900	D03	Ref 9	FS-7	SA 2900	D03	Ref 9	FS7	SA 2900	D03	Ref 9	FS7	SA 2900	D03	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate
METH - Method

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. bahia*

DATE		~~5/12~~ 5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1250				1900				16:00				0945				1055							
INIT.		JM				JH				JH				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04 - 2 10%	A	20.9	8.3	8.6	20																				
	B					18.7	8.4	8.1	20																
	C									20.2	8.3	7.0	20												
	D													19.7	8.1	6.5	21								
	E																	19.8	8.0	4.8	21				
E - PE04 - 2 50%	A	20.6	8.3	8.5	20																				
	B					18.7	8.4	8.0	20																
	C									20.3	8.3	6.9	20												
	D													19.7	8.1	6.2	21								
	E																	20.0	8.1	4.7	21				
E - PE04 - 2 100%	A	19.1	8.0	7.6	20																				
	B					18.7	8.3	7.8	20																
	C									20.2	8.3	6.2	20												
	D													19.8	8.1	5.6	21								
	E																	20.1	8.1	5.0	23				
INST/METH		FS7	SA 2900	D03	Ref 10	FS-7	SA 2900	D03	Ref 10	FS-7	SA 2900	D03	Ref 9	FS-7	SA 2900	D03	Ref 9	FS7	SA 2900	D03	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate
METH - Method

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. bahia*

DATE		5/12/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1250				1930				1600				0945				1055							
INIT.		JM				JM				JM				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04 - 3 10%	A	20.7	8.3	8.4	20																				
	B					18.8	8.4	8.0	20																
	C									19.9	8.3	7.1	20												
	D													19.6	8.1	6.5	20								
	E																	20.1	8.2	5.8	21				
E - PE04 - 3 50%	A	20.7	8.2	8.5	20																				
	B					18.8	8.4	7.9	20																
	C									19.7	8.3	6.7	20			5.6									
	D													19.5	8.0	5.7	20								
	E																	20.1	8.1	4.4	22				
E - PE04 - 3 100%	A	20.1	8.0	7.8	20																				
	B					18.8	8.4	7.9	20																
	C									20.4	8.3	7.3	20												
	D													19.7	8.1	5.6	19								
	E																	20.2	8.2	5.0	21				
INST/METH		FS7	SA 2900	DO3	Ref 10	FS-7	SA 2900	DO3	Ref 9	FS-7	SA 2900	DO3	Ref 9	FS7	SA 2900	DO3	Ref 9	FS7	SA 2900	DO3	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate
METH - Method

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. bahia*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04								
TIME		1250				1945				16:00				0955				1058								
INIT.		JM				JM				JM				CG				RD								
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04 - 4 10%	A	20.2	8.3	8.5	20																				
	B					18.8	8.4	7.8	20																
	C									20.3	8.3	6.8	20												
	D													19.6	8.1	6.1	20								
	E																	20.2	8.2	5.8	21				
E - PE04 - 4 50%	A	20.1	8.2	8.6	19																				
	B					18.8	8.3	7.6	20																
	C									20.7	8.3	6.4	20												
	D													19.4	8.1	6.2	20								
	E																	20.3	8.2	5.3	21				
E - PE04 - 4 100%	A	19.1	7.9	8.0	21																				
	B					18.8	8.3	7.1	20																
	C									20.3	8.3	6.6	20												
	D													19.5	8.1	6.1	20								
	E																	20.3	8.2	5.7	21				
INST/METH		FS7	SA 2900	DO3	Ref 10	FS-7	SA 2900	DO3	Ref 9	FS-7	SA 2900	DO3	Ref 9	FS7	SA 2900	DO3	Ref 9	FS7	SA 2900	DO3	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate
METH - Method

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. bahia*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1255				19:45				1606				1000				1100							
INIT.		JMM				JH				JH				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04-DUPE 10%	A	20.1	8.3	8.5	20																				
	B					18.7	8.4	8.0	20																
	C									20.8	8.2	6.6	20												
	D													19.3	8.1	6.5	20								
	E																	20.2	8.2	5.4	21				
E - PE04-DUPE 50%	A	20.3	8.3	8.5	20																				
	B					18.6	8.4	8.0	20																
	C									20.3	8.3	7.1	20												
	D													19.3	8.1	6.3	20								
	E			JMM														20.0	8.1	5.5	21				
E - PE04-DUPE 100%	A	20.2	8.0	~~8.6~~	20																				
	B			7.6		19.1	8.4	7.8	20																
	C									20.5	8.3	7.0	20												
	D													19.3	8.1	6.3	20								
	E																	20.1	8.3	6.6	21				
INST/METH		FS7	SA 290D	DO3	Ref 10	FS-7	SA 290D	DO3	Ref 9	FS7	SA 290	DO3	Ref 9	FS7	SA 290D	DO3	Ref 9	FS7	SA 290D	DO3	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate
METH - Method

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 015G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: M. bahia

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS while in holding		BS ~.2 mL		BS ~.2 mL		BS ~.2 mL		BS ~.2 mL	
TIME		loaded 1400		1945		1500		1100		1330	
INIT.		JMR		JN		JN		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
SEAWATER CONTROL 100%	A	10	loaded	10	N	10	N	10	N	10	N
	B			10	N			10	N	9	ld
	C			10	N	10	N	10	N	9	ld
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
CONTROL SEDIMENT 10%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
CONTROL SEDIMENT 50%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
CONTROL SEDIMENT 100%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	9	ld
	C			10	N	10	N	10	N	9	ld
	D			10	N	10	N	10	N	9	ld
	E			10	N	10	N	10	N	9	ld

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
FOS - Film on Surface of Water
UC - Undissolved Chemical
LETH - Lethargic
LE - Loss of Equilibrium
HYP - Hyperactive
BS - Brine Shrimp

AS - Organisms at Surface of Water
ERR - Erratic
GY - Gyrating
G - Gulping
RAR - Rapid Respiration
LT - Light Pigmentation
D - Organisms Dead

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 015G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: M. bahia

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS While in holding		BS ~.2 mL		BS ~.2 mL		BS ~.2 mL		BS ~.2 mL	
TIME		loaded 1415		20.00		15:00		1100		1330	
INIT.		[illegible]		JM		JM		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-1 10%	A	10	loaded	10	N	10	N	10	N	9	1d
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	9	1d
E-PE04-1 50%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	9	1d
	C			10	N	10	N	10	N	9	1d
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-1 100%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	9	1d
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
FOS - Film on Surface of Water
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LETH - Lethargic
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HYP - Hyperactive
BS - Brine Shrimp

AS - Organisms at Surface of Water
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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 015G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: M. bahia

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS Water holding		BS ~.2mL		BS ~.2mL		BS ~.2mL		BS ~.2mL	
TIME		loaded 1430		20:00		1500		1100		1330	
INIT.		JM		JH		JH		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-2 10%	A	10	loaded	10	N	10	N	10	N	9	1d
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-2 50%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	9	1d
	E			10	N	10	N	10	N	10	N
E-PE04-2 100%	A			10	N	10	N	10	N	8	2d
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
FOS - Film on Surface of Water
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LETH - Lethargic
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HYP - Hyperactive
BS - Brine Shrimp

AS - Organisms at Surface of Water
ERR - Erratic
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LT - Light Pigmentation
D - Organisms Dead

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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 015G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: M. bahia

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS while in holding		BS-.2 mL		BS-.2 mL		BS .2 mL		BS -.2 mL	
TIME		loaded 1445		10:00		1500		1600		1330	
INIT.		JM		JM		JM		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-3 10%	A	10 loaded		10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-3 50%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	9	1d
	E			10	N	10	N	10	N	9	1d
E-PE04-3 100%	A			10	N	10	N	10	N	9	1d
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	9	1d
	D			10	N	10	N	10	N	8	2d
	E			10	N	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
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LETH - Lethargic
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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 015G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: M. bahia

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS whole in holding		BS ~.2 mL		BS ~.2 mL		BS ~.2 mL		BS ~.2 mL	
TIME		loaded 1500		2000		1500		1100		1330	
INIT.		JMM		JM		JM		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-4 10%	A	10 loaded		10	N	10	N	10	N	9	1d
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	8	2d
E-PE04-4 50%	A			10	N	10	N	10	N	9	1d
	B			10	N	10	N	10	N	9	1d
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	9	1d
	E			10	N	10	N	10	N	9	1d
E-PE04-4 100%	A			10	N	10	N	10	N	9	1d
	B			10	N	10	N	10	N	9	1d
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	9	1d

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
FOS - Film on Surface of Water
UC - Undissolved Chemical
LETH - Lethargic
LE - Loss of Equilibrium
HYP - Hyperactive
BS - Brine Shrimp

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ERR - Erratic
GY - Gyrating
G - Gulping
RAR - Rapid Respiration
LT - Light Pigmentation
D - Organisms Dead

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 015G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: M. bahia

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS		BS ~.2mL		BS ~.2mL		BS ~.2mL		BS ~.2mL	
TIME		loaded 1515		2000		1500		1100		1330	
INIT.		[illegible]		LH		JH		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-DUPE 10%	A	10	loaded	10	N	10	N	10	N	9	1d
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	9	1d
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-DUPE 50%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	8	2d
	E			10	N	10	N	10	N	9	1d
E-PE04-DUPE 100%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	9	1d
	D	✓	✓	10	N	10	N	10	N	9	1d
	E			10	N	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
FOS - Film on Surface of Water
UC - Undissolved Chemical
LETH - Lethargic
LE - Loss of Equilibrium
HYP - Hyperactive
BS - Brine Shrimp

AS - Organisms at Surface of Water
ERR - Erratic
GY - Gyrating
G - Gulping
RAR - Rapid Respiration
LT - Light Pigmentation
D - Organisms Dead

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097RTG
Revised: March 2004

REFERENCE TOXICANT TEST DESCRIPTION SHEET

SPONSOR: MISC.

PROJECT NUMBER: REF TOX 6063640017

TEST MATERIAL

Amount of SDS : 0.10 (g)

Volume of Milli-Q Water: 100 (mL)

Date Prepared: 5/13/04

Batch Number: _____

PROTOCOL/GUIDELINES FOLLOWED:

Test Concentration Based On: ( ) Active Ingredient (X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Mysidopsis bahia*

Lot Number: 2004-8

Age/Life Stage: 3rd 4 days

Date Acclimation/Maintenance Began: 5/14/04

See Page 111 of Organisms Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: <1%

TEST CONDITIONS

( ) Range Finder (X) Static

( ) Screening ( ) Flow - Through

(X) Definitive

Lighting: (X) Fluorescent ( ) Incandescent

Photoperiod: 16 Hours Light
8 Hours Dark

Test Duration: 48 hrs.

Test Area Used: Water Bath

Test Temperature: 20 ± 1°C

Test Salintiy: 20 ± 2 ppt

Replicates per Concentration: 1

Organisms per Replicate: 10

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions (cm):10length x10width x5hieght

Test Solution Height (cm): 4

Test Vessels: ( ) Open (X) Covered

Test Container Volume: 0.34 L

Test Solution Volume: 0.20L

TEST SOLUTION PREPARATION

Test Concentration (Units: mg/L)	Control	2.5	5	10	20	40		
Volume of Dilution Water Added (mL)	200	199.5	199	198	196	192		
Volume of Effluent/ Stock Added (mL)	0	0.5	1	2	4	8		

ADDITIONAL OBSERVATIONS: _____

DATA BY: JM 5/14/04

CG

MACTEC Engineering and Consulting
TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

PAGE:
QA FORM NO: 097RT REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 0 – 2

Client: Misc.	Project Number: Ref Tox	Species: M. bahia

DAY 0 — REF TOXICANT: SDS

Nominal Concentration (mg/L)	Date: 5/14/04		Time: 16:00		Analyst: JH	
	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	Loaded	20.9	20	8.0	8.3
2.5	10	Loaded	20.9	20	8.1	8.3
5	10	Loaded	20.9	20	8.0	8.3
10	10	Loaded	20.9	20	8.1	8.3
20	10	Loaded	20.9	20	8.0	8.3
40	10	Loaded	20.9	20	8.0	8.3

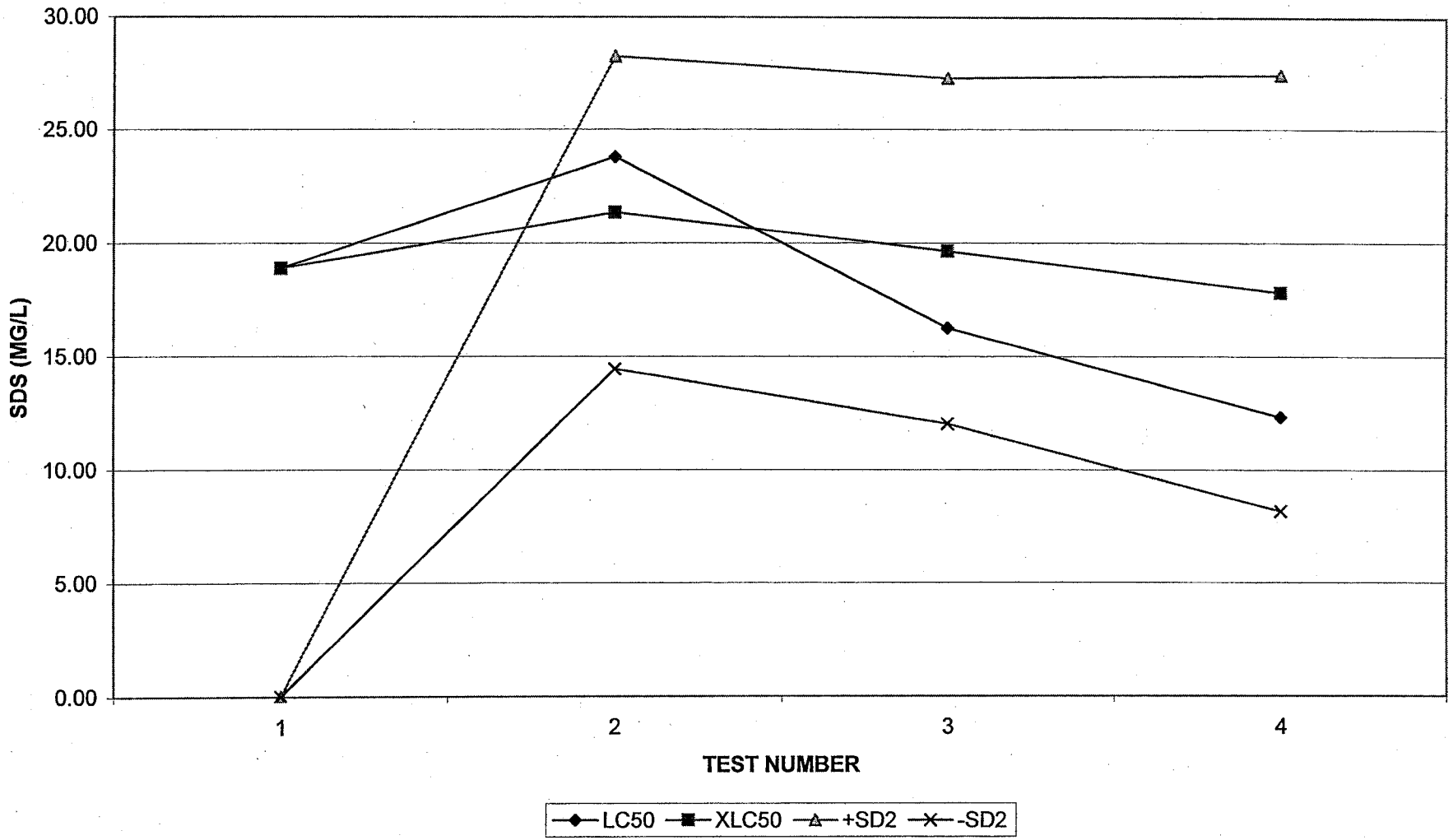
DAY 1	Date: 5/15/04		Time: 2000		Analyst: CG	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	N	19.1	20	7.8	8.3
2.5	10	N	19.2	20	7.7	8.3
5	10	N	19.1	20	7.6	8.3
10	10	N	19.1	20	7.6	8.4
20	10	N	19.1	20	7.6	8.3
40	10	N	19.2	20	7.6	8.3

DAY 2	Date: 5/16/04		Time: 1600		Analyst: CG	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	N	20.3	20	7.2	8.3
2.5	10	N	20.3	20	7.2	8.3
5	7	1NF 2D	20.4	20	7.0	8.3
10	8	2D	20.5	20	7.0	8.3
20	3	7D	20.5	20	7.1	8.3
40	0	10D	20.6	20	7.6	8.4

PAGE:

CG

MACTEC ENGINEERING AND CONSULTING, INC.
MYSIDOPSIS BAHIA
ACUTE REFERENCE TOXICITY TEST:SODIUM LAURYL SULFATE



7/8/2004

RIMMED SPEARMAN-KARBER METHOD. VERSION 1.5

DA 5/14/04 TEST NUMBER: REF TOX DURATION: 48 H
TOX ANT : SDS
SPECIES: M. bahia

RAW DATA: Concentration (mg/L)	Number Exposed	Mortalities
.00	10	0
2.50	10	0
5.00	10	3
10.00	10	2
20.00	10	7
40.00	10	10

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 12.31
95% LOWER CONFIDENCE: 8.80
95% UPPER CONFIDENCE: 17.22

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING.
ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097G
Revised: March 2004

TOXICITY TEST SYSTEM DESCRIPTION SHEET

SPONSOR: PORT EVERGLADES | PROJECT NUMBER: 6063040017.0300

TEST MATERIAL

Test Material: Sediment Elutriate

See Page 76 of Effluent Log for Test Material Information.

PROTOCOL/GUIDELINES FOLLOWED:

SOP - S -007

Test Concentration Based On: ( ) Active Ingredient (X) Whole Material

TEST ORGANISM HISTORY

Test Species: Menidia beryllina

Lot Number: 2004-9

Age/Life Stage: 13 days

Date Acclimation/Maintenance Began: 5/13/04

See Page 111 of Organism Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: < 1%

TEST CONDITIONS

( ) Range Finder (X) Static
( ) Screening ( ) Flow - Through
(X) Definitive

Lighting: (X) Fluorescent ( ) Incandescent
Photoperiod: 16 Hours Light
8 Hours Dark

Test Duration: 96 hours
Test Area Used: Water Bath
Test Temperature: 20 ± 2
Test Salintiy: 20 ± 2
Replicates per Concentration: 5
Organisms per Replicate: 10

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions(cm):lengthx 9.5widthx12hieght
Test Solution Height (cm): 6
Test Vessels: ( ) Open (X) Covered
Test Container Volume: 0.500 L
Test Solution Volume: 0.250 L

TEST SOLUTION PREPARATION

Test Concentration % mg/L	CONTROL	10	50	100				
Volume of Dilution Water Added (mL)	1500	1350	750	0				
Volume of Effluent/ Stock Added (mL)	0	150	750	1500				

ADDITIONAL OBSERVATIONS: _____

DATA BY: _____

C6

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 106G
Revised: March 2004

DAILY FEEDING LOG

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY	COMMENTS
0	5/14/04	1100	JMM	BS	2.0mL	
1	5/15/04	17:30	JH	BS	0.2mL	
2	5/16/04	16:00	JH	BS	0.2mL	
3	5/17/04	1040	CG	BS	0.2mL	
4	5/18/04	0845	CG	BS	0.2mL	

BS = Brine Shrimp nauplii YTC = Yeast/Trout Chow/Cereal Leaves
Algae = Green Algae (*Selenastrum capricornutum*)

Smr

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1403				2000				1700				1005				1040							
INIT.		Smr				JH				JH				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
Seawater Control 100%	A	20.7	8.4	8.5	20																				
	B					18.8	46.3	8.0	20																
	C									20.6	8.1	6.0	20												
	D													19.7	8.3	~~7.4~~ 7.9	20								
	E																	19.7	8.1	5.8	21				
	A																								
	B																								
	C																								
	D																								
	E																								
	A																								
	B																								
	C																								
	D																								
	E																								
INST/METH		FS7	SA 2900	DO3	Ref 18	FS-7	SA 2900	DO3	Ref 9	FS-7	SA 2900	DO3	Ref 9	FS7	SA 2900	~~Ref 18~~ DO3	Ref 9	FS7	SA 2900	DO3	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate
METH - Method

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1330				20:00				17:00				1015				1040							
INIT.		[illegible]				JH				JH				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
CONTROL SEDIMENT 10%	A	20.9	8.3	8.2	19																				
	B					18.6	8.4	8.0	20		~~8.1~~	~~6.4~~													
	C									20.1	8.1	6.1	20												
	D													18.7	8.2	7.4	20								
	E																	19.5	8.1	5.8	20				
CONTROL SEDIMENT 50%	A	20.2	8.2	8.4	19.0																				
	B					18.5	8.4	7.9	20																
	C									20.3	8.1	6.0	20												
	D													19.5	8.3	6.8	20								
	E																	19.4	8.2	6.2	20				
CONTROL SEDIMENT 100%	A	19.1	7.9	7.5	20																				
	B					18.7	8.3	7.8	20																
	C									20.1	8.1	5.8	20												
	D													19.7	8.3	~~7.6~~ 7.1	20								
	E																	19.5	8.3	6.9	20				
INST/METH		FS7	SA 2900	DO3	Ref 18	FS-7	SA 2900	DO3	Ref9	FS-7	SA 2900	DO3	Ref9	FS7	SA 2900	DO3	Ref9	FS7	SA 2900	DO3	Ref9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units

DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument

NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate

METH - Method

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form Number: 016G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1250				20:00				16:30				1015				1040							
INIT.		JMR				JN				JN				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04 - 1 10%	A	20.8	8.3	8.4	20																				
	B					18.8	8.4	7.8	20																
	C									20.3	8.3	6.0	20												
	D													19.2	8.2	7.3	20								
	E																	19.6	8.1	5.7	21				
E - PE04 - 1 50%	A	20.3	8.2	8.6	20																				
	B					18.9	8.3	7.7	20																
	C									20.4	8.1	6.0	20												
	D													19.3	8.3	7.4	20								
	E																	19.7	8.1	5.5	21				
E - PE04 - 1 100%	A	19.2	7.9	8.0	20																				
	B					18.7	8.3	7.7	20																
	C									20.4	8.1	6.0	20												
	D													19.2	8.2	7.2	21								
	E																	19.8	8.0	4.8	21				
INST/METH		FS7	SA 2900	DO3	Ref 10	FS-7	SA 2900	DO3	Ref	FS-7	SA 2900	DO3	Ref9	FS7	SA 2900	DO3	Ref9	FS7	SA 2900	DO3	Ref9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
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ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1250				20:00				16.30				1020				1043							
INIT.		[illegible]				JM				JM				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04 - 2 10%	A	20.9	8.3	8.6	20																				
	B					18.7	8.4	6.1	20																
	C									20.7	8.1	6.0	20												
	D													19.7	8.3	6.3	20								
	E																	19.9	8.1	5.5	21				
E - PE04 - 2 50%	A	20.6	8.3	8.5	20																				
	B					18.7	8.4	8.0	20																
	C									20.3	8.1	6.0	20												
	D													20.1	8.2	6.3	20								
	E																	19.8	8.0	5.0	21				
E - PE04 - 2 100%	A	19.1	8.0	7.6	20																				
	B					18.7	8.3	7.6	20																
	C									20.3	8.1	6.0	20												
	D													20.2	8.1	6.0	21								
	E																	19.8	8.0	4.6	21				
INST/METH		FS7	SA 2400	DO3	Ref 18	FS7	SA 2400	DO3	Ref 9	FS7	SA 2400	DO3	Ref 9	FS7	SA 2400	DO3	Ref 9	FS7	SA 2400	DO3	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
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SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1250				20:00				16:30				1025				1045							
INIT.		JMM				JH				JH				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04 - 3 10%	A	20.7	8.3	8.4	20																				
	B					18.8	8.4	6.8	20																
	C									20.7	8.0	6.0	20												
	D													20.3	8.2	6.6	20								
	E																	19.7	8.1	5.9	21				
E - PE04 - 3 50%	A	20.7	8.2	8.5	20																				
	B					18.8	8.4	7.9	20																
	C									20.7	8.1	6.0	20												
	D													20.2	8.3	6.3	19								
	E																	19.7	8.1	5.4	20				
E - PE04 - 3 100%	A	20.1	8.0	7.8	20																				
	B					18.8	8.4	7.9	20																
	C									20.2	8.1	6.0	20												
	D													19.8	8.3	7.2	20								
	E																	19.8	8.0	5.1	20				
INST/METH		FS7	SA 2000	DO3	Ref 10	FS-7	SA 2000	DO3	Ref9	FS-7	SA 2000	DO3	Ref9	FS7	SA 2000	DO3	Ref9	FS7	SA 2000	DO3	REF				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
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ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1250				2000				16:30				1030				1045							
INIT.		JMR				JH				JH				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04 - 4 10%	A	20.2	8.3	8.5	20																				
	B					18.8	8.4	7.8	20																
	C									20.1	8.1	6.0	20												
	D													19.5	8.2	7.4	20								
	E																	19.7	8.1	5.7	21				
E - PE04 - 4 50%	A	20.1	8.2	8.6	19																				
	B					18.8	8.3	7.6	20																
	C									20.1	8.1	6.0	20												
	D													19.2	8.5	6.9	20								
	E																	19.7	8.1	5.5	21				
E - PE04 - 4 100%	A	19.1	7.9	8.0	21																				
	B					18.8	8.3	7.7	20																
	C									20.3	8.1	6.0	20												
	D													20.1	8.3	6.3	20								
	E																	19.8	8.1	5.0	21				
INST/METH		FS7	SM 2400	DO3	Ref 10	FS7	SM 2400	DO3	Ref9	FS7	SM 2400	DO3	Ref9	FS7	SM 2400	DO3	Ref9	FS7	SM 2400	DO3	Ref9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
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METH - Method

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Gainesville, FL

QA Form Number: 016G
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ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

DATE		5/14/04				5/15/04				5/16/04				5/17/04				5/18/04							
TIME		1255				2000				1630				1030				1048							
INIT.		[illegible]				[illegible]				[illegible]				CG				RD							
NOMIN CONCN % mg/L µg/L	REP	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E - PE04-DUPE 10%	A	20.1	8.3	8.5	20																				
	B					18.7	8.4	8.0	20																
	C									20.3	8.1	6.0	20												
	D													20.1	8.3	7.2	20								
	E																	19.7	8.1	5.5	21				
E - PE04-DUPE 50%	A	20.3	8.3	8.5	20																				
	B					18.6	8.4	8.0	20																
	C									19.9	8.1	6.0	20												
	D													19.9	8.3	7.4	20								
	E																	19.6	8.1	5.7	21				
E - PE04-DUPE 100%	A	20.2	8.0	7.6	20																				
	B					18.1	8.4	7.6	20																
	C									20.0	8.1	6.0	20												
	D													20.0	8.3	7.2	20								
	E																	19.6	8.1	5.8	22				
INST/METH		FS7	SA 2900	DO3	Ref 10	FS-7	SA 2900	DO3	Ref	FS-7	SA 2900	DO3	Ref	FS7	SA 2900	DO3	Ref 9	FS7	SA 2900	DO3	Ref 9				

Key

TEMP - Temperature
SL - Salinity (ppt)
pH - Standard units
DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration
INIT. - Initials
REP - Replicate
METH - Method

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Gainesville, FL

QA Form: 015G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS		BS - .2 mL		BS ~.2 mL		BS		BS	
TIME		loaded 1400		2000		20.00		1100		1330	
INIT.		SM		JM		JM		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
SEAWATER CONTROL 100%	A	10	loaded	10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
CONTROL SEDIMENT 10%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
CONTROL SEDIMENT 50%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
CONTROL SEDIMENT 100%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
FOS - Film on Surface of Water
UC - Undissolved Chemical
LETH - Lethargic
LE - Loss of Equilibrium
HYP - Hyperactive
BS - Brine Shrimp

AS - Organisms at Surface of Water
ERR - Erratic
GY - Gyrating
G - Gulping
RAR - Rapid Respiration
LT - Light Pigmentation
D - Organisms Dead

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 015G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS		BS ~2mL		BS ~.2mL		BS		BS	
TIME		1445 loaded		2000		1030		1100		1330	
INIT.		JM		JH		JH		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-1 10%	A	10	loaded	10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-1 50%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-1 100%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
FOS - Film on Surface of Water
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LETH - Lethargic
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HYP - Hyperactive
BS - Brine Shrimp

AS - Organisms at Surface of Water
ERR - Erratic
GY - Gyrating
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ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS		BS ~.2 mL		BS ~.2 mL		BS		BS	
TIME		14:30 loaded		2000		1530		1100		1330	
INIT.		JMM		JM		JM		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-2 10%	A	10 loaded		10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-2 50%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-2 100%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

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FOS - Film on Surface of Water
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ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

TEST HOUR	0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE	5/14/03		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING	BS		BS ~.2mL		BS ~.2mL		BS		BS	
TIME	1445		20.00		1530		1100		1330	
INIT.	JM		JM		JM		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-3 10%	A	10	loaded	10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	9	1d
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-3 50%	A			10	N	10	N	10	N	~~9~~ 10	~~1d~~ N
	B			10	N	10	N	10	N	~~9~~ 10	~~1d~~ N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-3 100%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	~~9~~ 10	~~1d~~ N
	E			10	N	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
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AS - Organisms at Surface of Water
ERR - Erratic
GY - Gyrating
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RAR - Rapid Respiration
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ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		~~BS~~		BS ~ .2 mL		BS ~ .2 mL		BS		BS	
TIME		1500 ~~1200~~ loaded		2000		1530		1100		1330	
INIT.		JMM		JH		JH		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-4 10%	A	10 loaded		N	10	10	N	10	N	10	N
	B			N	10	10	N	10	N	10	N
	C			N	10	10	N	10	N	9	1d
	D			N	10	10	N	10	N	10	N
	E			N	10	10	N	10	N	9	1d
E-PE04-4 50%	A			N	10	10	N	10	N	9	1d
	B			N	10	10	N	10	N	9	1d
	C			N	10	10	N	10	N	10	N
	D			N	10	10	N	10	N	10	N
	E			N	10	10	N	10	N	10	N
E-PE04-4 100%	A			N	10	10	N	10	N	10	N
	B			N	10	10	N	10	N	10	N
	C			N	10	10	N	10	N	10	N
	D			N	10	10	N	10	N	9	1d
	E			N	10	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
FOS - Film on Surface of Water
UC - Undissolved Chemical
LETH - Lethargic
LE - Loss of Equilibrium
HYP - Hyperactive
BS - Brine Shrimp

AS - Organisms at Surface of Water
ERR - Erratic
GY - Gyrating
G - Gulping
RAR - Rapid Respiration
LT - Light Pigmentation
D - Organisms Dead

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 015G
Revised: March 2004

ACUTE TOXICITY DATA SHEET - SURVIVAL

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT ELUTRIATE

PROJECT NUMBER: 6063040017.0300
TEST SPECIES: *M. beryllina*

TEST HOUR		0 - HOUR		24 - HOURS		48 - HOURS		72 - HOURS		96 - HOURS	
DATE		5/14/04		5/15/04		5/16/04		5/17/04		5/18/04	
FEEDING		BS		BS ~.2mL		BS ~.2mL		BS		BS	
TIME		loaded 1515		20.00		1530		1100		1330	
INIT.		JM		JH		JH		CG		CG	
NOMINAL CONCENTRATION % mg/L	REP	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.	No. ALIVE	OBSERV.
E-PE04-DUPE 10%	A	10	loaded	10	N	10	N	10	N	9	1d
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-DUPE 50%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	9	1d
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	10	N
	E			10	N	10	N	10	N	10	N
E-PE04-DUPE 100%	A			10	N	10	N	10	N	10	N
	B			10	N	10	N	10	N	10	N
	C			10	N	10	N	10	N	10	N
	D			10	N	10	N	10	N	9	1d
	E			10	N	10	N	10	N	10	N

OBSERVATION KEY

REP - Replicate
OBS - Observations
INIT. - Initials
No. ALIVE - Number of Organisms Alive (survival)
N (None) - Normal Conditions
NF - Not Found
YTC/ ALG - YTC and Green Algae (daphnids)

PRE - Precipitate
FOS - Film on Surface of Water
UC - Undissolved Chemical
LETH - Lethargic
LE - Loss of Equilibrium
HYP - Hyperactive
BS - Brine Shrimp

AS - Organisms at Surface of Water
ERR - Erratic
GY - Gyrating
G - Gulping
RAR - Rapid Respiration
LT - Light Pigmentation
D - Organisms Dead

CG

MACTEC Engineering and Consulting
TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

PAGE:
FORM NO: 097A REFTOX
REVISED: MARCH 2001

REFERENCE TOXICANT TEST DATA SHEET

Sponsor: Misc.	Project Number: Ref Tox 6063040017
Test Material	**Test Conditions**
Amount of SDS : 0.10 (g) Volume of Milli-Q Water: 100 (mL) Date Prepared: 5/14/04	[X] Definitive [X] Static [ ] Screening Duration: 48 Hours
Test Organism History	Dilution Water: Natural filtered seawater
Species: M.beryllina Batch Number: 2004-9 Age/Life Stage: 13 days Date of Acclimation/Maintenance: 5/14/04 See Page 111 of Organism Receipt Log Mortality 48 hours prior to test: 1 % (%) Replicates/Concentration: 1 No. Of Organisms/Replicate: 10	Lighting: [X] Fluorescent [ ] Incandescent Photoperiod: 16 Hr Light 8 Hr Dark Test Vessel Dimensions: 8.5 L X 8.5 W 12.5 H (cm) Test Solution Height: 4 - 6 (cm) Test Vessel Volume: .6 (L) Test Solution Volume: .20 (L) Test Temperature: 20 ± 1 °C Test Salinity: 20 ± 2 ppt
Test Area Used: waterbath	Test Vessel Composition: [X] Glass [ ] Plastic
Test Concentrations Based on: [X] Whole Material [ ] Active Ingredient	Test Protocol/Guideline Followed: SOP-A-004

Test Concentrations: (Units: mg/L)	Control	0.625	1.25	2.5	5.0	10.0	20.0
Amount Dilution Water Added (mL)	200	199.87	199.75	199.5	199	198	196
Amount of Stock Added (mL)	---	0.13	0.25	0.50	1.0	2.0	4.0

Additional Observations:

Data By: JH Date: 5/14/04

CG

MACTEC Engineering and Consulting
TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

PAGE:
QA FORM NO: 097RT REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 0 – 1

Client: Misc.	Project Number: Ref Tox	Species: *M. beryllina*

DAY 0 REF TOXICANT: SDS

Nominal Concentration (mg/L)	Date: 5/14/04		Time: 16:00		Analyst: JH	
	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	Loaded	21.1	20	8.2	8.3
0.625	10	Loaded	21.0	20	8.1	8.3
1.25	10	Loaded	21.0	20	8.0	8.3
2.5	10	Loaded	20.9	20	8.0	8.3
5.0	10	Loaded	20.9	20	8.1	8.3
10.0	10	Loaded	20.9	20	8.0	8.3
20.0	10	Loaded	20.9	20	8.0	8.3

DAY 1	Date: 5/15/04		Time: 20.00		Analyst: JH	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10 ~~10~~ JH	N	18.3 ~~20.9~~ JH	20 ~~20~~ JH	7.8	8.3
0.625	10	N	18.6 ~~20.7~~ JH	20 ~~20~~ JH	8.0	8.3
1.25	10	N	18.6 ~~20.9~~ JH	20 ~~20~~ JH	7.9	8.3
2.5	10	N	18.7 ~~20.8~~ JH	20 ~~20~~ JH	7.8	8.3
5.0	10	N	18.6 ~~20.9~~ JH	20 ~~20~~ JH	7.8	8.3
10.0	1	9b	18.6 ~~20.9~~ JH	20 ~~20~~ JH	7.8	8.3
20.0	0	10 0	18.6 ~~20.9~~ JH	20 ~~20~~ JH	7.8	8.3

MACTEC Engineering and Consulting
TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

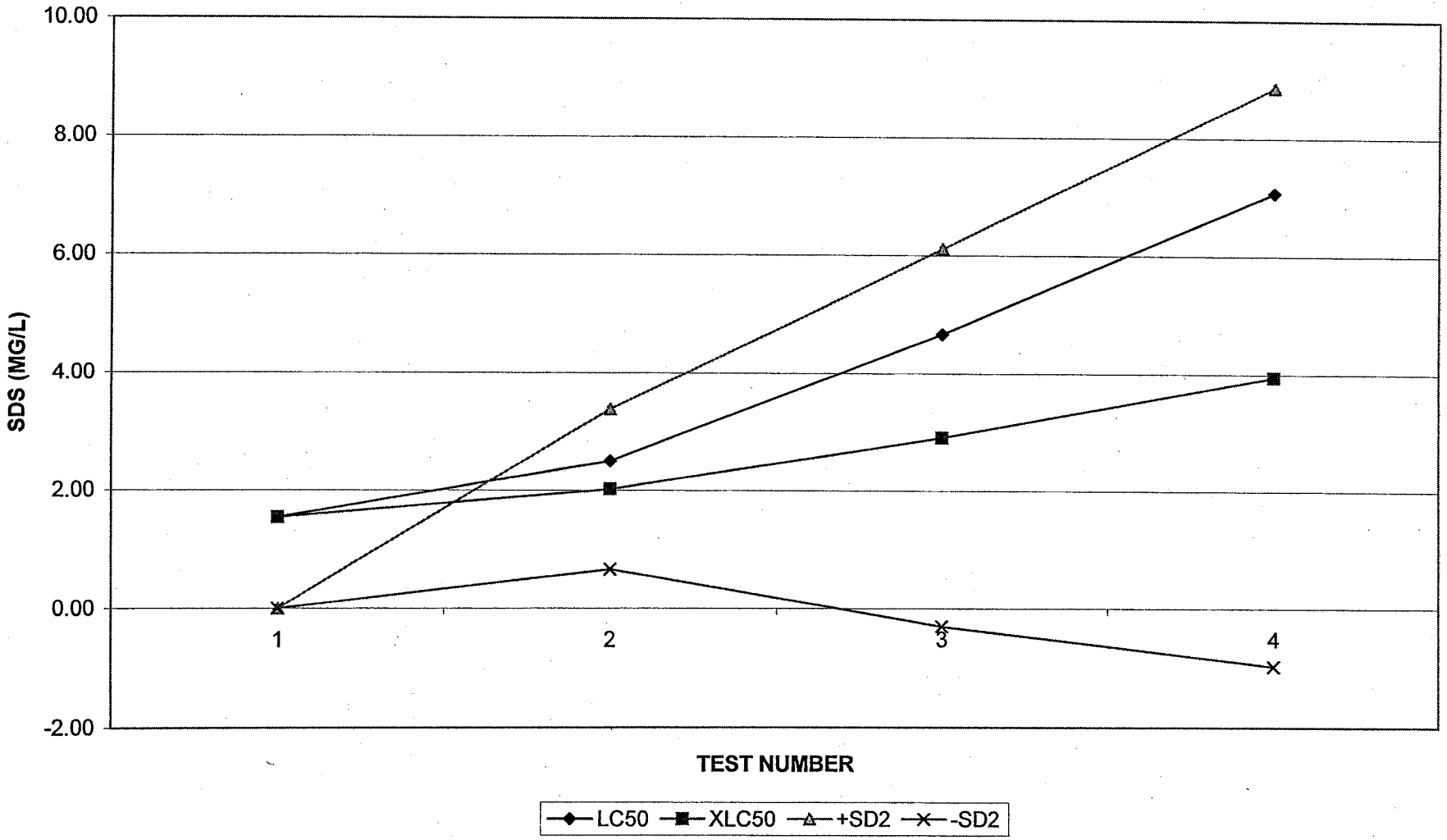
PAGE:
QA FORM NO: 097RT REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 2 – 3						
Client: Misc.		Project Number: Ref Tox			Species: *M. beryllina*	
REF TOXICANT: SDS						
DAY 2	**Date:** 5/16/04		**Time:** 1600		**Analyst:** JH	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	N	20.4	20	~~20~~ JH 6.6	8.2
0.625	10	N	20.1	20	6.3	8.1
1.25	10	N	20.3	20	6.3	8.1
2.5	10	N	20.4	20	6.1	8.1
5.0	9	1D	20.3	20	6.2	8.1
10.0	1	N	20.9	20	5.6	7.9
20.0	~~0~~	~~N~~	~~20.5~~	~~20~~	~~4.0~~	~~7.9~~

not required. all organisms died on 5/15/04 in 20.0 concentration
JH

06

MACTEC ENGINEERING AND CONSULTING, INC.
MENIDIA BERYLLINA
ACUTE REFERENCE TOXICITY TEST:SODIUM LAURYL SULFATE



7/8/2004

'RIMMED SPEARMAN-KARBER METHOD. VERSION 1.5

DA 5/14/04 TEST NUMBER: REF TOX DURATION: 48 H
T ANT : SDS
SP ES: M. beryllina

RAW DATA:	Concentration (mg/L)	Number Exposed	Mortalities
	.00	10	0
	.63	10	0
	1.25	10	0
	2.50	10	0
	5.00	10	1
	10.00	10	9
	20.00	10	10

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 7.07
95% LOWER CONFIDENCE: 5.87
95% UPPER CONFIDENCE: 8.52

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017 Client: Port Everglades Test:

DAILY LOG

6/30/04 - Organisms received, water quality monitored. Organisms acclimated to test temperature before placing in holding vessels. Ref Tox standard prepared: 0.1g $CuSO_4$/500mL Milli-Q water. prepared, 0.5 M KCl. 3.75g KCl/100mL DI water. (~1.0mL injected per organism). Elutriate prepared with site water, site sediment, and control sediment at a 4:1 ratio. Site water is 33 ppt, so salinity adjusted to 28ppt by combining sitewater with wellwater at a 4:1 ratio. Each elutriate mixture stirred by hand and magnetic stirrer for 0.5 hour, then allowed to settle for 2hrs and 10min. before supernatant removed. Supernatant removed for each sample. Each sample was then aerated and water qualities taken. CG Dilutions prepared for site samples & WQ monitored. Ref Tox dilutions prepared & water quality monitored.
Organisms spawned with KCl injections, and test conducted per guidance.

MACTEC Engineering and Consulting, Inc.
Toxicology Laboratory
Gainesville, Florida

QA Form No.: 114
Revised: March 2001

SEA URCHIN FERTILIZATION TEST

Client: Port Everglades

Project No.: 6063040017

Test Substance: Elutriate

Test Species: *A. punctulata*

Source of Sea Urchins: ARO

Date Received: 6/30/04

See Page 112 of the Organism Holding Log

Condition of organisms: Good / Adults
Batch #: 2004-22

Dilution Water: Natural Filtered Seawater

Salinity: 28

Test Temperature (°C): 20+/- 1

Type of Lighting: Flourescent

Test Guidelines:

TEST CONCENTRATIONS

Concentration ( )	Control	10%	50%	100%	
Dilution Water (mL)	50	45	25	-----	
Stock/Effluent (mL)	-----	5	25	50	

Stock Preparation / Comments: Elutriates prepared by stirring (0.5 hr.) 4 parts seawater with 1 part sediment and allowed to settle

Type of Test Chamber: Glass Scintillation vials

Test Chamber Volume (mL): 24

Number of Replicates per Concentration: 3
Volume of Test Solution per Replicate (mL): 5

Test Location: Prep Room

Test Duration: 80 minutes

MACTEC Engineering and Consulting, Inc.
Gainesville, Florida

QA Form Number: 016b
Revised: March 2001

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: Port Everglades

PROJECT NUMBER: 6063040017

TEST SUBSTANCE: Elutriate

TEST SPECIES: A. punctulata

DATE		6/30/04																			
TIME		1345																			
INIT.		CG																			
NOMIN CONCN % mg/L µg/L	REP	TEMP	PH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
Control Seawater	A	20.3	8.1	7.7	27																
	B																				
Control Sed 10%	A	21.4	8.0	7.4	26																
	B																				
Control Sed 50%	A	21.4	8.0	7.2	26																
	B																				
Control Sed 100%	A	21.3	8.0	7.2	26																
	B	~~26~~			~~26~~																
E-PE04-1 10%	A	20.6	8.1	7.4	26																
	B																				
E-PE04-1 50%	A	20.8	8.0	7.2	26																
	B																				
E-PE04-1 100%	A	21.1	7.9	7.2	26																
	B																				
E-PE04-2 10%	A	20.9	8.1	7.3	26																
	B																				
INST/METH		F57	SA 2900	D03	R&9																

KEY

TEMP - Temperature
SL - Salinity (ppt)
pH - standard units

DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration

INIT. - Initials
REP - Replicate
METH - Method

MACTEC Engineering and Consulting, Inc.
Gainesville, Florida

QA Form Number: 016b
Revised: March 2001

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: Port Everglades	PROJECT NUMBER: 6063040017
TEST SUBSTANCE: Elutriate	TEST SPECIES: A. punctulata

DATE		6/30/04																			
TIME		1345																			
INIT.		CG																			
NOMIN CONCN % mg/L µg/L	REP	TEMP	PH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E-PE04-2 50%	A	20.8	8.1	7.4	26																
	B																				
E-PE04-2 100%	A	21.2	8.0	7.2	26																
	B																				
E-PE04-3 10%	A	20.7	8.1	7.4	26																
	B																				
E-PE04-3 50%	A	20.6	8.0	7.2	26																
	B																				
E-PE04-3 100%	A	21.1	7.9	7.1	26																
	B																				
E-PE04-4 10%	A	20.7	8.1	7.5	27																
	B																				
E-PE04-4 50%	A	21.3 ~~21.7~~ CG	8.0 ~~7.8~~ CG	7.3	26 ~~26~~ CG																
	B																				
E-PE04-4 100%	A	21.1	7.8	7.1	26																
	B																				
INST/METH		FS7	SA 2900	003	Ref9																

KEY

TEMP - Temperature
SL - Salinity (ppt)
pH - standard units

DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration

INIT. - Initials
REP - Replicate
METH - Method

MACTEC Engineering and Consulting, Inc.
Gainesville, Florida

QA Form Number: 016b
Revised: March 2001

ACUTE TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: Port Everglades

PROJECT NUMBER: 6063040017

TEST SUBSTANCE: Elutriate

TEST SPECIES: A. punctulata

DATE		6/30/04																			
TIME		1345																			
INIT.		CG																			
NOMIN CONCN % mg/L µg/L	REP	TEMP	PH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN	TEMP	pH	DO	SL or CN
E-PE04-DUPE 10%	A	20.6	8.1	7.6	26																
	B																				
E-PE04-DUPE 50%	A	20.8	8.1	7.3	26																
	B																				
E-PE04-DUPE 100%	A	21.1	7.9	7.1	26																
	B																				
RS-PE04 10%	A																				
	B																				
RS-PE04 50%	A																				
	B																				
RS-PE04 100%	A																				
	B																				
	A																				
	B																				
	A																				
	B																				
INST/METH		F57	SA 2900	D03	Ref9																

KEY

TEMP - Temperature
SL - Salinity (ppt)
pH - standard units

DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration

INIT. - Initials
REP - Replicate
METH - Method

MACTEC Engineering and Consulting, Inc.
Gainesville, Florida

QA Form No.: 116
Revised: March 2001

SEA URCHIN FERTILIZATION TEST

Sponsor: Port Everglades

Project No.: 6063040017

Test Substance: Elutriate

Test Species: *A. punctulata*

Investigator: Shortelle

Date: 6/30/04

FINAL EGG FERTILIZATION COUNTS

Concentration (%, mg/L)	REPLICATE VIAL									
	A		B		C		D		TOTAL	
	F	U	F	U	F	U				
Control Seawater	75	25	89	11	86	14			250	50
Control Sediment 10%	75	25	89	11	70	30			234	66
Control Sediment 50%	77	23	92	8	78	22			247	53
Control Sediment 100%	75	25	79	21	66	34			220	80
E-PE04-1 10%	89	11	78	22	90	10			257	43
E-PE04-1 50%	77	23	85	15	91	9			253	47
E-PE04-1 100%	80	20	71	29	77	23			228	72
E-PE04-2 10%	95	5	86	14	80	20			261	39
E-PE04-2 50%	84	16	72	28	81	19			237	43

MACTEC Engineering and Consulting, Inc.
Gainesville, Florida

QA Form No.: 116
Revised: March 2001

SEA URCHIN FERTILIZATION TEST

Sponsor: Port Everglades

Project No.: 6063040017

Test Substance: Elutriate _____

Test Species: *A. punctulata*

Investigator: Shortelle

Date: 6/30/04

FINAL EGG FERTILIZATION COUNTS

Concentration (%, mg/L)	REPLICATE VIAL									
	A		B		C		D		TOTAL	
	F	U	F	U	F	U				
E-PE04-2 100%	83	17	70	30	87	13			240	60
E-PE04-3 10%	91	9	88	12	85	15			264	36
E-PE04-3 50%	77	~~23~~ 23	79	21	91	19			237	63
E-PE04-3 100%	86	14	77	23	69	31			232	68
E-PE04-4 10%	92	8	79	21	83	17			254	46
E-PE04-4 50%	83	17	91	9	73	27			247	53
E-PE04-4 100%	89	11	85	15	72	28			246	54
E-PE04-DUPE 10%	80	20	89	11	96	4			265	35
E-PE04-DUPE 50%	78	22	84	16	90	10			252	48

MACTEC Engineering and Consulting, Inc.
Gainesville, Florida

QA Form No.: 116
Revised: March 2001

SEA URCHIN FERTILIZATION TEST

Sponsor: Port Everglades

Project No.: 6063040017

Test Substance: Elutriate

Test Species: *A. punctulata*

Investigator: Shutelle

Date: 6/30/04

FINAL EGG FERTILIZATION COUNTS

Concentration (%, mg/L)	REPLICATE VIAL									
	A		B		C		D		TOTAL	
	F	U	F	U	F	U				
E-PE04-DUPE 100%	82	18	77	23	80	20			239	61
RS-PE04 10%										
RS-PE04 50%										
RS-PE04 100%										

MACTEC Engineering and Consulting, Inc.
Toxicology Laboratory
Gainesville, Florida

QA Form No.: 114RT
Revised: March 2001

SEA URCHIN FERTILIZATION TEST

Client: Port Everglades

Project No.: Ref Tox

Test Substance: Copper Sulfate

Test Species: A. punctulata

Source of Sea Urchins: ARO

Date Received: 6/30/04

See Page 112 of the Organism Holding Log

Condition of organisms: Good / Adults

Batch #: 2004-22

Dilution Water: Natural Filtered Seawater

Salinity: 28

Test Temperature (°C): 20+/- 1

Type of Lighting: Flourescent

Test Guidelines:

TEST CONCENTRATIONS

Concentration (~~mL~~ mL)	Control	25	50	100	200	400
Dilution Water (mL)	100	99.875	99.75	99.5	99.0	98.0
Stock/Effluent (mL)	----	.125	0.25	0.5	1.0	2.0

Stock Preparation / Comments: Primary stock: 0.1g copper sulfate in 500mL Milli-Q water. Final stock solution used 10mL of primary stock diluted to 100mL Milli-Q.
Stock soln prepared 6/30/04, Batch # CS2004.1 JMC

Type of Test Chamber: Glass Scintillation vials

Test Chamber Volume (mL): 24

Number of Replicates per Concentration: 3
Volume of Test Solution per Replicate (mL): 5

Test Location: Prep Room

Test Duration: 80 minutes

Concentrations prepared JMC 6/30/04
Confirmed by CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097RTG
Revised: March 2004

REFERENCE TOXICANT DATA SHEET						
SPONSOR: MISC.		PROJECT NUMBER: REF TOX			SPECIES: A. *punctulata*	
REF TOXICANT: Copper Sulfate						
DAY 0	DATE: 6/30/04		TIME: 1445		ANALYST: CG	
NOMINAL CONCENTRATION (mg/L)	~~# ALIVE~~ F	OBSERVATION	TEMP (°C)	SALINITY (ppt)	DO (mg/L)	pH
CONTROL	see next page	N	20.3	27	7.7	8.1
25			21.2	26	7.4	8.0
50			21.0	26	7.4	8.0
100			21.0	27	7.4	7.9
200			21.1	27	7.4	7.7
400			21.1	26	7.3	7.2

EC 50 = 90.70

95% Lower Conf: 84.99

95% Upper : 96.79

SEA URCHIN FERTILIZATION TEST

Sponsor: Port Everglades

Project No.: Ref Tox

Test Substance: Copper Sulfate

Test Species: *A. punctulata*

Investigator: Shurtelle

Date: 6/30/04

FINAL EGG FERTILIZATION COUNTS

Concentration (%, mg/L)	REPLICATE VIAL									
	A		B		C		D		TOTAL	
	F	U	F	U	F	U				
Control	75	25	89	11	86	14			250	50
25	80	20	71	29	83	17			234	66
50	62	38	72	28	65	35			199	101
100	46	54	40	60	39	61			125	175
200	4	96	6	94	11	89			21	279
400	3	97	10	90	1	99			14	286

APPENDIX C

WHOLE SEDIMENT BIOASSAY DATA

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017-0200 Client: Port Everglades Test: Whole Sediment *L. plumulosus* and *M. bahia*

DAILY LOG

6/1/04- Pore water ammonia and sulfide readings taken for each sample. CG
Vessels loaded w/ sediment. Water added to sediment vessels. 600ml 20ppt saltwater to 1.6 vessels
800ml 28ppt Saltwater added to 2 qt. jars
6/2/04- Overlaying water collated (for both M. bahia and L. plumulosus) and tested for ammonia levels. CG Water renewed prior to loading ~~for both~~ jmr 6/2/04 organisms. Water qualities taken, organisms counted and loaded for both M. bahia and L. plumulosus test. Airlines started and checked in both test. ~~Both~~ All test vessels covered. After organisms were loaded, each test vessel was checked to make sure all organisms were alive and acting (burrowing) normal. CG All organisms looked good and none were removed or replaced. CG Ref Tox setup and initiated for both organisms. CG
Photoperiod for each test checked: M. bahia, 16 hr light, 8 hr dark. jmr L. plumulosus, 24 hr light. jmr Data Reviewed. jmr
Airlines checked in PM. Fed M. bahia Brine shrimp ~1800 jmr
(unable to feed during holding as brine shrimp cysts were not "hatched," until later in day).

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017-0200 Client: Port Everglades Test: Whole Sediment *L. plumulosus* and *M. bahia*

DAILY LOG

6/3/04. (M. bahia) Organisms fed. RD 0800 tmc

Organisms monitored, WQ taken, organisms observed
Reftox monitored & organisms observed. (WS)
M. bahia test vessels & Ref tox vessels covered.
L. plumulosus test vessels covered. Ref Tox uncovered.
(salinity in Ref Tox on low side). Aeration rate inc'd slightly, L. plum. vessels
Airlines for both tests checked. tmc
Data reviewed. tmc

6/4/04 - water qualities taken, water renewed, new water qualities taken, organisms observed, and airlines checked and vessels covered. CG
M. bahia fed BS after renewal. CG Ref TOX monitor. CG MM Data reviewed tmc

6/5/04 - water qualities taken, organisms observed, airlines checked, M bahia fed, all vessels covered. Ref Tox (L. plumulosus) monitored. CG

6/6/04 - water qualities taken before & after renewal. Water renewed in both tests, organisms observed, airlines checked, ref tox (L. plumulosus) monitored. M. bahia fed. Ref Tox test terminated (L. plumulosus)

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017-0200 Client: Port Everglades Test: Whole Sediment *L. plumulosus* and *M. bahia*

DAILY LOG

6/7/04- Water qualities taken, organisms observed, and airlines checked. M. bahia fed (brine shrimp) and all vessels covered.

6/8/04- Water qualities taken prior to test renewal. Test renewed, water qualities taken after renewal. M. bahia fed (brine shrimp). Airlines checked and all vessels covered. CG Organisms observed. CG

6/9/04- Water qualities taken, organisms observed and airlines checked. M. bahia fed (brine shrimp) and all vessels covered. RD

6/10/04- Water qualities taken prior to test renewal. Test renewed. M. bahia fed (brine shrimp). Water qualities taken after renewal. Airlines checked. Organisms observed. Vessels covered. RD

6/11/04- Water qualities taken, organisms observed, 300 mL of Overlaying water taken for each sample ~~alk., hardness, cond., and ammonia~~ ammonia can be taken. Water taken out was then replaced in each vessel to restore appropriate test solution volume. CG M. bahia fed and airlines checked and vessels covered. CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017-0200 Client: Port Everglades Test: Whole Sediment *L. plumulosus* and *M. bahia*

DAILY LOG

6/12/04 - WATER QUALITIES TAKEN. Organisms observed and airlines checked. M. bahia fed Brine shrimp in morning. TI

CG

MACTEC
Gainesville, FL

QA Form Number: 016ASa
Revised: May 2003

ACUTE TOXICITY DATA SHEET – Ammonia (NH_3-N) /Sulfide (S^{2-}) Determination in PORE WATER / OVERLYING WATER (circle one)

SPONSOR: PPB/Port Everglades

PROJECT NUMBER: 6063040017.0200

TEST SUBSTANCE: sediment

TEST SPECIES: M. bahia, L. plumulosus

DATE:	6/1/04						~~6/2/04~~ CG					
INIT.	CG						~~CG~~ CG					
Sample ID	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	PoreWater /Overyling Water	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	Pore Water/ Overyling Water
Control	24.5 ~~24.6~~	7.5	0.0020		to low to detect	PW					–	OW
E-PE04-1	25.0	7.5	0 ~~0.0000~~			PW					–	OW
E-PE04-2	25.2	7.6	0.0060			PW					–	OW.
E-PE04-3	25.0	7.6	0			PW					–	OW
E-PE04-4	24.0	7.5	.0083			PW					–	OW
E-PE04-Dupe	23.6	7.5	.0018			PW					–	OW
RS-EPE04 ~~E-PE04 Refe~~	23.0	7.8	.0013			PW					–	OW

* Used meter SA290B

KEY

TEMP - Temperature
SL - Salinity (ppt)
pH - standard units
OW – overlying water

DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration

INIT. - Initials
REP - Replicate
METH - Method
PW – pore water

CG

MACTEC
Gainesville, FL

QA Form Number: 016ASa
Revised: May 2003

ACUTE TOXICITY DATA SHEET – Ammonia (NH_3-N) /Sulfide (S^{2-}) Determination in PORE WATER / OVERLYING WATER (circle one)

SPONSOR: PPB/Port Everglades

PROJECT NUMBER: 6063040017.0200

TEST SUBSTANCE: sediment

TEST SPECIES: ~~M. bahia~~ CG, ~~L. plumulosus~~ CG

DATE:	6/2/04						6/2/04					
INIT.	CG (M. bahia)						CG (L. plumulosus)					
Sample ID	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	PoreWater /Overyling Water	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	Pore Water/ Overyling Water
Control	21.7	8.1	0		–	OW	20.5	8.1	0		–	OW
E-PE04-1	21.8	8.1	0		–	OW	20.9	8.1	.0002		–	OW
E-PE04-2	21.8	8.1	0		–	OW	20.7	8.1	.0008		–	OW
E-PE04-3	21.6	8.1	0		–	OW	20.8	8.1	.0012		–	OW
E-PE04-4	21.6	8.1	0		–	OW	21.6	8.1	.0011		–	OW
E-PE04-Dupe	21.6	8.1	.0005		–	OW	20.8	8.1	.0004		–	OW
RS-PE04	21.6	8.1	0		–	OW	20.7	8.1	.0003		–	OW
												~~OW~~ CG

USED METER SA7908

KEY

TEMP - Temperature
SL - Salinity (ppt)
pH - standard units
OW – overlying water

DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration

INIT. - Initials
REP - Replicate
METH - Method
PW – pore water

CG

MACTEC
Gainesville, FL

QA Form Number: 016ASa
Revised: May 2003

ACUTE TOXICITY DATA SHEET – Ammonia (NH_3-N) /Sulfide (S^{2-}) Determination in PORE WATER / OVERLYING WATER (circle one)

SPONSOR: Port Everglades

PROJECT NUMBER: 60630400 17.0200

TEST SUBSTANCE: Sediment

TEST SPECIES:

DATE:	6/11/04						6/11/04 L. plumulosus					
INIT.	CG (M. bahia)						CG (~~M. beryllina~~) co					
Sample ID	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	PoreWater /Overyling Water	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	Pore Water/ Overyling Water
E-PE04-1	20.6	8.0	.0012			OW	20.9	8.1	.0001			OW
E-PE04-2	20.7	8.0	.0015			OW	20.8	8.2	.0004			OW
E-PE04-3	20.6	8.1	.0021			OW	20.9	8.2	.0010			OW
E-PE04-4	20.5	8.1	.0022			OW	21.1	8.3	.0008			OW
E-PE04-Pipe	20.7	8.1	.0016			OW	21.0	8.2	.0002			OW
E-PE04-CDC	20.5	8.1	.0005			OW	20.9	8.2	.0002			OW
E-PE04-RS	20.7	8.1	.0015	~~.0005~~		OW	21.1	8.2	.0000			OW

Meter SA290B

KEY

TEMP - Temperature
SL - Salinity (ppt)
pH - standard units
OW – overlying water

DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration

INIT. - Initials
REP - Replicate
METH - Method
PW – pore water

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097G
Revised: March 2004

TOXICITY TEST SYSTEM DESCRIPTION SHEET

SPONSOR: PORT EVERGLADES | PROJECT NUMBER: 6063040017 – 0200

TEST MATERIAL

Test Material: Sediment

See Page 72 of Effluent Log for Test Material Information.

PROTOCOL/GUIDELINES FOLLOWED:

SOP - S - 007

Test Concentration Based On: ( ) Active Ingredient (X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Mysidopsis bahia*

Lot Number: 2004 - 13

Age/Life Stage: 4 days

Date Acclimation/Maintenance Began: 6/2/04

See Page 111 of Organism Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: 4%

TEST CONDITIONS

( ) Range Finder (X) Static
(X) Screening ( ) Flow - Through
( ) Definitive

Lighting: (X) Fluorescent ( ) Incandescent
Photoperiod: 16 Hours Light
8 Hours Dark

Test Duration: 10 days
Test Area Used: Water Bath
Test Temperature: 20 ± 2
Test Salinity: ~~25~~ 20 ± 2
Replicates per Concentration: 5
Organisms per Replicate: 20

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions(cm):95lengthx 26widthx 7hieght
Test Solution Height (cm): 5
Test Vessels: ( ) Open (X) Covered
Test Container Volume: 1.6 L
Test Solution Volume: 0.6 L

TEST SOLUTION PREPARATION

Test Concentration % mg/L	Ctrl	Site samples, Ref sample, Dupe sample						
Volume of Dilution Water Added (mL)	600	0						
Volume of Effluent/ Stock Added (mL)	0	600						

ADDITIONAL OBSERVATIONS: _____

DATA BY: CG 6/2/04

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 106G
Revised: March 2004

DAILY FEEDING LOG

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017 - 0200
TEST SPECIES: *M. bahia*

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY	COMMENTS
0	6/2/04	2000	JMM	BS	1 mL	fed in test vessels
1	6/3/04	0715	RD	BS	1 mL	
2	6-4-04	1715	JM	BS	1 mL	
3	6/5/04	1920	CG	BS	1 mL	
4	6/6/04	1800	WS	BS	1 mL	
5	6/7/04	0930	CG	BS	1 mL	
6	6/8/04	0945	CG	BS	1 mL	
7	6/9/04	0945	RD	BS	1 mL	
8	6/10/04	1025	RD	BS	1 mL	
9	6/11/04	0900	CG	BS	1 mL	
10	6/12/04	0900	TT	BS	1 mL	

BS = Brine Shrimp nauplii *YTC = Yeast/Trout Chow/Cereal Leaves
Algae = Green Algae (*Selenastrum capricornutum*)

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT
PROJECT NUMBER: 6063040017.0200
TEST SPECIES: *M. bahia*

SAMPLE ID: **E - PE04 - CONTROL**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/2/04	0	A		21.6		8.1		7.2		21						WS
6/3/04	1	B	20.5		8.3		7.4		21						WS/1345	
6/4/04	2	C	20.4	20.3	8.2	8.1	7.6	7.0	21	22					CG 1615	JM 16:30
6/5/04	3	D	21.8		8.2		7.4		21						WS 19.15	
6/6/04	4	E	20.4	19.3	8.2	8.3	7.8	7.7	22	21					WS 1400	WS 17.40
6/7/04	5	A	20.3		8.1		8.8		20						CG 0910	
6/8/04	6	B	20.3	19.7	8.2	8.2	7.7	7.8	21	21					RD 0850	RD 0955
6/9/04	7	C	20.8		8.3		7.4		21						RD 0905	
6/10/04	8	D	20.5	20.5	8.1	8.1	7.4	7.5	21	20					RD 0845	RD 1050
6/11/04	9	E	20.6		8.1		7.9		21						CG 0850	
6/12/04	10	A	20.4		8.1		7.4		21						TI 1400	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - CONTROL**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/2/04	0	loaded	20	→	→	→		1600
6/3/04	1	N	N	N	N	N	WS	1445
6/4/04	2	N	N	N	N	N	CG	1645
6/5/04	3	N	N	N	N	N	WS	1925
6/6/04	4	N	N	N	N	N	~~CG~~ WS	~~0850~~ 1400
6/7/04	5	N	N	N	N	N	CG	0930
6/8/04	6	N	N	N	N	N	CG	0945
6/9/04	7	N	N	N	N	N	RD	0935
6/10/04	8	N	N	N	N	N	RD	1030
6/11/04	9	N	N	N	N	N	CG	0900
6/12/04	10	N	N	N	N	N	TI	0900
6/12/04 Day 10 Count		19A 1NF	19A, 1NF	17A, 3NF	19A, 1NF	18A, 2NF	JM	1540

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0200
TEST SPECIES: *M. bahia*

SAMPLE ID: **E - PE04 - 1**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/2/04	0	A	WS ~~21.4~~	21.4	WS ~~8.2~~	8.2		7.7		21						WS
6/3/04	1	B	20.4		8.2		7.2		21						WS/1350	
6/4/04	2	C	20.4	20.2	8.2	8.2	7.8	7.3	21	22					CG 1515	DM 1700
6/5/04	3	D	21.9		8.3		7.6		22						WS 1915	
6/6/04	4	E	20.2	20.2	8.2	8.3	7.8	7.7	22	21					WS 1400	WS 1740
6/7/04	5	A	20.1		8.0		8.1		20						CG 0910	
6/8/04	6	B	20.4	19.8	8.1	8.1	7.5	7.3	21	21					RD 0850	RD 0955
6/9/04	7	C	20.9		8.2		7.4		21						RD 0905	
6/10/04	8	D	20.5	20.2	8.1	8.1	7.3	7.8	20	20					RD 0845	RD 1050
6/11/04	9	E	20.7		8.1		8.0		21						CG 0850	
6/12/04	10	A	20.4		8.0		7.0		21						TT 0900	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - 1**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/2/04	0	loaded	→	→	→	→		1600
6/3/04	1	N	N	N	N	N	WS	1445
6/4/04	2	N	N	N	N	N	CG	1645
6/5/04	3	N	N	N	N	N	WS	1425
6/6/04	4	N	N	N	N	N	WS ~~CG~~	~~0830~~ 1400
6/7/04	5	N	N	N	N	N	CG	0930
6/8/04	6	N	N	N	N	N	CC	0945
6/9/04	7	N	N	N	N	N	RD	0935
6/10/04	8	N	N	N	N	N	RD	1030
6/11/04	9	N	N	N	N	N	CG	0900
6/12/04	10	N	N	N	N	N	TT	0900

6/12/04 Takedown 20 A 18A, 2NF 18A, 2NF 15A, 5NF 20A

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT
PROJECT NUMBER: 6063040017.0200
TEST SPECIES: *M. bahia*

SAMPLE ID: **E - PE04 - 2**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/2/04	0	A		21.8		8.1		6.6		21						WS
6/3/04	1	B	20.5		8.3		7.2		22						WS 1400	
6/4/04	2	C	20.6	20.2	8.2	8.3	7.7	7.4	22	22					CG 1515	JH 1700
6/5/04	3	D	21.1		8.4		7.5		22						WS 1915	
6/6/04	4	E	20.0	20.5	8.3	8.3	8.0	7.5	22	22					WS 1400	WS 17.40
6/7/04	5	A	20.7		8.1		7.7		21						CG 0930	
6/8/04	6	B	20.6	19.9	8.1	8.1	7.5	7.3	21	21					RD 0850	RD 0955
6/9/04	7	C	20.9		8.2		7.4		21						RD 0905	
6/10/04	8	D	20.8	20.1	8.1	8.1	7.4	7.9	21	21					RD 0845	RD 1050
6/11/04	9	E	20.8		8.1		8.1		21						CG 0850	
6/12/04	10	A	21.0		8.1		6.6		21						TT 0900	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - 2**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/2/04	0	loaded	→	→	→	→		1600
6/3/04	1	N	N	N	N	N	WS	1500
6/4/04	2	N	N	N	N	N	CG	1645
6/5/04	3	N	N	N	N	N	WS	1925
6/6/04	4	N	N	N	N	N	WS	1400
6/7/04	5	N	N	N	N	N	CG	0930
6/8/04	6	N	N	N	N	N	CG	0945
6/9/04	7	N	N	N	N	N	RD	0935
6/10/04	8	N	N	N	N	N	RD	1030
6/11/04	9	N	N	N	N	N	CC	0900
6/12/04	10	20A	18A/2NF	17A/3NF	18A/2NF	18A/2NF	CG	1540

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT
PROJECT NUMBER: 6063040017.0200
TEST SPECIES: *M. bahia*

SAMPLE ID: **E - PE04 - 3**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/2/04	0	A		21.4		8.2		7.7		21						WS
6/3/04	1	B	20.5		8.2		7.1		22						WS 1400	
6/4/04	2	C	20.7	20.1	8.2	8.3	7.6	7.3	22	22					CG 1520	JM 1700
6/5/04	3	D	22.0		8.3		7.6		22						WS 1915	
6/6/04	4	E	20.4	20.5	8.2	8.2	7.2	7.2	22	21					WS 1400	WS 1745
6/7/04	5	A	20.8		8.0		6.0		21						CG 0910	
6/8/04	6	B	20.7	20.0	8.1	8.1	7.3	7.5	21	21					RD 0850	RD 0955
6/9/04	7	C	20.7		8.2		7.5		22						RD 0905	
6/10/04	8	D	20.6	20.2	8.1	8.1	7.5	7.7	21	21					RD 0845	RD 1050
6/11/04	9	E	21.0		8.1		7.6		21						CG 0850	
6/12/04	10	A	20.8		8.2		7.2		21						TT 0900	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - 3**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/2/04	0	loaded	→	→	→	→		1600
6/3/04	1	N	N	N	N	N	WS	1500
6/4/04	2	N	N	N	N	N	CG	1645
6/5/04	3	N	N	N	N	N	WS	1925
6/6/04	4	N	N	N	N	N	WS	1400
6/7/04	5	N	N	N	N	N	CG	0930
6/8/04	6	N	N	N	N	N	CG	0945
6/9/04	7	N	N	N	N	N	RD	0935
6/10/04	8	N	N	N	N	N	RD	1030
6/11/04	9	N	N	N	N	N	CG	0900
6/12/04	10	18A/2NF	16A/4NF	20A	16A/4NF	14A/6NF	CG	1540

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT
PROJECT NUMBER: 6063040017.0200
TEST SPECIES: *M. bahia*

SAMPLE ID: **E - PE04 - 4**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/2/04	0	A		20.7		8.2		7.6		21						WS
6/3/04	1	B	20.4		8.1		6.5		22						WS/1710	
6/4/04	2	C	20.7	20.0	8.0	8.3	6.8	6.3	22	22					CG 1520	JM 1700
6/5/04	3	D	22.0		8.4		7.5		22						WS 1915	
6/6/04	4	E	20.4	20.5	8.3	8.3	7.7	7.6	21	21					WS 1400	WS 1745
6/7/04	5	A	20.9		8.0		7.5		21						CG 1910	
6/8/04	6	B	20.7	20.0	7.9	8.0	4.6	7.0	21	21					RD 0856	RD 0955
6/9/04	7	C	20.8		8.1		7.3		22						RD 0905	
6/10/04	8	D	20.5	20.0	8.2	8.2	7.5	7.8	21	21					RD 0845	RD 1050
6/11/04	9	E	20.9		8.2		7.6		21						CG 0950	
6/12/04	10	A	21.6		8.1		6.3		21						Tbag	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - 4**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/2/04	0	loaded	→	→	→	→		1600
6/3/04	1	N	N	N	N	N	WS	1500
6/4/04	2	N	N	N	N	N	CG	1645
6/5/04	3	N	N	N	N	N	WS	1925
6/6/04	4	N	N	N	N	N	WS	1400
6/7/04	5	N	N	N	N	N	CG	1930
6/8/04	6	N	N	N	N	N	CG	0945
6/9/04	7	N	N	N	N	N	RD	0935
6/10/04	8	N	N	N	N	N	RD	1030
6/11/04	9	N	N	N	N	N	CG	0900
6/12/04	10	17A/3NF	20A	19A/1NF	20A	16A/4NF	CG	1540

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT
PROJECT NUMBER: 6063040017.0200
TEST SPECIES: *M. bahia*

SAMPLE ID: **E - PE04 - DUPE**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/2/04	0	A		20.0		8.1		6.3		20						WS
6/3/04	1	B	20.9		8.2		6.8		22						WS 1415	
6/4/04	2	C	21.0	20.3	8.1	8.0	7.2	7.1	22	22					CG 1525	JM 1700
6/5/04	3	D	22.0		8.3		7.4		22						WS 1915	
6/6/04	4	E	20.5	20.5	8.2	8.3	7.3	7.3	21	21					WS 1400	WS 1745
6/7/04	5	A	20.7		8.0		7.4		21						CG 0910	
6/8/04	6	B	20.7	19.9	8.0	8.1	7.2	7.6	21	21					RD 0830	RD 0955
6/9/04	7	C	20.7		8.2		7.1		21						RD 0905	
6/10/04	8	D	20.4	19.9	8.1	8.1	7.6	7.8	21	21					RD 0845	RD 1050
6/11/04	9	E	20.3		8.0		8.1		21						CG 0850	
6/12/04	10	A	20.1		8.0		7.1		21							

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - DUPE**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/2/04	0	loaded	→	→	→	→		1600
6/3/04	1	N	N	N	N	N	WS	1500
6/4/04	2	N	N	N	N	N	CG	1645
6/5/04	3	N	N	N	N	N	WS	1925
6/6/04	4	N	N	N	N	N	WS	1400
6/7/04	5	N	N	N	N	N	CG	0930
6/8/04	6	N	N	N	N	N	CG	0945
6/9/04	7	N	N	N	N	N	RD	0935
6/10/04	8	N	N	N	N	N	RD	1030
6/11/04	9	N	N	N	N	N	CG	0900
6/12/04	10	16A/4NF	14A/6NF	18A/2NF	18A/2NF	19A/1NF	CG	1540

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

CC

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT
PROJECT NUMBER: 6063040017.0200
TEST SPECIES: *M. bahia*

SAMPLE ID: **RS - PE04**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/2/04	0	A		21.1		8.2		8.0		21						WS
6/3/04	1	B	20.7		8.2		6.8		22						WS/ 1413	
6/4/04	2	C	20.9	20.2	8.2	8.1	7.5	7.3	22	22					CG 1620	JM 1700
6/5/04	3	D	22.0		8.2		7.6		22						WS 1915	
6/6/04	4	E	20.2	20.4	8.3	8.3	7.8	7.6	22	20					WS 1400	WS 1745
6/7/04	5	A	20.7		8.1		7.4		21						CG 0910	
6/8/04	6	B	20.6	19.9	8.0	8.1	7.1	7.6	22	21					RD 0950	RD 0955
6/9/04	7	C	20.8		8.2		7.6		21						RD 0905	
6/10/04	8	D	20.5	20.0	8.1	8.1	7.2	7.8	21	21					RD 0845	RD 1050
6/11/04	9	E	20.7		8.1		8.1		21						CG 0950	
6/12/04	10	A	21.0		8.0		6.8		21							

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **RS - PE04**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/2/04	0	loaded	→	→	→	→		1600
6/3/04	1	N	N	N	N	N	WS	1500
6/4/04	2	N	N	N	N	N	CG	1645
6/5/04	3	N	N	N	N	N	WS	1925
6/6/04	4	N	N	N	N	N	WS	1400
6/7/04	5	N	N	N	N	N	CG	0930
6/8/04	6	N	N	N	N	N	CG	0945
6/9/04	7	N	N	N	N	N	RD	0935
6/10/04	8	N	N	N	N	N	RD	1030
6/11/04	9	N	N	N	N	N	CG	0900
6/12/04	10	16 A / 4 NF	16 A / 4 NF	20 A	20 A ~~16 A / 4 NF~~	16 A / 4 NF	CG	1540

OBSERVATION KEY

INIT - Tech Initials
N - Number of Organisms Alive
A - Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

CG

MACTEC Engineering and Consulting
TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

PAGE:
FORM NO: 097A REFTOX
REVISED: MARCH 2001

REFERENCE TOXICANT TEST DATA SHEET

Sponsor: Misc.	Project Number: Ref Tox
Test Material	**Test Conditions**
Amount of SDS : 0.100 (g) Volume of Milli-Q Water: 100 (mL) Date Prepared: 6/2/04	[X] Definitive [X] Static [ ] Screening Duration: 48 Hours
Test Organism History	Dilution Water: Natural Filtered Seawater
Species: *M. bahia* Batch Number: 2004-13 Age/Life Stage: 4 days Date of Acclimation/Maintenance: 6/2/04 See Page 111 of Organism Receipt Log Mortality 48 hours prior to test: <1 (%) Replicates/Concentration: 1 No. Of Organisms/Replicate: 10	Lighting: [X] Fluorescent [ ] Incandescent Photoperiod: 16 Hr Light 8 Hr Dark Test Vessel Dimensions: 8 L X 8 W 4 H Test Solution Height: 4 (cm) Test Vessel Volume: 0.34 (L) Test Solution Volume: 0.20 (L) Test Temperature: 20 ± 1 °C Test Salinity: 20 ± 2 ppt
Test Area Used: Water Bath	Test Vessel Composition: [ ] Glass [ ] Plastic
Test Concentrations Based on: [X] Whole Material [ ] Active Ingredient	Test Protocol/Guideline Followed:

Test Concentrations: (Units: mg/L)	Control	2.5	5.0	10.0	20.0	40.0	
Amount Dilution Water Added (mL)	200	199.5	199	198	196	192	
Amount of Stock Added (mL)	0	0.5	1.0	2.0	4.0	8.0	

Additional Observations:

Data By: CG Date: 6/2/04

reviewed data sheet before test initiation. JWR 4/23/04

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 106G
Revised: March 2004

REFTOX DAILY FEEDING LOG

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017
TEST SPECIES: *M. bahia*

TEST DAY	DATE	TIME	INITIALS	FOOD TYPE	QUANTITY	COMMENTS
0	6/2/04	2000	JMW	BS	1 mL	
1	6/3/04	1500	JMW	BS	1 mL	
2				BS	1 mL	
3				BS	1 mL	
4				BS	1 mL	

BS = Brine Shrimp nauplii YTC = Yeast/Trout Chow/Cereal Leaves
Algae = Green Algae (*Selenastrum capricornutum*)

CG

REFERENCE TOXICANT TEST DATA: DAY 0 – 2

Client: Misc.	Project Number: Ref Tox	Species: M. bahia

DAY 0 REF TOXICANT: SDS

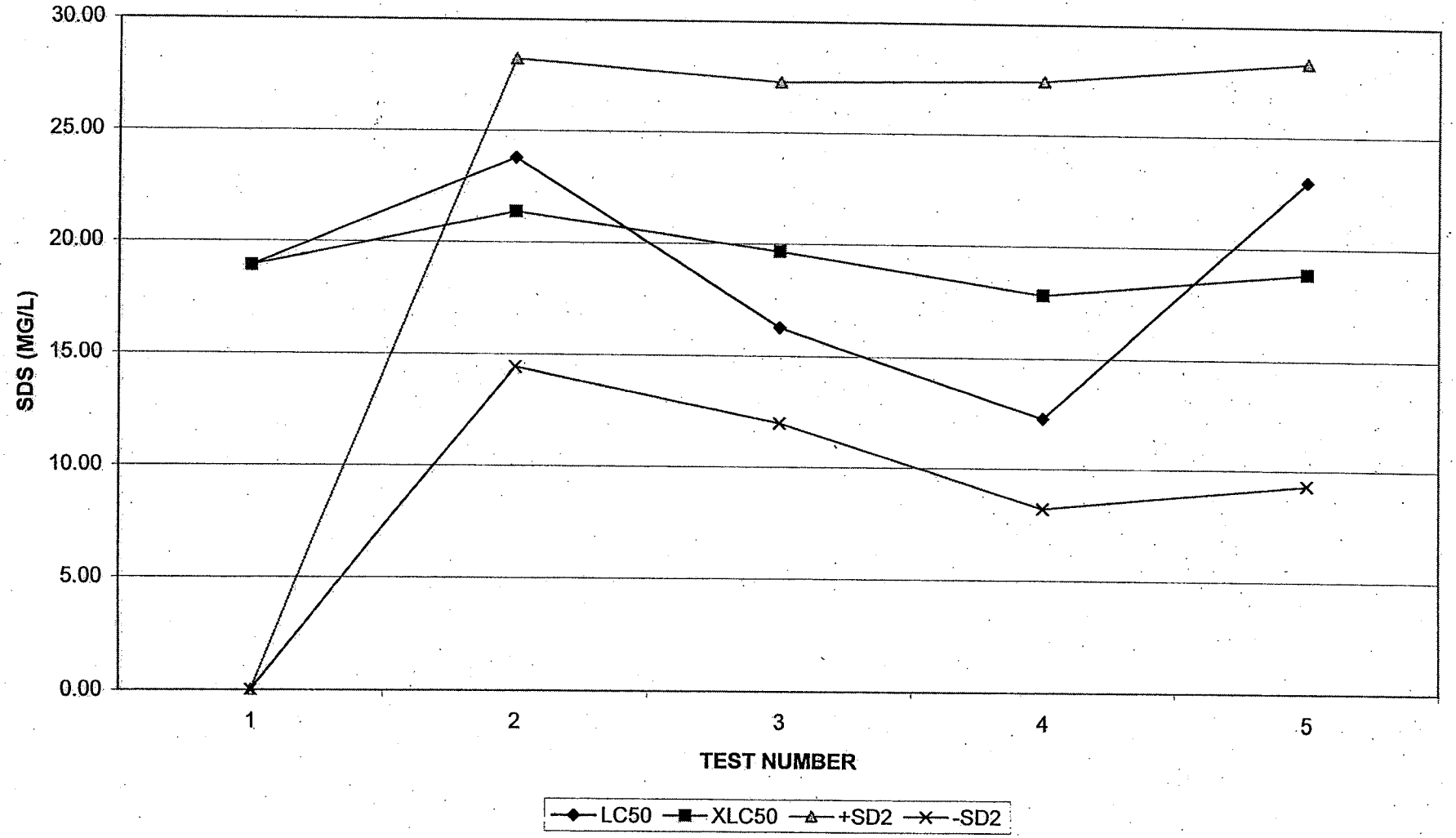
Nominal Concentration (mg/L)	Date: 6-2-04		Time: 1615		Analyst: RD	
	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	Loaded	10	20.1	19	8.2	8.2
2.5	↓	↓	19.9	19	8.3	8.2
5.0			19.7	19	8.4	8.2
10.0			19.7	19	8.4	8.2
20.0			19.7	19	8.3	8.2
40.0			19.9	19	8.4	8.2

DAY 1	Date: 6/3/04		Time: 14.25		Analyst: WS	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	N	20.1	19	5.6	8.1
2.5	10	10	20.0	19	4.9	8.1
5.0	8A/~~2d~~ CG	WS ~~8~~ 2d	20.1	20	4.6	8.1
10.0	10	N	20.0	20	5.4	8.1
20.0	9A/~~1d~~ CG	WS ~~9~~ 1d	19.9	19	6.9	8.1
40.0	7A	3d	19.7	19	7.6	8.2

DAY 2	Date: 6/4/04		Time: 1630		Analyst: CG	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	N	19.9	19	6.0	8.1
2.5	10	N	20.2	19	5.8	8.0
5.0	8	N	20.1	19	6.0	7.8
10.0	10	N	20.2	19	5.4	8.0
20.0	9	N	20.1	19	6.0	7.8
40.0	0 ~~A~~ CG	7d ~~A~~ CG	20.1	19	5.5	7.9

CG

MACTEC ENGINEERING AND CONSULTING, INC.
MYSIDOPSIS BAHIA
ACUTE REFERENCE TOXICITY TEST:SODIUM LAURYL SULFATE



7/8/2004

TRIMMED SPEARMAN-KARBER METHOD. VERSION 1.5

DATE: 6/2/04 TEST NUMBER: REF TOX DURATION: 48 H
TOXICANT : SDS
SPECIES: M. bahia

RAW DATA:

Concentration (mg/L)	Number Exposed	Mortalities
.00	10	0
2.50	10	0
5.00	10	2
10.00	10	0
20.00	10	1
40.00	10	10

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 22.97
95% LOWER CONFIDENCE: 18.29
95% UPPER CONFIDENCE: 28.85

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING.
ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017 Client: Port Everglades Test: Whole Sediment *L. plumulosus*

DAILY LOG

6/14/04- Sediment Loaded into vessels, porewater samples taken and analyzed for ammonia. Overlaying water (28ppt nat. Filt. Seawater) added to each vessel (800mL). Airlines started and vessels covered. CG

6/15/04- ~~Water qualities~~ Water renewed. Overlying water collected for Ammonia determination; water qualities checked- All vessels aeration started. Organisms loaded. Reftox prepared. (WS) Airlines checked, Reftox loaded

6/16/04 - Water qualities checked, organisms monitored. Reftox monitored, Reftox organisms observed. Airlines checked, vessels covered.

6/17/04- Water qualities taken, organisms observed. Water renewed w/ 28ppt filtered seawater. Water qualities taken again after renewal, Airlines checked, vessels covered. Reftox monitored, coved. (WS)

6/18/04- Ref tox monitored and covered. PO

(PM) WATER QUALITIES TAKEN, ORGANISMS observed- AIRLINES Checked. All vessels covered

6/19/04- (AM) Water qualities taken. Organisms observed. Water renewed. Airlines checked. All vessels covered (TT)

6/19/04 - (PM) Reftox water qualities taken. Reftox organisms carefully observed and counted. Reftox terminated (WS)

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017 Client: Port Everglades Test: Whole Sediment *L. plumulosus* ~~and M. bahia~~ JMW 6/12/04

DAILY LOG

6/20/04 - (PM) - All water qualities taken. Organisms monitored. Airlines checked. All vessels covered (T)

6/21/04 - Water Qualities taken. Water renewed. Organisms observed. Airlines checked. Vessels covered. RD
Water qualities taken after renewal. Airlines checked vessels covered. WS

6/22/04 - Water Qualities taken, organisms observed, and airlines checked. CG All vessels covered. CG

6/22/04 - ~~Water renewed~~ WS 6/23/04 water qualities monitored, airlines checked, vessels covered WS

6/23/04 - Water qualities taken, water renewed, organisms observed. Airlines checked. Vessels covered. RD
Data reviewed. JMW
(PM) Water qualities taken, airlines checked, vessels covered WS

6/24/04 - Water qualities taken, organisms observed, airlines checked and all vessels covered. RD
Overlying water ammonia qualities taken. RD

6/25/04 - Water qualities taken. RD Organisms counted. Test terminated. RD

MACTEC
Gainesville, FL

QA Form Number: 016ASa
Revised: May 2003

ACUTE TOXICITY DATA SHEET – Ammonia (NH_3-N) /Sulfide (S^{2-}) Determination in PORE WATER / OVERLYING WATER (circle one)

SPONSOR: PPB/Port Everglades

PROJECT NUMBER: 6063040017.0200

TEST SUBSTANCE: sediment

TEST SPECIES: L. plumulosus

DATE:	6/14/04	6/15/04
INIT.	CG	RD

Sample ID	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	PoreWater /Overlying Water	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	Pore Water/ Overlying Water
Control	20.3	7.5	0.0083			PW	22.3	8.1	0.0007			OW
E-PE04-1	20.3	7.6	0.0064			PW	22.1	8.1	0.0004			OW
E-PE04-2	20.2	7.4	0.0175			PW	22.2	8.1	0.0013			OW
E-PE04-3	20.2	7.5	0.0220			PW	22.2	8.2	0.0014			OW
E-PE04-4	20.0	7.4	0.0224			PW	22.3	8.2	0.0014			OW
RS-RE04	20.2	8.2	0.0044			PW	22.4	8.2	0.0002			OW
E-PE04-Dupe	20.0	7.7	0.0053			PW	22.4	8.2	0.0003			OW
						CG						

KEY

TEMP - Temperature
SL - Salinity (ppt)
pH - standard units
OW – overlying water

DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration

INIT. - Initials
REP - Replicate
METH - Method
PW – pore water

CG

MACTEC
Gainesville, FL

QA Form Number: 016ASa
Revised: May 2003

ACUTE TOXICITY DATA SHEET – Ammonia (NH_3-N) /Sulfide (S^{2-}) Determination in PORE WATER / OVERLYING WATER (circle one)

SPONSOR: PPB/Port Everglades

PROJECT NUMBER: 6063040017.0200

TEST SUBSTANCE: sediment

TEST SPECIES: L. plumulosus

DATE: 6/24/04

INIT. RD

Sample ID	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	PoreWater /Overyling Water	TEMP	pH	NH_3-N (ppm)	Unionized ammonia (ppm)	Sulfide (ppm) S^{2-}	Pore Water/ Overyling Water
Control	20.5	8.1	0.0004			OW						
E-PE04-1	20.3	8.0	0.0002			OW						
E-PE04-2	20.2	8.1	0.0002			OW						
E-PE04-3	20.1	8.1	0.0002			OW						
E-PE04-4	20.1	8.2	0.0007			OW						
RS-PE04	20.1	8.1	0.0002			OW						
E-PE04-DUPE	20.1	8.1	0.0001			OW						

KEY

TEMP - Temperature
SL - Salinity (ppt)
pH - standard units
OW – overlying water

DO - Dissolved oxygen (mg/L)
CN - Conductivity (µmhos/cm)
INST - Instrument
NOMIN CONCN - Nominal concentration

INIT. - Initials
REP - Replicate
METH - Method
PW – pore water

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097G
Revised: March 2004

TOXICITY TEST SYSTEM DESCRIPTION SHEET

SPONSOR: PORT EVERGLADES | PROJECT NUMBER: 6063040017

TEST MATERIAL

Test Material: Sediment

See Page 72 of Effluent Log for Test Material Information.

PROTOCOL/GUIDELINES FOLLOWED:

SOP - S -

Test Concentration Based On: ( ) Active Ingredient
(X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Leptochirus plumulosus*

Lot Number: 2004-21

Age/Life Stage: 3-5mm

Date Acclimation/Maintenance Began: 6/15/04

See Page 112 of Organism Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: <1%

TEST CONDITIONS

( ) Range Finder (X) Static
(X) Screening ( ) Flow - Through
( ) Definitive

Lighting: (X) Fluorescent ( ) Incandescent
Photoperiod: 24 Hours Light
0 Hours Dark

Test Duration: 10 days
Test Area Used: Water Bath
Test Temperature: 20 ± 2
Test Salintiy: 28 ± 2
Replicates per Concentration: 5
Organisms per Replicate: 20

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions(cm): - lengthx 4.5widthx 9hieght
Test Solution Height (cm): 6
Test Vessels: (X) Open ( ) Covered
Test Container Volume: 2 qt.
Test Solution Volume: 800 mL

TEST SOLUTION PREPARATION

Test Concentration % mg/L								
Volume of Dilution Water Added (mL)								
Volume of Effluent/ Stock Added (mL)								

ADDITIONAL OBSERVATIONS: _____

DATA BY: CG 6/15/04

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017
TEST SPECIES: *Leptochirus plumulosus*

SAMPLE ID: **E - PE04 - CONTROL**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/15/04	0	A	21.8		8.2		7.6		28						WS 1325	
6/16/04	1	B	21.5		8.1		7.3		28						WS 1320	
6/17/04	2	C	21.8	21.2	8.2	8.1	7.4	7.6	27	28					RD 1000	WS 1500
6/18/04	3	D	21.3		8.3		7.0		28						TI 1600	
6/19/04	4	E	20.5	23.0	8.1	8.2	7.5	7.8	28	27					TI 0845	WS 1825
6/20/04	5	A	23.1		8.3		7.3		27						TI 1750	
6/21/04	6	B	20.7	21.0	8.2	8.2	7.7	7.2	28	28					RD 1010	WS 1305
6/22/04	7	C	22.0		8.2		7.2		26						CG 0940	
6/23/04	8	D	21.5	21.7	8.1	8.2	7.2	7.7	28	28					RD 1105	WS 1805
6/24/04	9	E	19.3		8.1		7.6		27						RD 0910	
6/25/04	10	A	20.2		8.2		7.3		29						RD 1010	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - CONTROL**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/15/04	0	Loaded 20 →					WS	1650
6/16/04	1	N	N	N	N	N	RD	1530
6/17/04	2	N	N	N	N	N	RD	1100
6/18/04	3	N	N	N	N	N	TI	1600
6/19/04	4	N	N	N	N	N	TI	0900
6/20/04	5	N	N	N	N	N	TI	1800
6/21/04	6	N	N	N	N	N	RD	1030
6/22/04	7	N	N	N	N	N	CG	1000
6/23/04	8	N	N	N	N	N	RD	1120
6/24/04	9	N	N	N	N	N	RD	0925
6/25/04	10	18A/2NF	19A/1NF	20A	17/3NF	20A	CG	1500

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017
TEST SPECIES: *Leptochirus plumulosus*

SAMPLE ID: **E - PE04 - 1**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/15/04	0	A	21.6		8.2		7.7		28						WS 1325	
6/16/04	1	B	21.4		8.2		7.4		28						WS 1320	
6/17/04	2	C	21.9	20.8	8.2	8.1	7.4	8.1	28	28					RD 1040	WS 1500
6/18/04	3	D	21.1		8.2		7.4		28						TT 1600	
6/19/04	4	E	20.4	23.1	8.0	8.2	7.6	7.4	28	27					TT 0845	WS 1825
6/20/04	5	A	21.4		8.2		7.3		28						TT 1450	
6/21/04	6	B	20.6	20.8	8.2	8.2	7.7	7.3	28	28					RD 1010	WS 1308
6/22/04	7	C	22.3		8.1		7.2		27						CG 0940	
6/23/04	8	D	21.5	21.0	8.1	7.6	7.3	7.8	28	27					RD 1105	WS 1805
6/24/04	9	E	19.4		8.0		7.6		29						RD 0910	
6/25/04	10	A	20.1		8.0		7.2		28						RD 1000	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - 1**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/15/04	0	Loaded	20 →				WS	1650
6/16/04	1	N	N	N	N	N	RD	1530
6/17/04	2	N	N	N	N	N	RD	1100
6/18/04	3	N	N	N	N	N	TT	1615
6/19/04	4	N	N	N	N	N	TT	0900
6/20/04	5	N	N	N	N	N	TT	1800
6/21/04	6	N	N	N	N	N	RD	1030
6/22/04	7	N	N	N	N	N	CG	1000
6/23/04	8	N	N	N	N	N	RD	1120
6/24/04	9	N	N	N	N	N	RD	0925
6/25/04	10	13A/7NF	18A/2NF	11A/9NF	13A/7NF	12A/8NF	CG	1400

OBSERVATION KEY

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HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017
TEST SPECIES: *Leptochirus plumulosus*

SAMPLE ID: **E - PE04 - 2**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/15/04	0	A	21.7		8.2		7.1		28						WS 1330	
6/16/04	1	B	21.6		8.1		7.3		28						WS 1320	
6/17/04	2	C	22.0	20.6	8.2	8.2	7.3	8.2	28	28					RD 1040	WS 1500
6/18/04	3	D	21.5		8.2		7.0		28						TT 1600	
6/19/04	4	E	20.5	23.1	8.1	8.1	7.4	7.3	28	27					TT 0850	WS 1825
6/20/04	5	A	21.7		8.2		7.1		28						TT 1755	
6/21/04	6	B	20.8	21.0	8.2	8.2	7.6	7.2	28	28					RD 1010	WS 1310
6/22/04	7	C	22.4		8.1		7.2		27						CG 0940	
6/23/04	8	D	21.6	21.7	8.1	7.8	7.3	6.8	28	28					RD 1105	WS 1805
6/24/04	9	E	19.3		8.1		7.6		29						RD 0910	
6/25/04	10	A	20.4		8.1		7.2		28						RD 1000	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - 2**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/15/04	0	Loaded 20 →					WS	1650
6/16/04	1	N	N	N	N	N	RD	1530
6/17/04	2	N	N	N	N	N	RD	1100
6/18/04	3	N	N	N	N	N	TT	1615
6/19/04	4	N	N	N	N	N	TT	0900
6/20/04	5	N	N	N	N	N	TT	1800
6/21/04	6	N	N	N	N	N	RD	1030
6/22/04	7	N	N	N	N	N	CG	1000
6/23/04	8	N	N	N	N	N	RD	1120
6/24/04	9	N	N	N	N	N	RD	0925
6/25/04	10	17A/3NF	19A/1NF	20A	19A/1NF	19A/1NF	CG	1400

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017
TEST SPECIES: *Leptochirus plumulosus*

SAMPLE ID: **E - PE04 - 3**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/15/04	0	A	21.6		8.1		7.7		28						WS 1330	
6/16/04	1	B	21.6		8.1		7.4		28						WS 1320	
6/17/04	2	C	22.0	20.6	8.1	8.1	7.1	7.8	28	28					RD 1040	WS 1500
6/18/04	3	D	21.2		8.3		7.0		28						TT 1600	
6/19/04	4	E	20.5	23.0	8.0	8.2	7.4	7.3	28	28					TT 0850	WS 1825
6/20/04	5	A	21.7		8.1		7.1		28						TT 1755	
6/21/04	6	B	20.9	21.1	8.2	8.2	7.6	7.2	28	28					RD 1010	WS 1310
6/22/04	7	C	22.2		8.1		7.1		28						CG 0940	
6/23/04	8	D	21.7	21.5	8.2	8.4	7.2	7.7	28	28					RD 1105	WS 1805
6/24/04	9	E	19.5		8.1		7.6		29						RD 0910	
6/25/04	10	A	20.2		8.1		7.3		28						RD 1000	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - 3**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/15/04	0	Loaded 20 →					WS	1650
6/16/04	1	N	N	N	N	N	RD	1530
6/17/04	2	N	N	N	N	N	RD	1100
6/18/04	3	N	N	N	N	N	TT	1615
6/19/04	4	N	N	N	N	N	TT	0900
6/20/04	5	N	N	N	N	N	TT	1800
6/21/04	6	N	N	N	N	N	RD	1030
6/22/04	7	N	N	N	N	N	CG	1000
6/23/04	8	N	N	N	N	N	RD	1120
6/24/04	9	N	N	N	N	N	RD	0925
6/25/04	10	18A/2NF	18A/2NF	18A/2NF	17A/3NF	16A/4NF	CG	1500

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017
TEST SPECIES: *Leptochirus plumulosus*

SAMPLE ID: **E - PE04 - 4**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/15/04	0	A	21.8		8.2		7.7		28						WS 1330	
6/16/04	1	B	21.5		8.0		6.8		28						WS 1320	
6/17/04	2	C	21.9	21.0	8.1	8.1	7.1	7.1	29	28					RD 1040	WS 1500
6/18/04	3	D	21.6		8.0		6.9		28						TT 1600	
6/19/04	4	E	20.9	23.0	8.1	8.1	7.4	7.0	28	28					TT 0850	WS 1825
6/20/04	5	A	22.3		8.3		7.0		28						TT 1055	
6/21/04	6	B	21.2	21.6	8.2	8.2	7.6	7.1	28	28					RD 1010	WS 1310
6/22/04	7	C	22.3		8.2		6.9		28						CG 0940	
6/23/04	8	D	22.2	21.9	8.2	8.3	7.1	7.6	27	28					RD 1105	WS 1805
6/24/04	9	E	19.9		8.3		7.5		30						RD 0910	
6/25/04	10	A	20.3		8.3		7.4		29						RD 1000	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - 4**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/15/04	0	Load all	20	→	→	→	WS	1650
6/16/04	1	N	N	N	N	N	RD	1530
6/17/04	2	N	N	N	N	N	RD	1100
6/18/04	3	N	N	N	N	N	TT	1615
6/19/04	4	N	N	N	N	N	TT	0900
6/20/04	5	N	N	N	N	N	TT	1800
6/21/04	6	N	N	N	N	N	RD	1030
6/22/04	7	N	N	N	N	N	CG	1000
6/23/04	8	N	N	N	N	N	RD	1120
6/24/04	9	N	N	N	N	N	RD	0925
6/25/04	10	19A/1NF	17A/3NF	19A/1NF	17A/3NF	18A/2NF	CG	1506

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017
TEST SPECIES: *Leptochirus plumulosus*

SAMPLE ID: **E - PE04 - DUPE**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/15/04	0	A	21.9		8.1		7.7		27						WS 1330	
6/16/04	1	B	21.6		8.1		7.4		28						WS 1320	
6/17/04	2	C	22.0	20.7	8.2	8.0	7.2	8.1	28	28					RD 1040	WS 1500
6/18/04	3	D	21.7		8.3		6.9		28						TT 1600	
6/19/04	4	E	20.7	23.1	8.1	8.1	7.5	7.2	28	28					TT 0855	WS 1805
6/20/04	5	A	22.3		8.2		7.0		28						TT 1755	
6/21/04	6	B	21.1	21.6	8.1	8.1	7.5	7.1	29	29					RD 1010	WS 1310
6/22/04	7	C	22.4		8.1		7.1		28						CG 0940	
6/23/04	8	D	21.9	21.4	8.1	8.2	7.2	7.7	28	28					RD 1105	WS 1805
6/24/04	9	E	19.4		8.0		7.7		29						RD 0910	
6/25/04	10	A	20.3		8.0		6.8		29						RD 1000	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **E - PE04 - DUPE**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/15/04	0	Loaded 20 →					WS	1650
6/16/04	1	N	N	N	N	N	RD	1530
6/17/04	2	N	N	N	N	N	RD	1100
6/18/04	3	N	N	N	N	N	TT	1615
6/19/04	4	N	N	N	N	N	TT	0900
6/20/04	5	N	N	N	N	N	TT	1800
6/21/04	6	N	N	N	N	N	RD	1030
6/22/04	7	N	N	N	N	N	CG	1000
6/23/04	8	N	N	N	N	N	RD	1120
6/24/04	9	N	N	N	N	N	RD	0925
6/25/04	10	14A/6NF	19A/1NF	18A/2NF	16A/4NF	14A/6NF	CG	1500

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
REP - Replicate
TEMP - Temperature

NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
DO - Dissolved Oxygen
NH_3 - Ammonia

AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

WHOLE SEDIMENT TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017
TEST SPECIES: *Leptochirus plumulosus*

SAMPLE ID: **RS - PE04**

DATE	DAY	REP	TEMP (° C) old	TEMP (° C) new	pH (s.u.) old	pH (s.u.) new	DO (mg/L) old	DO (mg/L) new	SALINITY (ppt) old	SALINITY (ppt) new	SULFIDE old	SULFIDE new	NH_3 (ppm) old	NH_3 (ppm) new	INIT / TIME old	INIT / TIME new
6/15/04	0	A	21.9		8.1		7.8		28						WS 1330	
6/16/04	1	B	21.8		8.1		7.3		28						WS 1320	
6/17/04	2	C	21.8	21.4	8.2	8.1	7.1	7.9	28	28					RD 1040	WS 1500
6/18/04	3	D	21.9		8.2		6.8		28						TT 1600	
6/19/04	4	E	20.9	22.9	8.1	8.1	8.0	7.6	28	28					TT 0855	WS 1825
6/20/04	5	A	22.1		8.2		7.6		28						TT 1255	
6/21/04	6	B	21.9	22.1	8.1	8.1	7.4	7.0	30	30					RD 1010	WS 1310
6/22/04	7	C	22.3		8.1		6.9		28						CG 0940	
6/23/04	8	D	22.8	21.6	8.2	8.2	7.1	7.8	30	30					RD 1105	WS 1805
6/24/04	9	E	19.4		8.1		7.7		30						RD 0910	
6/25/04	10	A	20.3		8.1		7.1		30						RD 1000	

WHOLE SEDIMENT TOXICITY DATA SHEET - SURVIVAL DATA

SAMPLE ID: **RS - PE04**

DATE	DAY	REPLICATE A	REPLICATE B	REPLICATE C	REPLICATE D	REPLICATE E	INIT	TIME
6/15/04	0	Loaded	20 →				WS	1640
6/16/04	1	N	N	N	N	N	RD	1530
6/17/04	2	N	N	N	N	N	RD	1100
6/18/04	3	N	N	N	N	N	TT	1615
6/19/04	4	N	N	N	N	N	TT	0900
6/20/04	5	N	N	N	N	N	TT	1800
6/21/04	6	N	N	N	N	N	RD	1030
6/22/04	7	N	N	N	N	N	CG	1000
6/23/04	8	N	N	N	N	N	RD	1120
6/24/04	9	N	N	N	N	N	RD	0925
6/25/04	10	20A ~~N~~ CG	18A/2NF ~~A~~ CG	15A/5NF ~~A~~ CG	19A/1NF ~~A~~ CG	19A/1NF ~~A~~ CG	CG	1530

OBSERVATION KEY

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REP - Replicate
TEMP - Temperature

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MACTEC Engineering and Consulting
TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

PAGE:
FORM NO: 097A REFTOX
REVISED: MARCH 2001

REFERENCE TOXICANT TEST DATA SHEET

Sponsor: Misc.	Project Number: Ref Tox
Test Material	**Test Conditions**
Amount of $CdCl_2$: 0.0328 (g) Volume of Milli-Q Water: 1000 (mL) Date Prepared: 6/15/04	[ ] Definitive [ ] Static [x] Screening Duration: Hours
Test Organism History	Dilution Water: natural filtered seawater
Species: L. plumulosus Batch Number: 2004-21 Age/Life Stage: 3-5mm Date of Acclimation/Maintenance: See Page 112 of Organisms Receipt Log Mortality 48 hours prior to test: C1 (%) Replicates/Concentration: 1 No. Of Organisms/Replicate: 10	Lighting: [x] Fluorescent [ ] Incandescent Photoperiod: 24 Hr Light 0 Hr Dark Test Vessel Dimensions: 100 L X – W 50 H Test Solution Height: 4 (cm) Test Vessel Volume: 0.34 (L) Test Solution Volume: 0.20 (L) Test Temperature: 20 ± 1 °C Test Salinity: 28 ± 1 ppt
Test Area Used: waterbath in room _____	Test Vessel Composition: [x] Glass [ ] Plastic
Test Concentrations Based on: [x] Whole Material [ ] Active Ingredient	Test Protocol/Guideline Followed: S-007

Test Concentrations: (Units: µ/L)	Control	0.256	0.512	1.02	2.05	4.1	
Amount Dilution Water Added (mL)	250	246.8	243.6	237.2	224.4	199.8	
Amount of Stock Added (mL)	0	3.2	6.4	12.8	25.6	51.2	

Additional Observations: _____

Data By: CG Date: 6/15/04

CG

REFERENCE TOXICANT TEST DATA: DAY 0 – 2

Client: Misc.	Project Number: Ref Tox	Species: L. plumulosus

DAY 0 REF TOXICANT: $CdCl_2$

Nominal Concentration (mg/L)	Date: 6-15-04		Time: 17:30		Analyst: JH	
	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	loaded	19.9	28	7.0	7.8
0.256	10	loade	20.0	28	7.2	7.7
0.512	10	loaded	20.1	28	7.1	7.6
1.02	10	loaded	21.0	27	7.0	7.8
2.05	10	loaded	21.0	28	6.9	7.6
4.10	10	loaded	22.8	27	6.9	7.6

DAY 1	Date: 6/16/04		Time: 13:30		Analyst: WS	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	N	21.2	29	7.3	8.0
0.256	10	N	21.3	29	7.3	8.0
0.512	10	N	21.1	28	7.2	8.0
1.02	10	N	21.4	29	7.2	7.9
2.05	10	N	21.3	28	7.2	7.9
4.10	10	N	21.6	27	7.1	7.9

DAY 2	Date: 6/17/04		Time: 13:45		Analyst: WS	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	~~N~~ CC 10	N	21.1	29	7.4	8.1
0.256	~~N~~ CC 10	N	21.1	30	7.4	8.1
0.512	~~N~~ CC 10	N	21.1	29	7.3	8.0
1.02	~~N~~ CC 10	N	21.2	30	7.3	8.1
2.05	~~N~~ CC 10	N	20.7	30	7.5	8.0
4.10	~~N~~ CC 10	N	20.8	27	7.4	8.0

CG

MACTEC Engineering and Consulting, Inc.
TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

QA FORM NO: 097 REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 3 AND 4

Client: Misc	Project Number: Ref Tox	Species: L.plumulosus

DAY 3

Nominal Concentration	Date: 6/18/04		Time: 0905		Analyst: RD	
	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	~~A~~ 10	N	20.0	29	7.1	8.1
0.256	~~A~~ 10	N	20.1	31	6.9	8.1
0.512	~~A~~ 10	N	20.1	30	6.8	8.1
1.02	~~A~~ 10	N	20.2	30	6.9	8.0
2.05	~~A~~ 10	N	19.8	30	6.9	8.1
4.10	~~A~~ 10	N	20.0	28	7.0	8.0

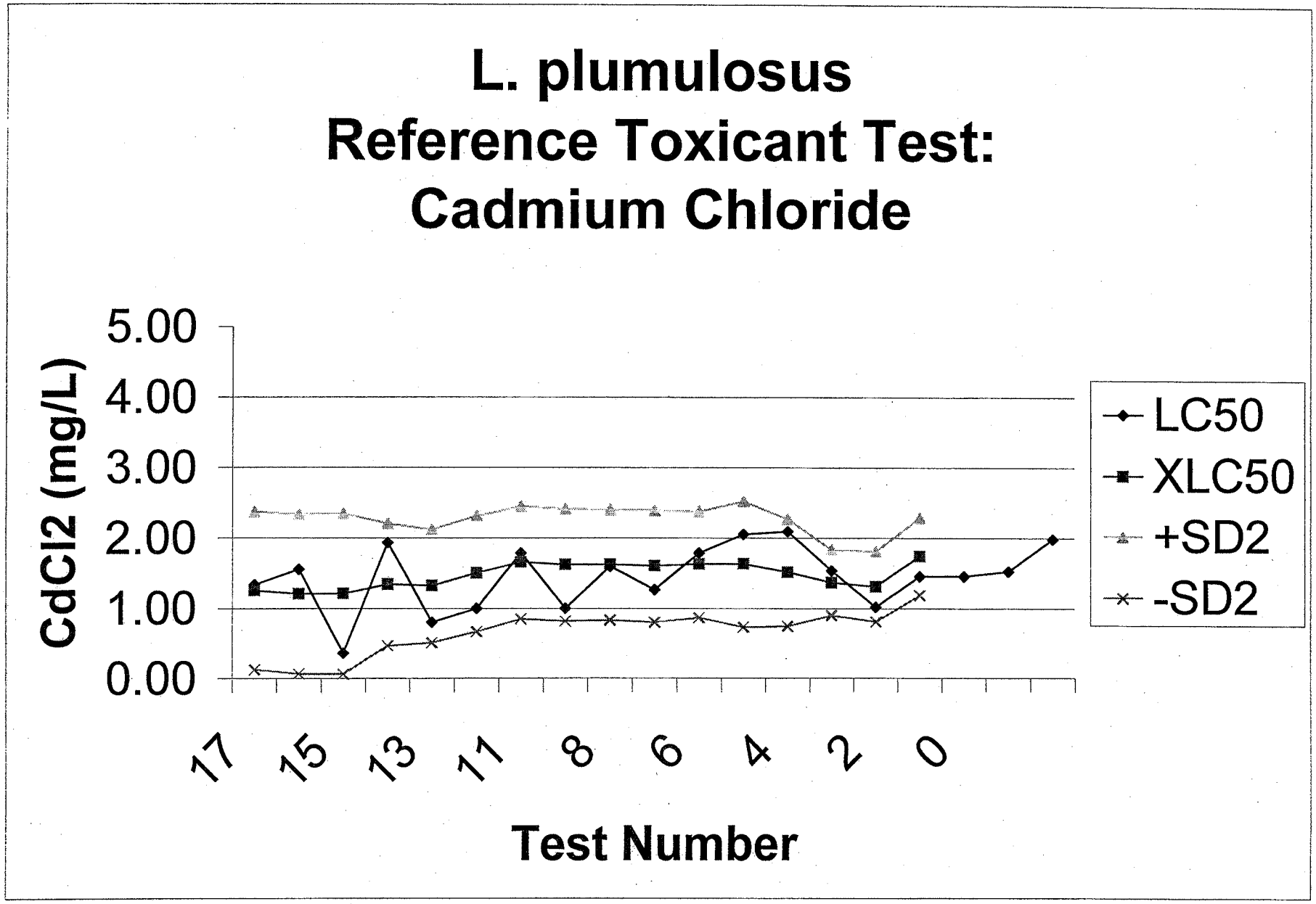
DAY 4	Date: 6/19/04		Time: 18:10		Analyst: WS	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	10	N	22.4	30	6.7	8.1
0.256	9A/1NF	N	22.5	30	6.6	8.1
0.512	9A/1D	N	22.6	29	6.6	8.1
1.02	8A/2D	N	22.4	30	6.5	8.1
2.05	1A/9D	N	22.1	30	6.6	8.0
4.10	0A/10D	N	22.1	29	6.4	7.9

SUMMARY

Nominal Concentration	Number Dead
Control	10A/0D
0.256	9A/1NF
0.512	9A/1D
1.02	8A/2D
2.05	1A/9D
4.10	0A/10D

COMMENTS:

CG


L. plumulosus
Reference Toxicant Test:
Cadmium Chloride
CdCl2 (mg/L)
5.00
4.00
3.00
2.00
1.00
0.00
17
15
13
11
8
6
4
2
0
Test Number
LC50
XLC50
+SD2
-SD2

7/8/2004

TRIMMED SPEARMAN-KARBER METHOD. VERSION 1.5

DATE: 6/15/04 TEST NUMBER: REF TOX DURATION: 96 H
TOXICANT : CdCL2
SPECIES: L. plumulosus

RAW DATA:

Concentration (ug/L)	Number Exposed	Mortalities
.00	10	0
.26	10	1
.51	10	1
1.02	10	2
2.05	10	9
4.10	10	10

SPEARMAN-KARBER TRIM: 10.00%

SPEARMAN-KARBER ESTIMATES: LC50: 1.33
95% LOWER CONFIDENCE: 1.03
95% UPPER CONFIDENCE: 1.70

APPENDIX D

BIOACCUMULATION BIOASSAY DATA

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0400 Client: Port Everglades Test: Bioaccumulation *M. nasuta* and *N. virens*

DAILY LOG

5/11/04. Macoma nasuta (clams) received and placed into holding vessels after acclimated to temperature. Clams fed algal spat. Sediment loaded in all aquaria (for both clams + worms) for samples Control, PE04-1, PE04-2, PE04-3, PE04-4, PE0 Dupe. NOTE: Reference sample still not received from client. Aquaria sediment covered with 25 ppt natural filtered seawater. Aeration started, + allowed to settle overnight. JMR

5/12/04. Water renewed for all aquaria (clams + worm aquaria) before loading organisms. Water quality monitored before loading organisms. Clams in holding monitored + renewed (water). JMR Organisms loaded. Ref Tox monitored and loaded. Airlines checked. RO Pretest clams + worms placed in bags + saltwater to depurate overnight. JMR

5/13/04. Quick organism observation @ 0815. JMR Depurated organisms drained + rinsed with DI water. Excess water removed. Placed in freeze bags, in freezer JMR Water qualities taken, airlines checked, and organisms observed. CG Removed dead worms and replaced them with healthy worms. CG

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0400 Client: Port Everglades Test: Bioaccumulation *M. nasuta* and *N. virens*

DAILY LOG

5/14/04 - M. nasuta and N. virens test vessels renewed. CG
Organisms observed and counted. Airlines checked. CG

5/14/03 - AIRLINES CHECKED TTT Data Reviewed. JM

5/15/03 - Ref tox monitored N. virens and M. Nasuta. Organisms observed. EPE04-3 B M.N. aquarium leaked replaced 25 ppt sea water. WQ taken for M.V. and M.N. organisms observed. air checked

5/16/03 - Ref tox taken down - test monitored WQ taken test observed airline checked

5/17/04 - M. nasuta and N. virens test vessels renewed. Organisms observed and counted. RD Water quality monitored. Airlines checked. RD

5/18/04 - WQ monitored. Organisms observed. Airlines checked. RD

5/19/04 - M. nasuta and N. virens test vessels renewed. Organisms observed and counted. RD

Data Reviewed. JM

Airlines checked in AM. Placed large airline on E-PE04-2 Rep E, as airstone only 1/2 submerged. JMM Dead organisms removed, rinsed, and placed in ziploc rep bag. All bags placed in freezer. RD WQ monitored. RD

5/20/04 - WQ monitored. Organisms observed. Dead organisms removed, rinsed, placed in ziploc rep bag & placed in freezer. Airlines checked. RD

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0400 Client: Port Everglades Test: Bioaccumulation *M. nasuta* and *N. virens*

DAILY LOG

5/21/04 - M. nasuta and N. virens test vessels renewed. Organisms observed and counted. Dead organisms removed, rinsed, placed in ziploc rep bag & placed in freezer. RD WQ monitored. Airlines checked. RD
(Data reviewed, [illegible])

5/22/04 - Water Quality Monitored. Airlines checked. WS
M.N. EPE04-A: Replaced airline - stone half-submerged WS
Organisms observed and counted. Dead organisms removed rinsed & placed in ziploc rep bag & placed in freezer.
(WS)

5/23/04 - Water Quality Monitored. Airlines Checked (WS)
Organisms observed & counted. Dead organisms removed, rinsed & placed in ziplock bags. put in freezer WS
Data reviewed 5/24/04 [illegible]

5/24/04 - M. nasuta and N. virens test vessels renewed. Organisms observed and counted. Dead organisms removed rinsed, placed in ziploc rep bag & placed in freezer. RD
WQ monitored. Airlines checked. RD

5/25/04 - WQ monitored. Organisms observed. Dead organisms removed, rinsed, placed in ziploc rep bag & placed in freezer. Airlines checked. RD

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0400 Client: Port Everglades Test: Bioaccumulation *M. nasuta* and *N. virens*

DAILY LOG

5/26/04 - Water renewed. Organisms observed. Water qualities taken and airlines checked. CG

5/27/04 - Water qualities taken. Organisms observed and airlines checked. CG
Airlines Checked 1910. (WS)

5/28/04 - Water renewed, Water qualities taken, organisms observed, and airlines checked. CG Data reviewed. JMM
Airlines checked. TT

5/29/04 - Water qualities taken. Organisms observed and airlines checked TT.
PM Airlines checked HI

5/30/04 - Water qualites taken and organisms observed and counted. Airlines checked in AM. TT Data reviewed. JMM
Airlines checked in PM. JM

5-31-04 - Water Qualities taken organism observations
Test renewed - airlines checked HI
Airlines checked (WS)

6/1/04 - Water qualities taken, organisms observed, and airlines checked. CG

6/2/04 - Water renewed. Organisms observed. Water qualities taken and airlines checked. RD Data reviewed. JMM
Airlines checkin in PM. TT
Reference Sample sediment loaded into 15 (5 for Nereis, 10 for Macoma) aquaria. Covered with seawater, allowed to aerate/settle overnight. JM

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0400 Client: Port Everglades Test: Bioaccumulation *M. nasuta* and *N. virens*

DAILY LOG

6/3/04 - Water qualities taken, organisms observed, and airlines checked. CG (E-PE04-1 thru 4 + Dupe + Ctrl). Reference sample aquaria (loaded w/ sediment yesterday) renewed. N. virens loaded into Reference sample replicate aquaria.

E-PE04-1 thru 4, Ctrl, + Dupe

6/4/04 - Water renewed, organisms observed, water qualities taken, airlines checked. CG N. virens Ref Tox monitor. CG M. nasuta Ref Tox test initiated. M. nasuta loaded into Reference sample replicate aquaria.

Begin Ref Sample + other samps

6/5/04 - Water ~~renewed~~ qualities taken, organisms observed, and airlines checked. Ref Tox monitored.

6/6/04 - Water qualities taken, organisms observed, and airlines checked. Ref tox monitored. WS

6/7/04 - Water renewed, organisms observed, water qualities taken, airlines checked. RD N. virens Ref Tox terminated. Ref tox monitored. RD

6/8/04 - Water qualities taken, organisms observed and airlines checked. Ref tox monitored. RD M. nasuta Ref Tox test terminated.

6/9/04 - Water qualities taken. RD Organisms* counted and place into Ziplor bags filled with clean seawater. The bags (with organisms) are left to set overnight so the organisms can depurate. CG Test terminated.**

*Organisms counted were N. virens + M. nasuta for samples E-PE04-1 thru E-PE04-4, Ctrl, and Dupe.

**Test terminated included samples E-PE04-1 thru E-PE04-4, Ctrl, + Dupe. Reference sample (NV + MN) portion of test continued. Reference sample replicates water renewed + organisms observed. Airlines checked. JMR

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0400 Client: Port Everglades Test: Bioaccumulation *M. nasuta* and *N. virens*

DAILY LOG

6/10/04. Water quality monitored. Organisms observed. Airlines checked for Reference samples. RD } Reference Sample

Sample E-Pe 04 thru Ctrl, Dupe { Depurated organisms drained + rinsed with DI water. Ziploc bags drained + rinsed. Organisms returned to appropriate replicate bag + placed in freezer. JMR

↓ START REFERENCE SAMPLE ONLY (Daily Log) MN + NV

6/11/04. Water renewed. Water quality monitored. Organism observed. Airlines checked. JMR for JA

6/12/04. For ~~Reference~~ Reference sample replicates: Water quality monitored. Organisms observed. Airlines checked. JMR for JA

6/13/04. ~~We~~ JMR For Reference sample replicates: Water quality monitored, organisms observed. Airlines checked. N. virens Reference Replicate A tank suspected of leaking is still full. WS, JMR.

6/14/04. For ~~Reference Sample~~: Water renewed. WQ monitored. Organisms observed. Airlines checked. Tank suspected of leaking is still full (see 6/13/04). JMR for CG.

6/15/04. For Reference Sample: Water quality monitored. Organisms observed. Airlines checked. Reference Sample Replicate A, N. virens aquarium is leaking (still has water + aeration in tank - is just low). Remaining water drained + retained; organisms + sediment carefully removed and placed in new, clean aquarium. Addt'l seawater added to bring water level to appropriate level. Airlines checked in PM. JMR for TT.

C6

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0400 Client: Port Everglades Test: Bioaccumulation *M. nasuta* and *N. virens*

DAILY LOG Reference Sample

6/16/04. Daily Log and Data reviewed, all samples. JMR

~~6/16/~~ JH 6/16/04 JH - Water renewed organisms observed Dead m.n. removed - airlines checked - Dead placed in freezer courtored.

WS - WQ monitored, Airlines checked.

6/17/04 - Water qualities taken. Organisms observed. Airlines checked. WS

6/18/04 - Water renewed. RD Organisms monitored. Water qualities taken. AIRLINES CHECKED TT

6/19/04 - WATER qualities taken. Organisms observed Airlines checked TT

6/20/04 - Water qualities taken. Organisms observed AIRLINES checked TT

6/21/04 Water qualities taken. Organisms observed Airlines checked. Dead organisms rinsed + Bagged. WS Water renewed. RD

6/22/04. Data reviewed. JMR

6/22/04. Water qualities taken, organisms observed, and airlines checked. CG

6/23/04 - Water renewed. RD Organisms observed, water qualities taken and airlines checked. RD

Data reviewed. JMR

6/24/04 - Water qualities taken, organisms observed, and airlines checked. RD

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 018G
Revised: March 2004

Project Number: 6063040017.0400 Client: Port Everglades Test: Bioaccumulation *M. nasuta* and *N. virens*

DAILY LOG Reference Sample

6/25/04 - Water renewed. RD Organisms observed, water qualities taken and airlines checked. RD

6/26/04 - Water qualities taken. Organisms observed. Airlines checked on PM. TT

6/27/04 - Water qualities taken. Organisms observed. Airlines checked.

6/28/04 - Water renewed. Organisms observed, water qualities taken and airlines checked. RD Airlines checked in PM (TT)

6/29/04 - Water qualities taken, organisms observed, and airlines checked. CG

6/30/04 - Water renewed. Organisms observed, water qualities taken and airlines checked. RD Airlines checked in PM, TT

7/1/04 - Water qualities taken. RD + Organisms (M. Nasuta + N. virens) observed + counted. Ref test terminated. Organisms placed in ziploc bags w/ nat. filt. seawater (25 ppt). Allowed to sit overnight to depurate. WS

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097G
Revised: March 2004

TOXICITY TEST SYSTEM DESCRIPTION SHEET

SPONSOR: PORT EVERGLADES | PROJECT NUMBER: 6063040017.0400

TEST MATERIAL

Test Material: Sediment

See Page 72 of Effluent Log for Test Material Information.

PROTOCOL/GUIDELINES FOLLOWED:

SOP - S - 007

Test Concentration Based On: ( ) Active Ingredient
(X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Macoma nasuta*

Lot Number: 2004-6

Age/Life Stage: Adult

Date Acclimation/Maintenance Began: 5/11/04

See Page 111 of Organism Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: <10%

TEST CONDITIONS

( ) Range Finder (X) Static
(X) Screening ( ) Flow - Through
( ) Definitive

Lighting: (X) Fluorescent ( ) Incandescent
Photoperiod: 16 Hours Light
8 Hours Dark

Test Duration: 28 days
Test Area Used: Room 2407
Test Temperature: 18 ± 2
Test Salintiy: 25 ± 2
Replicates per Concentration: 10
Organisms per Replicate: 20

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions(cm):49lengthx25widthx32hieght
Test Solution Height (cm): 27
Test Vessels: (X) Open ( ) Covered
Test Container Volume: 38 L (10 gallons)
Test Solution Volume: 30 L (~ 8 gallons)

TEST SOLUTION PREPARATION

Test Concentration % mg/L								
Volume of Dilution Water Added (mL)								
Volume of Effluent/ Stock Added (mL)								

ADDITIONAL OBSERVATIONS: _____

DATA BY: RD

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - CONTROL**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5-12-04	0	A	18.5	8.2	8.0	26		RD	1325
5/13/04	1	B	16.7	8.0	8.7	26		CG	1440
5/14/04	2	C	17.3	8.1	8.4	25		CG	1110
5/15/04	3	D	15.6	8.2	8.2	25		JM	1830
5/16/04	4	E	15.5	8.1	8.5	26		JM	1700
5/17/04	5	F	17.6	8.1	8.3	25		RD	1118
5/18/04	6	G	16.6	8.0	8.7	26		RD	0941
5/19/04	7	H	17.8	8.1	8.1	26		RD	1305
5/20/04	8	I	16.4	8.1	8.2	26		RD	1916
5/21/04	9	J	18.0	8.1	8.1	26		RD	1107
5/22/04	10	A	16.5	8.1	8.2	26		JM	1245
5/23/04	11	B	16.0	8.1	9.2	26		WS	12.45
5/24/04	12	C	17.0	8.1	8.4	26		RD	1055
5/25/04	13	D	16.1	8.1	8.4	26		RD	1348
5/26/04	14	E	17.9	8.0	8.0	25		CG	1015
5/27/04	15	F	16.4	8.1	8.2	25		CG	0910
5/28/04	16	G	17.6	7.9	9.0	25		CG	1040
5/29/04	17	H	16.7	8.0	8.4	25		TT	0915
5/30/04	18	I	16.4	8.0	8.4	25		TT	0915
5/31/04	19	J	16.5	8.0	8.3	26		JM	1030
6/1/04	20	A	16.7	8.0	8.7	26		CG	0830
6/2/04	21	B	17.7	8.0	8.3	26		RD	0910
6/3/04	22	C	16.5	7.9	8.3	25		CG	0820
6/4/04	23	D	17.6	8.0	8.5	25		CG	0910
6/5/04	24	E	16.8	8.0	9.1	25		CG	1830
6/6/04	25	F	15.6	8.1	9.1	26		WS	1700
6/7/04	26	G	17.7	8.0	8.6	26		RD	1015
6/8/04	27	H	16.4	8.0	9.0	26		RD	1113
6/9/04	28	I	16.0	8.0	8.6	26		RD	0835

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - 1**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	19.3	8.2	7.9	25		RD	1330
5/13/04	1	B	16.7	8.0	8.6	26		CG	1440
5/14/04	2	C	18.2	8.2	8.2	25		CG	1110
5/15/04	3	D	16.4	8.1	8.1	25		JH	18:00
5/16/04	4	E	15.9	8.1	8.6	26		JH	1700
5/17/04	5	F	18.0	8.1	8.1	25		RD	1122
5/18/04	6	G	16.7	8.0	8.5	26		RD	0842
5/19/04	7	H	17.7	8.0	8.0	26		RD	1307
5/20/04	8	I	17.1	8.1	8.1	26		RD	0918
5/21/04	9	J	17.6	8.1	8.2	25		RD	1109
5/22/04	10	A	16.9	8.1	8.1	26		WS	1301
5/23/04	11	B	16.3	8.1	9.1	25		WS	1252
5/24/04	12	C	17.8	8.1	8.3	24		RD	1057
5/25/04	13	D	16.6	8.1	8.2	26		RD	1349
5/26/04	14	E	17.5	8.0	8.1	25		CG	1015
5/27/04	15	F	16.8	8.1	8.1	26		CG	0910
5/28/04	16	G	17.6	7.9	9.1	25		CG	1040
5/29/04	17	H	16.5	8.0	8.4	25		TT	0915
5/30/04	18	I	16.8	8.0	8.2	25		TT	0915
5-31-04	19	J	16.7	8.0	8.1	26		JH	1030
6/1/04	20	A	16.4	8.1	8.5	26		CG	0830
6/2/04	21	B	18.0	8.0	8.3	26		RD	0912
6/3/04	22	C	17.5	7.9	8.1	25		CG	0820
6/4/04	23	D	17.4	8.0	8.5	25		CG	0910
6/5/04	24	E	16.4	8.0	9.1	26		CG	1830
6/6/04	25	F	16.1	8.1	8.9	25		WS	1700
6/7/04	26	G	17.7	8.0	8.6	26		RD	1017
6/8/04	27	H	16.3	8.0	9.0	26		RD	1114
6/9/04	28	I	16.4	7.9	8.4	26		RD	0840

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - 2**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	18.9	8.2	8.0	26		RD	1334
5/13/04	1	B	16.0	8.1	9.0	26		CG	1440
5/14/04	2	C	17.7	8.2	8.3	25		CG	1110
5/15/04	3	D	15.9	8.2	8.3	25		JM	1800
5/16/04	4	E	16.8	8.1	8.1	26		JM	1700
5/17/04	5	F	17.8	8.1	8.1	25		RD	1124
5/18/04	6	G	16.4	8.1	8.8	26		RD	0843
5/19/04	7	H	18.0	8.1	8.0	26		RD	1310
5/20/04	8	I	17.2	8.2	8.1	26		RD	0920
5/21/04	9	J	18.0	8.1	8.2	26		RD	1111
5/22/04	10	A	16.4	8.1	8.2	26		WS	1306
5/23/04	11	B	17.2	8.1	8.0	26		WS	1255
5/24/04	12	C	17.5	8.1	8.3	25		RD	1058
5/25/04	13	D	16.1	8.1	8.3	26		RD	1350
5/26/04	14	E	18.5	8.1	8.1	25		CG	1020
5/27/04	15	F	17.1	8.1	8.0	26		CG	0910
5/28/04	16	G	17.6	7.9	8.8	25		CG	~~0840~~ 1040
5/29/04	17	H	17.2	8.1	8.1	25		TT	0915
5/30/04	18	I	16.9	8.0	8.1	25		TT	0915
5/31/04	19	J	16.9	8.0	8.0	26		JM	1030
6/1/04	20	A	16.4	8.1	8.7	26		CG	0830
6/2/04	21	B	18.1	8.0	8.2	26		RD	0913
6/3/04	22	C	17.2	8.1	8.3	26		CG	0820
6/4/04	23	D	17.4	8.0	8.5	25		CG	0910
6/5/04	24	E	16.7	8.0	8.8	25		CG	1830
6/6/04	25	F	16.6	8.2	8.7	25		WS	1700
6/7/04	26	G	17.3	8.0	8.5	26		RD	1018
6/8/04	27	H	16.9	8.0	8.9	26		RD	1115
6/9/04	28	I	16.6	8.0	8.5	26		RD	0841

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - 3**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	19.8	8.2	7.8	25		RD	1335
5/13/04	1	B	16.0	8.2	8.9	26		CG	1450
5/14/04	2	C	18.1	8.2	8.3	25		CG	1110
5/15/04	3	D	16.4	8.1	8.1	25		JH	1800
5/16/04	4	E	16.4	8.1	8.0	26		JH	1700
5/17/04	5	F	18.0	8.1	8.1	25		RD	1126
5/18/04	6	G	16.6	8.1	8.8	26		RD	0845
5/19/04	7	H	17.8	8.1	8.0	26		RD	1312
5/20/04	8	I	16.8	8.1	8.2	26		RD	0921
5/21/04	9	J	18.6	8.1	8.3	25		RD	1113
5/22/04	10	A	17.3	8.1	8.0	26		WS	1310
5/23/04	11	B	17.1	8.1	8.1	26		WS	1300
5/24/04	12	C	17.6	8.1	8.3	25		RD	1100
5/25/04	13	D	16.7	8.0	8.1	26		RD	1352
5/26/04	14	E	18.1	8.0	8.0	25		CG	1020
5/27/04	15	F	16.3	8.1	8.1	26		CG	0915
5/28/04	16	G	17.9	8.0	8.9	25		CG	1045
5/29/04	17	H	16.9	8.0	8.3	25		TT	0915
5/30/04	18	I	16.0	8.0	8.4	25		TT	0915
5-31-04	19	J	16.7	8.0	8.3	26		JH	1030
6/1/04	20	A	17.1	8.1	8.6	26		CG	0835
6/2/04	21	B	18.0	8.0	8.2	26		RD	0914
6/3/04	22	C	17.0	8.0	8.3	27		CG	0820
6/4/04	23	D	17.9	8.0	8.6	25		CG	0915
6/5/04	24	E	16.5	8.0	9.0	26		CG	1835
6/6/03	25	F	16.2	8.2	9.0	26		WS	1700
6/7/04	26	G	17.7	8.0	8.7	26		RD	1050
6/8/04	27	H	16.3	8.0	8.9	27		RD	1116
6/9/04	28	I	16.3	8.0	8.5	27		RD	0842

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - 4**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	19.1	8.1	7.9	24		RD	1337
5/13/04	1	B	16.5	8.1	8.7	26		CG	1450
5/14/04	2	C	18.1	8.0	8.1	25		CG	1115
5/15/04	3	D	16.8	8.2	8.1	25		JH	1800
5/16/04	4	E	16.2	8.2	8.5	26		JH	1400
5/17/04	5	F	17.9	8.1	8.1	25		RD	1128
5/18/04	6	G	17.0	8.1	8.6	26		RD	0847
5/19/04	7	H	17.6	8.1	8.1	26		RD	1313
5/20/04	8	I	17.1	8.2	8.2	26		RD	0923
5/21/04	9	J	17.8	8.1	8.2	26		RD	1114
5/22/04	10	A	17.0	8.1	8.1	26		WS	13.05
5/23/04	11	B	16.9	8.2	8.0	26		WS	13.03
5/24/04	12	C	17.3	8.1	8.4	26		RD	1101
5/25/04	13	D	16.6	8.1	8.2	26		RD	1353
5/26/04	14	E	18.2	8.0	8.0	25		CG	1025
5/27/04	15	F	16.9	8.1	8.2	26		CG	0915
5/28/04	16	G	17.5	7.9	8.9	25		CG	1045
5/29/04	17	H	16.8	8.0	8.4	25		TT	0915
5/30/04	18	I	16.5	8.1	8.2	25		TT	0915
5-31-04	19	J	16.3	8.0	8.1	26		JH	1032
6/1/04	20	A	16.9	8.1	8.6	26		CG	0835
6/2/04	21	B	18.7	8.0	8.3	26		RD	0915
6/3/04	22	C	16.9	8.0	8.4	26		CG	0820
6/4/04	23	D	18.0	8.0	8.4	26		CG	0915
6/5/04	24	E	16.2	8.0	9.1	27		CG	1835
6/6/04	25	F	15.9	8.2	9.0	26		WS	1760
6/7/04	26	G	17.9	8.0	8.6	26		RD	1032
6/8/04	27	H	16.4	8.1	9.0	27		RD	1117
6/9/04	28	I	16.2	8.0	8.6	27		RD	0843

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - DUPE**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	19.2	8.2	7.9	26		RD	1340
5/13/04	1	B	16.0	8.1	8.9	26		CG	1450
5/14/04	2	C	18.0	8.2	8.2	25		CG	1115
5/15/04	3	D	16.6	8.2	8.0	25		JH	1800
5/16/04	4	E	15.6	8.1	8.7	26		JH	1900
5/17/04	5	F	18.0	8.1	8.2	25		RD	1130
5/18/04	6	G	16.8	8.1	8.7	26		RD	0848
5/19/04	7	H	17.4	8.1	8.1	26		RD	1314
5/20/04	8	I	16.3	8.2	8.3	26		RD	0924
5/21/04	9	J	18.1	8.1	8.2	26		RD	1115
5/22/04	10	A	16.8	8.1	7.9	26		WS	1320
5/23/04	11	B	16.5	8.2	8.1	26		WS	13.05
5/24/04	12	C	17.1	8.1	8.4	25		RD	1103
5/25/04	13	D	16.5	8.1	8.3	26		RD	1355
5/26/04	14	E	17.7	8.1	8.1	25		CG	1025
5/27/04	15	F	16.4	8.1	8.2	26		CG	0915
5/28/04	16	G	18.4	8.0	8.8	25		CG	1050
5/29/04	17	H	16.6	8.0	8.5	25		TT	0915
5/30/04	18	I	16.2	8.1	8.3	25		TT	0915
5-31-04	19	J	16.2	8.0	8.1	26		JH	1030
6/1/04	20	A	17.0	8.1	8.5	26		CG	0835
6/2/04	21	B	17.8	8.0	8.4	26		RD	0917
6/3/04	22	C	16.9	8.1	8.4	25		CG	0820
6/4/04	23	D	17.9	8.0	8.4	26		CG	0915
6/5/04	24	E	16.0	8.1	8.2	26		CG	1840
6/6/04	25	F	15.7	8.2	8.9	26		WS	1700
6/7/04	26	G	17.5	8.0	8.6	26		RD	1034
6/8/04	27	H	16.0	8.0	9.1	27		RD	1119
6/9/04	28	I	16.1	8.0	8.6	27		RD	0845

OBSERVATION KEY

REP - Replicate
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INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES | PROJECT NUMBER: 6063040017.0400
TEST SUBSTANCE: SEDIMENT | TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **RS - PE04**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
6/4/04	0	A	17.6	8.1	8.5	26	—	~~WS~~	~~15:30~~
6/4/04	1	B	17.5	8.0	8.5	26		CG	0915
6/5/04	2	C	16.3	8.0	9.1	26		CG	1840
6/6/04	3	D	15.8	8.2	9.0	26		WS	1700
6/7/04	4	E	18.0	8.0	8.7	26		RD	1033
6/8/04	5	F	16.3	8.6	9.0	27		RD	1118
6/9/04	6	G	16.3	8.0	8.6	27		RD	0844
6/10/04	7	H	16.9	8.0	8.4	26		RD	1105
6/11/04	8	I	18.1	8.1	~~8.6~~ 6.9	26		JM	14:30
6/12/04	9	J	17.2	7.8	8.5	26		JM	18:45
6/12/04	10	A	19.6	8.1	9.9	26		WS	11:15
6/14/04	11	B	18.3	8.1	~~8.0~~ 9.2	26		CG	0900
6/15/04	12	C	15.0	8.1	9.1	25		TT	TT 1445
6/16/04	13	D	19.0	8.1	8.3	26		WS	1405
6/17/04	14	E	14.9	8.0	9.4	~~27~~ 27		WS	13:25
6/18/04	15	F	16.2	7.8	8.4	27		TT	15:00
6/19/04 ~~6/18/04~~	16	G	16.0	7.8	8.3	26		TT	0945
6/20/04	17	H	15.0	8.1	8.8	26		TT	1735
6/21/04	18	I	16.8	8.0	7.8	27		WS	1325
6/22/04	19	J	15.8	7.9	8.3	25		CG	1005
6/23/04	20	A	17.6	8.2	8.2	25		RD	1135
6/24/04	21	B	15.3	8.0	8.7	27		RD	0935
6/25/04	22	C	16.0	8.1	8.7	26		RD	0925
6/26/04	23	D	15.9	8.2	8.8	27		TT	1735
6/27/04	24	E	14.9	8.0	9.1	27		WS	17.10
6/28/04	25	F	17.7	8.1	8.2	26		RD	0950
6/29/04	26	G	15.7	7.8	8.1	25		CG	0900
6/30/04	27	H	17.5	8.0	8.3	26		RD	0930
7/1/04	28	I	15.8	7.9	8.5	27		RD	0900

OBSERVATION KEY

REP - Replicate
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DO - Dissolved Oxygen
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PW - Ammonia measured from pore water samples

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - CONTROL**

DATE	DAY	REPLICATE A	B	C	D	E	F	G	H	I	J	INIT
5/12/04	0	Loaded	20	→								CG
5/13/04	1	N	N	N	N	N	N	N	N	N	N	CG
5/14/04	2	N	N	N	N	N	N	N	N	N	19A/1d	CG
5/15/04	3	N	N	N	N	N	N	N	N	N	N	JH
5/16/04	4	N	N	N	19A/1d	N	N	N	N	N	N	JH
5/17/04	5	N	N	N	18A/1d	N	N	N	N	N	N	RD
5/18/04	6	N	N	N	N	N	N	N	N	N	N	RD
5/19/04	7	N	N	N	N	N	N	N	N	N	N	RD
5/20/04	8	N	N	N	N	N	N	N	N	N	N	RD
5/21/04	9	N	N	N	N	N	N	19A/1d	N	N	18A/1d	RD
5/22/04	10	19A/1d	N	N	N	N	N	N	N	N	N	WS
5/23/04	11	N	N	N	N	N	N	N	N	N	N	WS
5/24/04	12	N	N	N	N	N	N	N	N	N	N	RD
5/25/04	13	N	N	N	N	N	N	N	19A/1d	N	N	RD
5/26/04	14	N	N	N	N	N	N	N	N	N	N	CG
5/27/04	15	N	N	N	N	N	N	N	N	N	N	CG
5/28/04	16	N	N	N	N	N	N	N	N	N	N	CG
5/29/04	17	N	N	N	N	N	N	N	N	N	N	TT
5/30/04	18	N	N	N	N	N	N	N	N	N	N	TT
5/31/04	19	N	N	N	N	N	N	N	N	N	N	JH
6/1/04	20	N	N	N	N	N	N	N	N	N	N	CG
6/2/04	21	N	N	N	N	N	N	N	N	N	N	RD
6/3/04	22	N	N	N	N	N	N	N	N	N	N	CG
6/4/04	23	N	N	N	N	N	18A/2d	N	N	N	N	CG
6/5/04	24	N	N	N	N	N	N	N	N	N	N	CG
6/6/04	25	N	N	N	N	N	N	N	N	N	N	CG
6/7/04	26	N	N	19A/1d	N	N	N	N	N	N	N	WS
6/8/04	27	N	N	N	N	N	N	N	N	N	N	RD
6/9/04	28	19A/1d	20A	18A/2d	18A/2d	17A/3d	18A/2d	19A/1d	16A/4d	20A	17A/3d	CG

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - 1**

DATE	DAY	REPLICATE A	B	C	D	E	F	G	H	I	J	INIT
5/12/04	0	Loaded	20	→							→	CG
5/13/04	1	N	N	N	N	N	N	N	N	N	N	CG
5/14/04	2	N	N	N	N	N	N	N	N	N	N	CG
5/15/04	3	N	N	N	N	N	N	N	N	N	N	JP
5/16/04	4	N	N	N	N	N	N	N	N	N	N	JA
5/17/04	5	N	N	N	N	N	N	19A/1d	N	N	N	RD
5/18/04	6	N	N	N	N	N	N	N	N	N	N	RD
5/19/04	7	N	19A/1d	N	N	N	N	N	19A/1d	N	N	RD
5/20/04	8	N	N	N	N	N	N	N	N	N	N	RD
5/21/04	9	N	N	N	N	N	N	N	N	N	N	RD
5/22/04	10	N	N	N	16A/4d	N	N	N	N	N	N	WS
5/23/04	11	N	N	N	N	N	N	N	N	N	19A/1d	WS
5/24/04	12	N	N	N	N	N	N	N	N	N	N	RD
5/25/04	13	N	N	N	N	N	N	N	N	N	N	RD
5/26/04	14	N	N	N	N	N	N	N	N	N	N	CG
5/27/04	15	N	N	N	N	N	N	N	N	N	N	CG
5/28/04	16	N	N	18A/2d	N	N	N	N	N	N	N	CG
5/29/04	17	N	N	N	N	N	N	N	N	N	N	TT
5/30/04	18	17A/3d	N	N	N	N	N	N	N	18A/2d	N	TT
5/31/04	19	N	N	N	N	N	N	N	N	N	N	JA
6/1/04	20	N	N	N	N	N	N	N	N	N	N	CG
6/2/04	21	N	N	N	N	N	N	17A/2d	N	N	N	RD
6/3/04	22	N	N	N	N	N	N	N	N	N	N	CG
6/4/04	23	N	N	N	N	N	N	14A/3d	N	N	N	CG
6/5/04	24	N	N	N	N	N	N	N	N	N	N	CG
6/6/04	25	N	N	N	N	N	N	N	N	N	N	WS
6/7/04	26	14A/3d	18A/1d	N	N	N	N	N	16A/3d	N	N	RD
6/8/04	27	N	N	N	N	N	N	N	N	N	N	RD
6/9/04	28	11A/9d	16A/4d	7A/13d	11A/9d	15A/5d	12A/8d	11A/9d	16A/4d	15A/5d	15A/5d	CG

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
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BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - 2**

DATE	DAY	REPLICATE A	B	C	D	E	F	G	H	I	J	INIT
5/12/04	0	Loaded	20									CG
5/13/04	1	N	N	N	N	N	N	N	N	N	N	CG
5/14/04	2	N	N	N	N	N	N	N	N	N	N	CG
5/15/04	3	N	N	N	N	N	N	N	N	N	N	JA
5/16/04	4	N	N	N	N	19A/1d	N	N	N	N	N	JA
5/17/04	5	19A/1d	N	N	19A/1d	18A/1d	N	N	N	N	N	RD
5/18/04	6	N	N	N	N	N	N	N	N	N	N	RD
5/19/04	7	N	19A/1d	N	N	17A/1d	N	N	N	N	N	RD
5/20/04	8	N	N	N	N	N	N	N	N	N	N	RD
5/21/04	9	N	N	N	N	N	N	N	N	N	N	RD
5/22/04	10	N	N	N	N	N	19A/1d	N	19A/1d	N	N	WS
5/23/04	11	N	N	N	N	N	N	N	18A/1d	N	N	WS
5/24/04	12	N	N	N	N	16A/1d	N	N	N	N	N	RD
5/25/04	13	N	N	N	N	N	N	N	N	N	N	RD
5/26/04	14	N	N	N	N	N	N	N	N	N	N	CG
5/27/04	15	N	N	N	N	N	N	N	N	N	N	CG
5/28/04	16	N	N	N	N	N	N	N	N	19A/1d	N	CG
5/29/04	17	N	N	N	N	N	N	N	N	N	N	TT
5/30/04	18	N	18A/1d	N	N	N	N	N	N	N	N	TT
5/31/04	19	N	N	N	N	N	N	N	N	N	N	JA
6/1/04	20	N	17A/1d	N	N	N	N	N	17A/1d	N	N	CG
6/2/04	21	N	N	N	N	N	16A/3d	N	N	N	N	RD
6/3/04	22	N	N	N	N	N	N	N	N	N	N	CG
6/4/04	23	N	N	N	N	N	N	N	N	N	N	CG
6/5/04	24	N	N	N	N	N	N	N	N	N	N	CG
6/6/04	25	N	N	N	N	N	N	N	N	N	N	WS
6/7/04	26	N	N	N	16A/3d	14A/2d	N	17A/3d	N	N	N	RD
6/8/04	27	N	N	N	N	N	N	N	N	N	N	RD
6/9/04	28	17A/3d	14A/6d	15A/5d	14A/6d	11A/9d	14A/6d	14A/6d	15A/5d	18A/2d	18A/2d	CG

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - 3**

DATE	DAY	REPLICATE A	B	C	D	E	F	G	H	I	J	INIT
5/12/04	0	Loaded 2D	N	N	N	N	N	N	N	N	N	CG
5/13/04	1	N	N	N	N	N	N	N	N	N	N	CG
5/14/04	2	N	N	N	N	19A/1d	N	N	N	N	N	CG
5/15/04	3	N	N	N	N	N	N	N	N	N	N	JH
5/16/04	4	18A/2d	N	N	N	N	N	N	N	N	N	JH
5/17/04	5	16A/2d	N	N	N	N	N	N	N	N	N	RD
5/18/04	6	N	N	N	N	N	N	N	N	N	N	RD
5/19/04	7	N	N	N	N	N	N	N	N	N	N	RD
5/20/04	8	N	N	N	N	N	N	N	19A/1d	N	N	RD
5/21/04	9	N	N	N	N	N	N	N	N	N	N	RD
5/22/04	10	15A/1d	N	18A/2d	19A/1d	N	N	N	18A/1d	N	N	WS
5/23/04	11	N	N	N	18A/1d	N	N	N	15A/3d	N	N	WS
5/24/04	12	N	N	N	N	N	N	N	N	19A/1d	N	RD
5/25/04	13	N	N	17A/1d	N	N	N	N	14A/1d	N	N	RD
5/26/04	14	14A/1d	N	N	17A/1d	N	N	N	13A/1d	N	N	CG
5/27/04	15	N	N	N	N	N	N	N	N	N	N	CG
5/28/04	16	13A/1d	N	N	N	N	N	N	N	N	N	CG
5/29/04	17	N	N	N	N	N	N	N	N	N	N	TT
5/30/04	18	N	N	N	N	N	N	N	N	N	N	TT
5/31/04	19	N	N	N	N	N	N	N	N	N	N	JH
6/1/04	20	11A/2d	N	N	N	N	N	N	N	N	N	CG
6/2/04	21	10A/1d	N	N	N	17A/2d	N	N	N	18A/1d	N	RD
6/3/04	22	N	N	N	N	N	N	N	N	N	N	CG
6/4/04	23	N	N	N	N	16A/1d	N	N	N	N	N	CG
6/5/04	24	N	N	N	N	N	N	N	N	N	N	CG
6/6/04	25	N	N	N	N	N	N	N	N	N	N	WS
6/7/04	26	N	N	N	16A/1d	N	N	N	N	N	N	RD
6/8/04	27	N	N	N	N	N	N	N	N	N	N	RD
6/9/04	28	10A/10d	18A/2d	10A/10d	15A/5d	13A/7d	17A/3d	15A/5d	12A/8d	14A/6d	16A/4d	RD

OBSERVATION KEY

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CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - 4**

DATE	DAY	REPLICATE A	B	C	D	E	F	G	H	I	J	INIT
5/12/04	0	Loaded 20	N	N	N	N	N	N	N	N	N	CG
5/13/04	1	N	N	N	N	N	N	N	N	N	N	CG
5/14/04	2	N	N	N	N	N	N	N	N	N	N	CG
5/15/04	3	N	N	N	N	N	N	N	N	N	N	JA
5/16/04	4	N	N	19A/1d	19A/1d	N	N	N	N	N	N	JA
5/17/04	5	N	N	18A/1d	18A/1d	N	N	N	N	N	N	RD
5/18/04	6	N	N	N	N	N	N	N	N	N	N	RD
5/19/04	7	N	19A/1d	N	N	N	N	N	N	N	N	RD
5/20/04	8	N	N	N	N	N	N	N	N	N	N	RD
5/21/04	9	N	N	N	N	N	N	N	N	19A/1d	N	RD
5/22/04	10	19A/1d	N	N	N	N	N	N	N	N	N	WS
5/23/04	11	N	N	N	N	N	N	N	N	N	N	WS
5/24/04	12	N	N	N	N	N	N	N	N	N	N	RD
5/25/04	13	N	N	N	N	N	N	N	N	N	N	RD
5/26/04	14	N	N	N	N	N	N	N	N	18A/1d	N	CG
5/27/04	15	N	N	N	N	N	N	N	N	N	N	CG
5/28/04	16	N	N	N	N	N	N	N	N	N	N	CG
5/29/04	17	N	N	N	N	N	N	N	N	N	N	TT
5/30/04	18	N	N	N	N	17A/3d	N	N	N	N	N	TT
5/31/04	19	N	N	N	N	N	N	N	N	N	N	JA
6/1/04	20	N	N	N	N	N	N	N	N	N	N	CG
6/2/04	21	N	16A/3d	N	N	N	16A/4d	N	N	N	N	RD
6/3/04	22	N	N	N	N	N	N	N	N	N	N	CG
6/4/04	23	N	N	N	N	N	N	N	N	N	N	CG
6/5/04	24	N	N	N	N	N	N	N	N	N	N	CG
6/6/04	25	N	N	N	N	N	N	N	N	N	N	WS
6/7/04	26	16/3d	N	N	N	N	N	N	N	N	N	RD
6/8/04	27	N	N	N	N	N	N	N	N	N	N	RD
6/9/04	28	11A/9d	13A/7d	13A/7d	16A/4d	17A/3d	13A/7d	14A/6d	18A/2d	13A/7d	17A/3d	RD

OBSERVATION KEY

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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **E - PE04 - DUPE**

DATE	DAY	REPLICATE A	B	C	D	E	F	G	H	I	J	INIT
5/12/04	0	Loaded	20	→								CG
5/13/04	1	N	N	N	N	N	N	N	N	N	N	CG
5/14/04	2	N	N	N	N	N	N	N	N	N	N	CG
5/15/04	3	N	N	N	N	N	N	N	N	N	N	JH
5/16/04	4	N	N	N	N	19A/1d	N	N	19A/1d	N	N	JH
5/17/04	5	N	N	N	N	18A/1d	N	N	18A/1d	N	N	RD
5/18/04	6	N	N	N	19A/1d	N	N	N	17A/1d	N	N	RD
5/19/04	7	N	N	N	N	N	N	N	N	N	N	RD
5/20/04	8	N	19A/1d	N	N	N	N	N	16A/1d	N	N	RD
5/21/04	9	N	N	N	N	N	N	N	N	N	N	RD
5/22/04	10	N	N	N	N	N	N	N	N	N	19A/1d	WS
5/23/04	11	N	N	N	N	N	N	N	N	N	N	WS
5/24/04	12	N	N	19A/1d	N	N	N	N	15A/1d	N	N	RD
5/25/04	13	N	N	N	N	N	N	N	N	N	N	RD
5/26/04	14	N	N	N	N	N	N	N	N	N	N	CG
5/27/04	15	N	N	N	N	N	N	N	N	N	N	CG
5/28/04	16	N	18A/1d	N	N	N	N	N	N	N	N	CG
5/29/04	17	N	N	N	N	N	N	N	N	N	N	TT
5/30/04	18	N	N	N	N	N	N	N	N	N	N	TT
5/31/04	19	N	N	N	N	N	N	N	N	N	N	JH
6/1/04	20	N	N	N	N	N	N	N	N	N	N	CG
6/2/04	21	N	N	N	N	N	N	N	N	N	N	RD
6/3/04	22	N	N	N	N	N	N	N	N	N	N	CG
6/4/04	23	N	N	N	N	N	N	N	N	N	N	CG
6/5/04	24	N	N	N	N	N	N	N	N	N	N	CG
6/6/04	25	N	N	N	N	N	N	N	N	N	N	WS
6/7/04	26	N	15A/3d	N	N	N	N	19A/1d	N	N	N	RD
6/8/04	27	N	N	N	N	N	N	N	N	N	N	RD
6/9/04	28	15A/5d	13A/7d	18A/2d	17A/3d	17A/3d	19A/1d	13A/7d	10A/10d	19A/1d	14A/6d	RD

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CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Macoma nasuta*

SAMPLE ID: **RS - PE04**

DATE	DAY	REPLICATE A	B	C	D	E	F	G	H	I	J	INIT
6/3/04	0	Loaded 20	→									CG
6/4/04	1	N	N	N	N	N	N	N	N	N	N	CG
6/5/04	2	N	N	N	N	N	N	N	N	N	N	CG
6/6/04	3	N	N	N	N	N	N	N	N	N	N	WS
6/7/04	4	N	N	N	N	N	N	N	N	N	N	RD
6/8/04	5	N	N	N	N	N	N	N	N	N	N	RD
6/9/04	6	N	N	N	N	N	N	N	N	N	N	CG
6/10/04	7	N	N	N	N	19A/1d	N	N	N	N	N	RD
6/11/04	8	N	N	N	N	N	N	N	N	N	N	JH
6/12/04	9	N	N	N	N	N	N	N	N	N	N	JH
6/13/04	10	N	N	N	N	N	N	N	N	N	N	WS
6/14/04	11	N	N	N	N	N	N	N	N	N	N	CG
6/15/04	12	N	N	N	N	N	N	N	N	N	N	TT
6/16/04	13	19A/1d	16A/4d	18A/2d	16A/4d	18A/1d	19A/1d	18A/2d	17A/3d	16A/4d	16A/4d	JH
6/17/04	14	N	N	N	N	N	N	N	N	N	N	WS
6/18/04	15	N	N	N	N	N	N	N	N	N	N	TT
6/19/04	16	N	N	N	N	N	N	N	N	N	N	TT
6/20/04	17	N	N	N	N	N	N	15A/3d	N	13A/3d	15A/1d	TT
6/21/04	18	N	N	N	N	N	N	14A/1d	N	N	14A/1d	WS
6/22/04	19	N	N	N	N	N	N	N	N	N	N	CG
6/23/04	20	N	N	N	N	N	N	13A/1d	N	12A/1d	13A/1d	RD
6/24/04	21	N	N	N	N	N	N	N	N	N	N	RD
6/25/04	22	N	N	N	N	N	N	N	16A/1d	N	N	RD
6/26/04	23	N	N	N	N	N	N	N	N	N	N	TT
6/27/04	24	N	N	N	N	N	N	N	N	N	N	WS
6/28/04	25	N	N	N	N	N	N	12A/1d	N	N	10A/3d	RD
6/29/04	26	N	N	N	N	N	N	N	N	N	N	CG
6/30/04	27	N	N	N	N	16A/2d	N	N	N	N	N	RD
7/1/04	28	15A/5d	15A/5d	12A/8d	14A/6d	14A/6d	16A/4d	10A/10d	15A/5d	10A/10d	9A/11d	CG

OBSERVATION KEY

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HYP - Hyperactive

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RAR - Rapid Respiration
LT - Light Pigmentation

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097RTG
Revised: March 2004

REFERENCE TOXICANT TEST DESCRIPTION SHEET

SPONSOR: MISC.

PROJECT NUMBER: REF TOX

TEST MATERIAL

Amount of $CuSO_4$: 0.1 (g)

Volume of Milli-Q Water: 1000 (mL)

Date Prepared: 5/12/04

Batch Number: —

PROTOCOL/GUIDELINES FOLLOWED:

S-007

Test Concentration Based On: ( ) Active Ingredient (X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Macoma nasuta*

Lot Number: 2004-6

Age/Life Stage: adult

Date Acclimation/Maintenance Began: 5/11/04

See Page 111 of Organisms Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: <1%

TEST CONDITIONS

( ) Range Finder (X) Static

(X) Screening ( ) Flow - Through

( ) Definitive

Lighting: (X) Fluorescent ( ) Incandescent

Photoperiod: 16 Hours Light
8 Hours Dark

Test Duration: 96 hrs.

Test Area Used: Water Bath

Test Temperature: 18 ± 2°C

Test Salintiy: 25 ± 2 ppt

Replicates per Concentration: 2

Organisms per Replicate: 5

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions (cm): 10 length x 10 width x 15 hieght

Test Solution Height (cm): 12

Test Vessels: ( ) Open (X) Covered

Test Container Volume: 1.0 L

Test Solution Volume: 0.9 L

TEST SOLUTION PREPARATION

Test Concentration (Units: µg/L or ppt)	Control	312	624	1248	2496	4992	9884	
Volume of Dilution Water Added (mL)	1800	1794.4	1788.8	1777.6	1755	1710.2	1622	
Volume of Effluent/ Stock Added (mL)	0	5.6	11.2	22.4	45	89.8	178	

ADDITIONAL OBSERVATIONS: All vessels have air lines which were started at the beginning of the test. CG

DATA BY: CG 5/12/04

CG

REFERENCE TOXICANT TEST DATA: DAY 0 – 2

Client: Misc.	Project Number: Ref Tox	Species: M. nasuta

DAY 0 — REF TOXICANT: CuSO4

Nominal Concentration (mg/L)	Date: 5-12-04		Time: 1910		Analyst: RD	
	# Alive	Observ.	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	5 loaded	N	18.6	25	7.7	8.2
312			19.3	25	7.6	8.2
624			19.7	25	7.5	8.2
1248			19.9	25	7.4	8.2
2496			20.0	25	7.4	8.2
4992			20.0	25	7.4	8.2
9884			19.6	24	7.4	8.1

DAY 1	Date: 5/13/04				Time: 1515		Analyst: CG	
Nominal Concentration	A # Alive	B	A Observ.	B	Temp. (°C) B	Sal (ppt) B	DO (mg/L) B	pH B
Control	5	5	N	N	17.5	25	CG 7.7	7.7
312	5	5	N	N	17.5	26	7.7	7.8
624	5	5	N	N	17.0	26	8.0 ~~6.2~~ CG	7.9
1248	5	5	N	N	17.1	26	6.2	7.6
2496	5	5	N	N	17.0	26	7.4	7.7
4992	5	5	N	N	16.8	25	6.8	7.7
9884	5	5	N	N	16.7	25	7.1	7.6

DAY 2	Date: 5/14/04				Time: 0815		Analyst: CG	
Nominal Concentration	A # Alive	B	A Observ.	B	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	5	5	N	N	16.4	25	8.3	8.0
312	5	5	N	N	16.4	25	8.1	7.9
624	5	5	N	N	16.2	25	8.3	8.1
1248	5	5	N	N	16.2	25	8.1	7.9
2496	5	5	N	N	16.4	26	8.0	8.1
4992	5	5	N	N	16.3	25	8.0	8.1 ~~7.6~~
9884	5	5	N	N	16.3	25	7.6	8.0

CG

MACTEC Engineering and Consulting, Inc.
TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

QA FORM NO: 097 REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 3 AND 4

Client:	Project Number: Ref. Tox	Species: M. Macrata

DAY 3

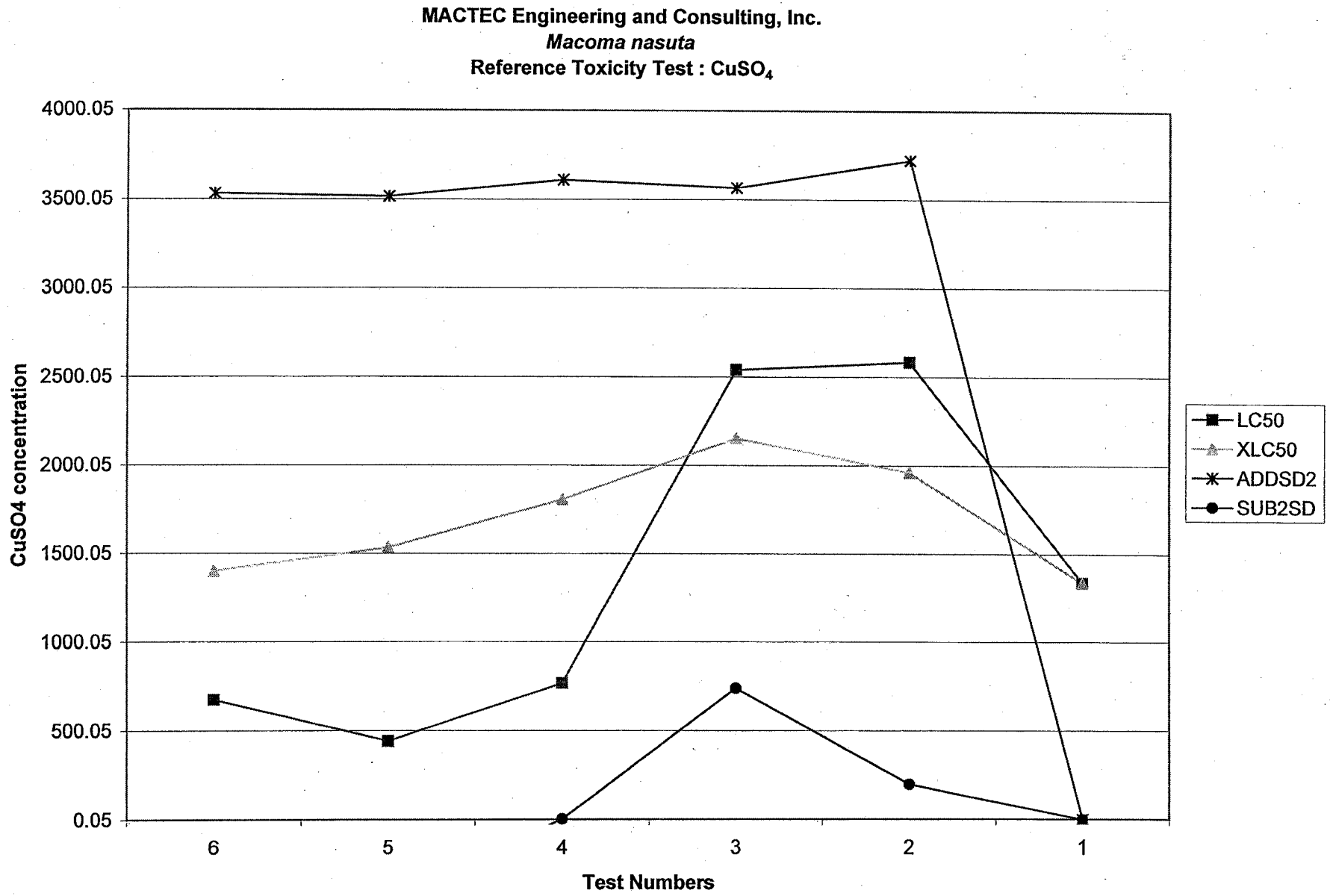
Nominal Concentration	Date: 5/15/04		Time: 1800		Analyst: TT	
	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	5/5	N/N	16.1	26	8.0	~~8.05~~ 8.1
312	5/5	N/N	16.2	26	7.2	8.0
624	5/5	N/N	16.1	26	7.5	8.0
1248	5/5	N/N	16.2	25	6.9	8.0
2496	5/5	N/N	16.1	26	6.9	8.1
4992	4/4	1D/1D	16.0	25	4.8	7.8
9884	4/3	1D/2D	16.0	24	5.7	8.0

DAY 4	Date: 5/16/04		Time: 1820		Analyst: CG	
Nominal Concentration	# Alive	Observ.	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	5/5	N/N	16.2	26	8.1	8.0
312	4/4	1D/1D	16.1	26	6.6	7.8
624	3/2	2D/3D	16.1	26	7.1	7.9
1248	1/2	4D/3D	16.2	26	7.7	4.5
2496	0/0	5D/5D	16.2	26	4.5	8.0
4992	0/0	4D/5D	16.0	26	3.0	7.8
9884	0/0	4D/3D	16.0	26	7.4	7.8

CG

SUMMARY M. nasuta, Ref Tox Test (Reference Toxicant: CuSO4) COMMENTS:

Nominal Concentration	Number Dead
Control	0
312	2
624	5
1248	7
2496	10
4992	10
9884	10


MACTEC Engineering and Consulting, Inc.
Macoma nasuta
Reference Toxicity Test : CuSO4
4000.05
3500.05
3000.05
2500.05
2000.05
1500.05
1000.05
500.05
0.05
CuSO4 concentration
6
5
4
3
2
1
Test Numbers
LC50
XLC50
ADDSD2
SUB2SD

TRIMMED SPEARMAN-KARBER METHOD. VERSION 1.5

DATE: 5/12/04 TEST NUMBER: REF TOX DURATION: 96 H
TOXICANT : CuSO4
SPECIES: M. nasuta

RAW DATA:

Concentration (mg/L)	Number Exposed	Mortalities
.00	10	0
312.00	10	2
624.00	10	5
1248.00	10	7
2496.00	10	10
4992.00	10	10
9884.00	10	10

SPEARMAN-KARBER TRIM: 20.00%

SPEARMAN-KARBER ESTIMATES: LC50: 673.96
95% LOWER CONFIDENCE: 420.45
95% UPPER CONFIDENCE: 1080.31

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097RTG
Revised: March 2004

REFERENCE TOXICANT TEST DESCRIPTION SHEET

SPONSOR: MISC. | PROJECT NUMBER: REF TOX

TEST MATERIAL

Amount of $CuSO_4$: 0.1 (g)
Volume of Milli-Q Water: 1000 (mL)
Date Prepared: 6/3/04
Batch Number: –

PROTOCOL/GUIDELINES FOLLOWED:

S007

Test Concentration Based On: ( ) Active Ingredient (X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Macoma nasuta*

Lot Number: 2004-14

Age/Life Stage: adult

Date Acclimation/Maintenance Began: 5/3/04

See Page 111 of Organisms Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: <1%

TEST CONDITIONS

( ) Range Finder (X) Static
(X) Screening ( ) Flow - Through
( ) Definitive

Lighting: (X) Fluorescent ( ) Incandescent
Photoperiod: 16 Hours Light
8 Hours Dark

Test Duration: 96 hrs.
Test Area Used: Water Bath
Test Temperature: 18 ± 2°C
Test Salintiy: 25 ± 2 ppt
Replicates per Concentration: 2
Organisms per Replicate: 5

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions (cm):10lengthx10widthx15hieght
Test Solution Height (cm): 12
Test Vessels: ( ) Open (X) Covered
Test Container Volume: 1.0 L
Test Solution Volume: 0.9 L

TEST SOLUTION PREPARATION

Test Concentration (Units: µg/L or ppt)	Control	312	624	1248	2496	4992	9884	
Volume of Dilution Water Added (mL)	1800	1794.4	1788.8	1777.6	1755	1710.2	1622	
Volume of Effluent/ Stock Added (mL)	0	5.6	11.2	22.4	45	89.8	178	

ADDITIONAL OBSERVATIONS:

DATA BY: CG 6/4/04

CG

REFERENCE TOXICANT TEST DATA: DAY 0 – 2

Client: Misc.	Project Number: Ref Tox	Species: M. nasuta

DAY 0 — REF TOXICANT: CuSO4

Nominal Concentration (mg/L)	Date: 6/4/04		Time: 1425		Analyst: CG	
	# Alive	Observ.	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	Loaded	5	19.1	25	8.0	8.1
312	↓	↓	19.2	25	8.0	8.1
624			19.2	25	8.0	8.1
1248			19.2	25	8.0	8.1
2496			19.2	25	8.1	8.0
4992			19.1	24	8.1	8.0
9884			19.1	24	8.1	7.9

DAY 1 — Date: 6/5/04 — Time: 1845 — Analyst: CG

Nominal Concentration	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C) B	Sal (ppt) B	DO (mg/L) B	pH A
Control	5	5	N	N	16.1	26	8.3	8.0
312	5	5	N	N	16.1	~~27~~ CG 26	8.5	8.0
624	5	5	N	N	16.0	~~27~~ CG 26	8.4	7.9
1248	5	5	N	N	16.1	27	7.9	8.0
2496	5	5	N	N	16.1	27	8.3	8.0
4992	5	5	N	N	16.1	26	6.3	7.8
9884	5	5	N	N	16.0	25	8.3	7.8

DAY 2 — Date: 6/6/04 — Time: 1900 — Analyst: WS

Nominal Concentration	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	5	5	N	N	15.9	26	8.5	8.2
312	5	5	N	N	16.3	26	6.8	7.6
624	5	5	N	N	16.2	26	8.6	8.1
1248	5	5	N	N	16.2	26	8.6	8.2
2496	5	5	N	N	16.2	26	7.9	8.0
4992	5	5	N	N	16.2	26	7.8	8.1
9884	5	5	N	N	16.1	26	5.4	7.7

CG

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TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

QA FORM NO: 097 REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 3 AND 4

Client:	Project Number:	Species: M. nasuta

DAY 3

Nominal Concentration	Date: 6/7/04				Time: 1055		Analyst: RD	
	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	5	5	N	N	16.5	26	8.8	7.9
312	5	5	N	N	17.0	26	7.7	7.2
624	5	5	N	N	16.9	26	8.6	8.0
1248	5	5	N	N	17.0	27	8.4	8.0
2496	5	5	N	N	16.9	26	7.4	7.9
4992	5	5	N	N	17.0	26	7.6	7.9
9884	5	5	N	N	16.9	26	5.8	7.6

DAY 4	Date: 6/8/04				Time: 1315		Analyst: RD	
Nominal Concentration	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C)	Sal (ppt)	DO (mg/L)	pH
Control	5	5	N	N	16.0	27	9.1	8.0
312	4	5	1d	N	16.0	26	8.0	8.1
624	5	4	N	1d	16.2	26	8.5	8.1
1248	4	3	1d	2d	16.3	27	8.1	8.0
2496	2	1	3d	4d	16.2	27	6.3	7.8
4992	0	0	5d	5d	16.2	26	5.9	7.6
9884	0	0	5d	5d	15.5	26	5.4	7.6

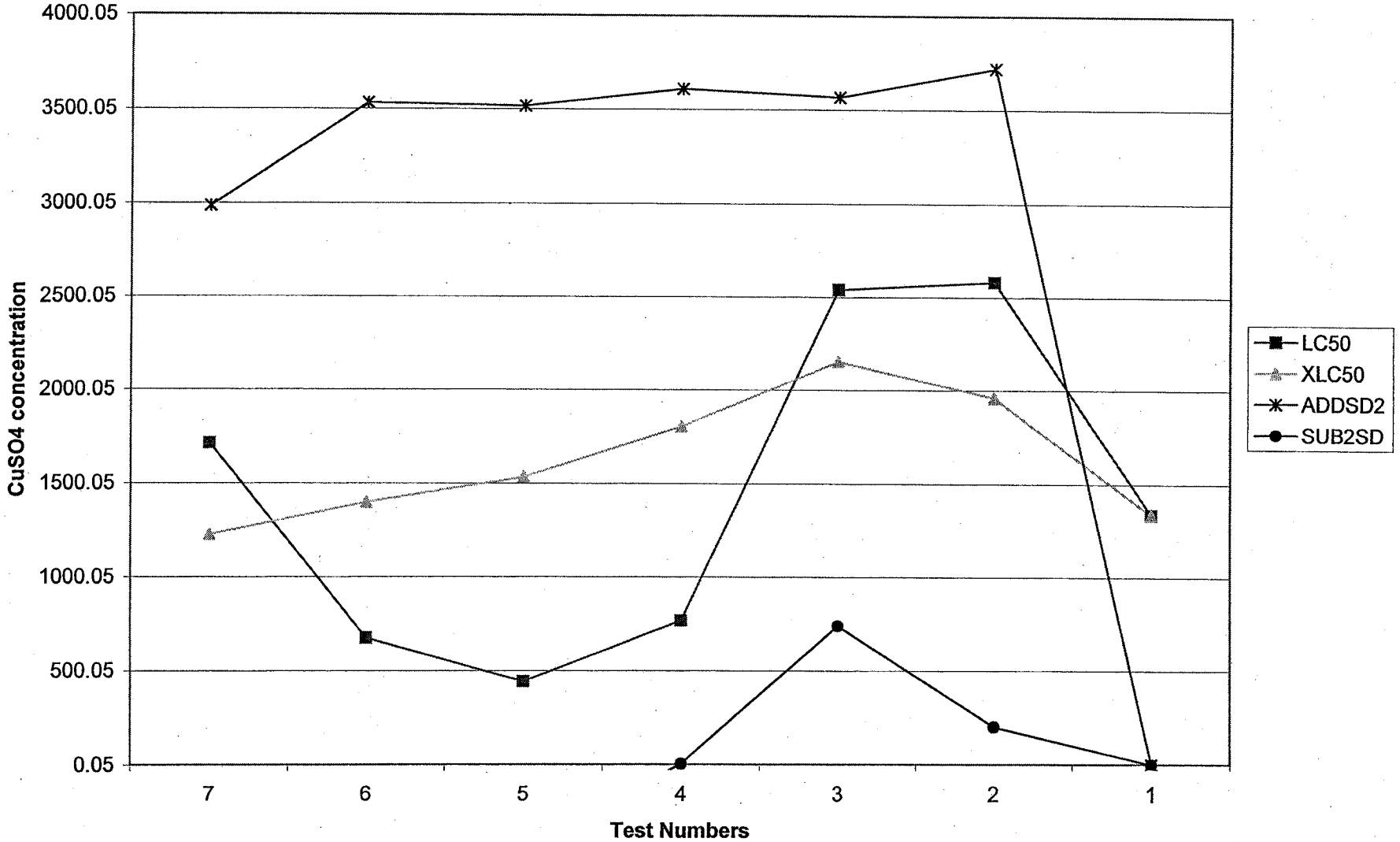
CC

SUMMARY M. nasuta, Ref Tox Test (Reference Toxicant: CuSO4) COMMENTS:

Nominal Concentration	Number Dead
Control	0
312	1
624	1
1248	3
2496	7
4992	10
9884	10

CG

MACTEC Engineering and Consulting, Inc.
Macoma nasuta
Reference Toxicity Test : $CuSO_4$



TRIMMED SPEARMAN-KARBER METHOD. VERSION 1.5

DATE: 6/4/04 TEST NUMBER: REF TOX DURATION: 96 H
TOXICANT : CuSO4
SPECIES: M. nasuta

RAW DATA: ---	Concentration (mg/L)	Number Exposed	Mortalities
	.00	10	0
	312.00	10	1
	624.00	10	1
	1248.00	10	3
	2496.00	10	7
	4992.00	10	10
	9884.00	10	10

SPEARMAN-KARBER TRIM: 10.00%

SPEARMAN-KARBER ESTIMATES: LC50: 1714.69
95% LOWER CONFIDENCE: 1202.23
95% UPPER CONFIDENCE: 2445.60

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097G
Revised: March 2004

TOXICITY TEST SYSTEM DESCRIPTION SHEET

SPONSOR: PORT EVERGLADES | PROJECT NUMBER: 6063040017.0400

TEST MATERIAL

Test Material: Sediment

See Page 72 of Effluent Log for Test Material Information.

PROTOCOL/GUIDELINES FOLLOWED:

SOP - S - 007

Test Concentration Based On: ( ) Active Ingredient (X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Nereis virens*

Lot Number: 2004-7

Age/Life Stage: Adult

Date Acclimation/Maintenance Began: 5/12/04

See Page 111 of Organism Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: <1%

TEST CONDITIONS

( ) Range Finder (X) Static
(X) Screening ( ) Flow - Through
( ) Definitive

Lighting: (X) Fluorescent ( ) Incandescent
Photoperiod: 16 Hours Light
8 Hours Dark

Test Duration: 28 days
Test Area Used: Room 2407
Test Temperature: 18 ± 2
Test Salintiy: 25 ± 2
Replicates per Concentration: 5
Organisms per Replicate: 20

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions(cm):49lengthx25widthx32hieght
Test Solution Height (cm): 27
Test Vessels: (X) Open ( ) Covered
Test Container Volume: 38 L (10 gallons)
Test Solution Volume: 30 L (~ 8 gallons)

TEST SOLUTION PREPARATION

Test Concentration % mg/L								
Volume of Dilution Water Added (mL)								
Volume of Effluent/ Stock Added (mL)								

ADDITIONAL OBSERVATIONS: _____

DATA BY: RO

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - CONTROL**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	18.8	8.2	8.0	25		RD	1341
5/13/04	1	B	16.2	8.2	8.9	26		CG	1455
5/14/04	2	C	17.7	8.1	8.4	25		CG	1100
5/15/04	3	D	16.1	8.1	8.4	25		JH	18:30
5/16/04	4	E	15.1	8.1	8.5	24		JH	17:00
5/17/04	5	A	17.6	8.1	8.2	25		RD	1132
5/18/04	6	B	16.2	8.1	8.8	26		RD	0850
5/19/04	7	C	17.5	8.1	8.1	26		RD	1317
5/20/04	8	D	16.6	8.2	8.3	27		RD	0926
5/21/04	9	E	18.6	8.1	8.0	26		RD	1116
5/22/04	10	A	16.6	8.1	8.2	26		WS	1335
5/23/04	11	B	16.5	8.1	8.1	25		WS	1318
5/24/04	12	C	17.5	8.1	8.3	25		RD	1106
5/25/04	13	D	16.1	8.2	8.3	27		RD	1356
5/26/04	14	E	18.2	8.1	8.0	25		CG	1025
5/27/04	15	A	16.5	8.1	8.2	26		CG	0920
5/28/04	16	B	17.8	8.0	8.8	25		CG	1050
5/29/04	17	C	16.4	8.1	8.5	25		TT	0930
5/30/04	18	D	16.2	8.2	8.3	25		TT	0930
5-31-04	19	E	16.3	8.1	8.2	26		JH	1030
6/1/04	20	A	16.4	8.1	8.8	26		CG	0840
6/2/04	21	B	18.0	8.1	8.6	25		RD	0918
6/3/04	22	C	16.5	8.1	8.5	27		CG	0830
6/4/04	23	D	17.7	8.1	8.4	26		CG	0920
6/5/04	24	E	16.0	8.1	9.3	27		CG	1845
6/6/04	25	A	15.7	8.2	9.1	26		WS	17.15
6/7/04	26	B	17.7	8.0	8.7	26		RD	1037
6/8/04	27	C	16.0	8.1	9.2	27		RD	1124
6/9/04	28	D	16.1	8.2	8.6	27		RD	0848

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - 1**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	18.5	8.2	8.0	26		RD	1344
5/13/04	1	B	16.8	8.1	8.7	26		CG	1455
5/14/04	2	C	17.4	8.1	8.3	25		CG	1100
5/15/04	3	D	15.8	8.2	8.2	~~26~~ 26		JM	1900
5/16/04	4	E	15.2	8.1	8.4	26		JM	1700
5/17/04	5	A	17.3	8.1	8.1	25		RD	1134
5/18/04	6	B	16.0	8.0	8.6	26		RD	0852
5/19/04	7	C	17.7	8.1	8.0	26		RD	1319
5/20/04	8	D	16.6	8.1	8.3	27		RD	0927
5/21/04	9	E	17.6	8.1	8.2	26		RD	1117
5/22/04	10	A	16.1	8.1	8.2	26		WS	1336
5/23/04	11	B	16.3	8.1	8.0	25		WS	1317
5/24/04	12	C	17.3	8.1	8.3	25		RD	1107
5/25/04	13	D	15.3	8.1	8.4	27		RD	1357
5/26/04	14	E	17.6	8.2	8.1	26		CG	1025
5/27/04	15	A	16.0	8.1	8.3	26		CG	0920
5/28/04	16	B	17.2	8.0	9.0	25		CG	1100
5/29/04	17	C	15.7	8.1	8.4	25		TI	0930
5/30/04	18	D	15.4	8.2	8.5	26		TI	0930
5-31-04	19	E	16.0	8.1	8.3	26		JM	1036
6/1/04	20	A	16.0	8.1	8.8	27		CG	0840
6/2/04	21	B	17.3	8.1	8.4	26		RD	0919
6/3/04	22	C	16.5	8.1	8.5	27		CG	0830
6/4/04	23	D	17.2	8.1	8.4	27		CG	0920
6/5/04	24	E	16.0	8.2	9.3	27		CG	1845
6/6/04	25	A	15.1	8.2	9.2	27		WS	1715
6/7/04	26	B	17.3	8.1	8.8	27		RD	1038
6/8/04	27	C	16.2	8.1	9.2	27		RD	1125
6/9/04	28	D	15.4	8.1	8.8	27		RD	0849

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - 2**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	18.4	8.2	8.1	26		RD	1346
5/13/04	1	B	16.8	8.2	8.8	26		CG	1455
5/14/04	2	C	17.2	8.1	8.3	26		CG	1100
5/15/04	3	D	14.5	8.1	8.5	26		JM	1900
5/16/04	4	E	15.4	8.1	8.5	26		JM	1706
5/17/04	5	A	17.8	8.1	8.1	25		RD	1136
5/18/04	6	B	15.4	8.1	9.0	26		RD	0854
5/19/04	7	C	17.1	8.1	8.1	26		RD	1320
5/20/04	8	D	16.3	8.1	8.3	26		RD	0929
5/21/04	9	E	18.3	8.1	7.9	26		RD	1118
5/22/04	10	A	16.5	8.1	8.2	26		WS	1340
5/23/04	11	B	15.9	8.1	8.2	26		WS	1318
5/24/04	12	C	17.0	8.1	8.3	25		RD	1109
5/25/04	13	D	16.0	8.1	8.4	26		RD	1358
5/26/04	14	E	17.7	8.1	8.0	25		CG	1030
5/27/04	15	A	16.2	8.2	8.3	26		CG	0920
5/28/04	16	B	17.4	8.0	8.9	25		CG	1100
5/29/04	17	C	16.1	8.1	8.5	25		TT	0930
5/30/04	18	D	16.0	8.1	8.4	28		TT	0930
5-31-04	19	E	16.1	8.1	8.0	26		JM	1030
6/1/04	20	A	16.2	8.2	8.8	27		CG	0845
6/2/04	21	B	17.2	8.1	8.4	26		RD	0920
6/3/04	22	C	16.1	8.1	8.6	26		CG	0830
6/4/04	23	D	17.2	8.1	8.5	26		CG	0925
6/5/04	24	E	16.0	8.1	9.1	28		CG	1850
6/6/04	25	A	15.5	8.3	9.2	26		WS	1715
6/7/04	26	B	16.9	8.0	8.9	27		RD	1039
6/8/04	27	C	16.0	8.2	9.2	27		RD	1126
6/9/04	28	D	15.7	8.1	8.7	27		RD	0850

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - 3**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	18.4	8.2	8.1	26		RD	1347
5/13/04	1	B	17.6	8.2	8.6	26		CG	1455
5/14/04	2	C	17.3	8.1	8.3	25		CG	1100
5/15/04	3	D	16.4	8.2	8.3	26		JM	1900
5/16/04	4	E	15.4	8.1	8.4	26		JM	1700
5/17/04	5	A	18.2	8.1	7.9	25		RD	1138
5/18/04	6	B	15.6	8.1	8.9	26		RD	0855
5/19/04	7	C	17.0	8.1	8.2	26		RD	1323
5/20/04	8	D	16.3	8.1	8.1	26		RD	0930
5/21/04	9	E	18.5	8.1	8.2	26		RD	1120
5/22/04	10	A	16.4	8.1	8.2	26		WS	1372
5/23/04	11	B	15.3	8.1	8.3	26		WS	1319
5/24/04	12	C	17.1	8.1	8.4	26		RD	1111
5/25/04	13	D	16.0	8.1	8.4	27		RD	1400
5/26/04	14	E	17.9	8.1	8.1	25		CG	1030
5/27/04	15	A	16.0	8.1	8.2	26		CG	0925
5/28/04	16	B	16.6	8.0	9.1	26		CG	1100
5/29/04	17	C	16.8	8.1	8.3	25		TI	0930
5/30/04	18	D	15.9	8.1	8.3	25		TI	0930
5-31-04	19	E	16.0	8.1	8.0	26		JM	1050
6/1/04	20	A	16.2	8.1	8.7	26		CG	0845
6/2/04	21	B	16.8	8.2	8.5	27		RD	0921
6/3/04	22	C	16.1	8.1	8.6	26		CG	0835
6/4/04	23	D	17.0	8.1	8.5	26		CG	0925
6/5/04	24	E	15.8	8.1	9.5	27		CG	1850
6/6/04	25	A	15.4	8.3	9.1	27		WS	1715
6/7/04	26	B	16.8	8.1	8.8	27		RD	1040
6/8/04	27	C	15.8	8.1	9.2	27		RD	1127
6/9/04	28	D	15.8	8.1	8.6	27		RD	0851

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - 4**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	18.4	8.2	8.1	26		RD	1348
5/13/04	1	B	17.2	8.1	8.6	26		CG	1500
5/14/04	2	C	17.4	8.1	8.3	26		CG	1100
5/15/04	3	D	14.5	8.1	8.4	26		JH	1900
5/16/04	4	E	15.1	8.1	8.5	26		JH	1700
5/17/04	5	A	18.2	8.1	8.0	25		RD	1139
5/18/04	6	B	15.9	8.1	8.8	26		RD	0856
5/19/04	7	C	17.0	8.1	8.1	27		RD	1325
5/20/04	8	D	16.0	8.1	8.2	27		RD	0931
5/21/04	9	E	17.7	8.1	8.0	26		RD	1122
5/22/04	10	A	16.0	8.1	8.3	26		WS	13.45
5/23/04	11	B	16.4	8.1	8.0	26		WS	1323
5/24/04	12	C	17.1	8.2	8.5	26		RD	1112
5/25/04	13	D	15.6	8.1	8.4	27		RD	1401
5/26/04	14	E	17.5	8.1	8.1	26		CG	1030
5/27/04	15	A	16.0	8.1	8.3	26		CG	0925
5/28/04	16	B	17.3	8.0	8.9	25		CG	1105
5/29/04	17	C	19.1	8.1	8.5	25		TT	0930
5/30/04	18	D	15.4	8.1	8.5	26		TT	0930
5-31-04	19	E	16.0	8.1	8.2	26		JH	1050
6/1/04	20	A	16.0	8.2	8.7	26		CG	0850
6/2/04	21	B	18.1	8.1	8.4	26		RD	0922
6/3/04	22	C	16.2	8.1	8.6	27		CG	0835
6/4/04	23	D	17.3	8.1	8.4	26		CG	0925
6/5/04	24	E	15.8	8.2	9.3	27		CG	1850
6/6/04	25	A	14.9	8.3	9.3	26		WS	17.15
6/7/04	26	B	17.2	8.1	8.8	27		RD	1041
6/8/04	27	C	15.6	8.1	9.1	27		RD	1128
6/9/04	28	D	15.2	8.1	8.8	27		RD	0852

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - DUPE**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
5/12/04	0	A	18.9	8.2	8.0	26		RD	1349
5/13/04	1	B	17.2	8.1	8.6	25		CG	CG 1500
5/14/04	2	C	17.2	8.2	8.4	26		CG	1100
5/15/04	3	D	15.6	8.1	8.0	26		JH	1900
5/16/04	4	E	not recorded.						
5/17/04	5	A	17.6	8.1	8.2	25		RD	1140
5/18/04	6	B	15.6	8.1	9.0	26		RD	0858
5/19/04	7	C	16.8	8.1	8.1	26		RD	1326
5/20/04	8	D	16.7	8.1	8.1	27		RD	0933
5/21/04	9	E	19.3	8.1	7.7	26		RD	1124
5/22/04	10	A	16.6	8.1	8.1	26		WS	1347
5/23/04	11	B	16.2	8.2	8.0	26		WS	1325
5/24/04	12	C	17.1	8.2	8.3	26		RD	1114
5/25/04	13	D	16.2	8.1	8.3	27		RD	1402
5/26/04	14	E	18.2	8.1	8.0	25		CG	1030
5/27/04	15	A	16.3	8.2	8.3	26		CG	0925
5/28/04	16	B	17.2	8.0	8.9	25		CG	1505
5/29/04	17	C	16.8	8.1	8.3	25		TT	0930
5/30/04	18	D	16.5	8.1	8.2	26		TT	0930
5-31-04	19	E	16.3	8.1	8.1	26		JH	1030
6/1/04	20	A	16.6	8.2	8.7	26		CG	0850
6/2/04	21	B	17.3	8.1	8.4	26		RD	0923
6/3/04	22	C	16.4	8.1	8.5	27		CG	0835
6/4/04	23	D	17.6	8.1	8.5	27		CG	0930
6/5/04	24	E	15.8	8.1	9.3	27		CG	1855
6/6/04	25	A	15.4	8.3	9.2	26		WS	1715
6/7/04	26	B	17.3	8.1	8.8	27		RD	1043
6/8/04	27	C	15.8	8.1	9.2	27		RD	1130
6/9/04	28	D	16.4	8.1	8.6	27		RD	0854

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

CG

BIOACCUMULATION TOXICITY DATA SHEET - WATER QUALITY DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **RS - PE04**

DATE	DAY	REP	TEMP (°C)	pH (s.u.)	DO (mg/L)	SALINITY (ppt)	NH_3 (ppm) PW / OW	INIT.	TIME
6/3/04	0	A	16.1	8.1	8.8	26	—	WS	15:30
6/4/04	1	B	17.7	8.1	8.5	26		CG	0930
6/5/04	2	C	15.8	8.1	9.3	27		CG	1855
6/6/04	3	D	~~16.7~~ 16.7	8.2	9.2	26		WS	17.15
6/7/04	4	E	17.1	8.0	8.8	27		RD	1042
6/8/04	5	A	16.2	8.0	9.3	27		RD	1129
6/9/04	6	B	16.0	8.0	8.7	27		RD	0853
6/10/04	7	C	16.6	8.0	8.5	27		RD	1105
6/11/04	8	D	18.1	8.2	7.3	26		JM	1430
6/12/04	9	E	17.8	8.1	8.4	26		JM	1830
6/13/04	10	A	15.7	8.1	9.8	26		WS	1115
6/14/04	11	B	18.9	8.0	8.9	26		CG	0900
6/15/04	12	C	15.6	8.2	8.9	26		TT	1445
6/16/04	13	D	18.5	8.1	8.4	27		WS	14.05
6/17/04	14	E	15.6	8.1	9.2	27		WS	13:25
6/18/04	15	A	15.9	8.1	8.9	26		TT	~~1550~~
6/19/04	16	B	16.5	8.0	8.5	26		TT	0945
6/20/04	17	C	15.5	8.2	8.8	26		TT	~~1740~~
6/21/04	18	D	16.6	8.2	8.5	26		WS	1325
6/22/04	19	E	16.0	8.1	8.8	26		CG	1005
6/23/04	20	A	16.4	8.1	8.4	25		RD	1135
6/24/04	21	B	16.0	8.0	8.3	26		RD	0935
6/25/04	22	C	17.1	8.0	8.6	26		RD	0925
6/26/04	23	D	16.4	8.1	8.7	26		TT	~~1735~~
6/27/04	24	E	15.8	8.1	9.0	26		WS	17.10
6/28/04	25	A	16.7	8.0	8.3	26		RD	0950
6/29/04	26	B	15.8	8.0	8.9	26		CG	0900
6/30/04	27	C	17.3	8.0	8.3	25		RD	0930
7/1/04	28	D	15.8	8.0	8.7	27		RD	0900

OBSERVATION KEY

REP - Replicate
TEMP - Temperature
INIT - Tech Initials
NH3 - Ammonia
DO - Dissolved Oxygen
OW - Ammonia measured from overlaying water samples
PW - Ammonia measured from pore water samples

MACTEC Engineering and Consulting, Inc.
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QA Form: 1086
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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - CONTROL**

DATE	DAY	REPLICATE A	B	C	D	E						INIT
5/12/04	0	Loaded	20	→								CG
5/13/04	1	N	N	N	N	N						CG
5/14/04	2	N	N	N	N	N						CG
5/15/04	3	N	N	N	N	N						JA
5/16/04	4	N	N	N	N	N						JA
5/17/04	5	N	19A/1d	N	N	N						RD
5/18/04	6	N	N	N	19A/1d	N						RD
5/19/04	7	N	18A/1d	N	N	N						RD
5/20/04	8	N	N	N	N	N						RD
5/21/04	9	N	N	N	N	N						RD
5/22/04	10	N	17A/1d	N	18A/1d	N						WS
5/23/04	11	N	N	N	N	N						WS
5/24/04	12	N	N	N	N	N						RD
5/25/04	13	N	N	N	N	N						RD
5/26/04	14	N	N	N	N	N						CG
5/27/04	15	N	N	N	N	N						CG
5/28/04	16	N	N	N	N	N						CG
5/29/04	17	N	N	N	N	N						TT
5/30/04	18	N	N	N	N	N						TT
5/31/04	19	N	N	N	N	N						JA
6/1/04	20	N	N	N	N	N						CG
6/2/04	21	N	N	N	N	N						RD
6/3/04	22	N	N	N	N	N						CG
6/4/04	23	N	N	N	N	N						CG
6/5/04	24	N	N	N	N	N						CG
6/6/04	25	N	N	N	N	N						WS
6/7/04	26	N	N	N	N	N						RD
6/8/04	27	N	N	N	N	N						RD
6/9/04	28	19A/1d	17A/3d	18A/2d	18A/2d	19A/1d						CG

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

CG

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QA Form: 108G
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BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - 1**

DATE	DAY	REPLICATE A	B	C	D	E						INIT
5/12/04	0	Loaded 20 ~~N~~	~~N~~	~~N~~	~~N~~	~~N~~ 20						CG
5/13/04	1	N	N	N	N	N						CG
5/14/04	2	N	N	N	N	N						CG
5/15/04	3	N	N	N	N	N						JA
5/16/04	4	N	N	N	N	N						JA
5/17/04	5	N	19A/1d	N	N	N						RD
5/18/04	6	N	N	19A/1d	N	19A/1d						RD
5/19/04	7	N	16A/3d	N	N	18A/1d						RD
5/20/04	8	N	N	N	N	N						RD
5/21/04	9	N	N	N	N	N						RD
5/22/04	10	N	14A/2d	18A/1d	N	N						WS
5/23/04	11	N	N	N	N	N						WS
5/24/04	12	N	N	N	N	N						RD
5/25/04	13	N	12A/2d	N	N	N						RD
5/26/04	14	N	N	N	N	N						CG
5/27/04	15	N	N	N	N	N						CG
5/28/04	16	N	N	N	N	N						CG
5/29/04	17	N	N	N	N	N						TT
5/30/04	18	N	N	N	N	N						TT
5/31/04	19	N	N	N	N	N						JA
6/1/04	20	N	N	N	N	N						CG
6/2/04	21	N	N	N	N	N						RD
6/3/04	22	N	N	N	N	N						CG
6/4/04	23	N	N	N	N	N						CG
6/5/04	24	N	N	N	N	N						CG
6/6/04	25	N	N	N	N	N						WS
6/7/04	26	N	N	N	N	N						RD
6/8/04	27	N	N	N	N	N						RD
6/9/04	28	11A/9d	11A/9d	18A/2d	11A/9d	17A/3d						RD

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
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RAR - Rapid Respiration
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MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 108G
Revised: March 2004

BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

AMPLE ID: **E - PE04 - 2**

DATE	DAY	REPLICATE A	B	C	D	E						INIT
5/12/04	0	Loaded	20 →									CG
5/13/04	1	N	N	N	N	N						CG
5/14/04	2	N	N	N	N	N						CG
5/15/04	3	N	N	N	N	N						JA
5/16/04	4	N	N	N	N	N						JA
5/17/04	5	N	N	N	N	19A/1d						RD
5/18/04	6	N	19A/1d	19A/1d	N	N						RD
5/19/04	7	N	N	18A/1d	N	N						RD
5/20/04	8	N	N	N	N	N						RD
5/21/04	9	N	N	N	N	N						RD
5/22/04	10	N	N	17A/1d	N	N						WS
5/23/04	11	19A/1d	N	N	N	N						WS
5/24/04	12	N	N	N	N	N						RD
5/25/04	13	N	N	N	N	N						RD
5/26/04	14	N	N	N	N	N						CG
5/27/04	15	N	N	N	N	N						CG
5/28/04	16	N	18A/1d	N	N	N						CG
5/29/04	17	N	N	N	N	N						TT
5/30/04	18	N	N	N	N	N						TT
5/31/04	19	N	N	N	N	N						JA
6/1/04	20	N	N	N	N	N						CG
6/2/04	21	N	N	N	N	N						RD
6/3/04	22	N	N	N	N	N						CG
6/4/04	23	N	N	N	N	N						CG
6/5/04	24	N	N	N	N	N						CG
6/6/04	25	N	N	N	N	N						WS
6/7/04	26	N	N	N	N	N						RD
6/8/04	27	N	N	N	N	N						RD
6/9/04	28	12A/8d	15A/5d	14A/6d	20A	14A/6d						RD

OBSERVATION KEY

INIT - Tech Initials
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BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - 3**

DATE	DAY	REPLICATE A	B	C	D	E						INIT
5/12/04	0	Loaded	20	→	→	→						CG
5/13/04	1	N	N	N	N	N						CG
5/14/04	2	N	N	N	N	N						CG
5/15/04	3	N	N	N	N	N						JA
5/16/04	4	N	N	N	N	N						JA
5/17/04	5	N	N	N	N	N						RD
5/18/04	6	N	19A/1d	N	18A/2d	N						RD
5/19/04	7	N	N	N	N	N						RD
5/20/04	8	19A/1d	N	N	N	N						RD
5/21/04	9	N	N	N	N	N						RD
5/22/04	10	18A/1d	N	N	N	N						LWS
5/23/04	11	N	N	N	N	N						LWS
5/24/04	12	N	N	N	N	N						RD
5/25/04	13	N	N	N	N	N						RD
5/26/04	14	N	N	N	N	N						CG
5/27/04	15	N	N	N	N	N						CG
5/28/04	16	N	N	N	N	N						CG
5/29/04	17	N	N	N	N	N						TT
5/30/04	18	N	N	N	N	N						TT
5/31/04	19	N	N	N	N	N						JA
6/1/04	20	N	N	N	N	N						CG
6/2/04	21	N	N	N	N	N						RD
6/3/04	22	N	N	N	N	N						CG
6/4/04	23	N	N	N	N	N						CG
6/5/04	24	N	N	N	N	N						CG
6/6/04	25	N	N	N	N	N						LWS
6/7/04	26	N	N	N	N	N						RD
6/8/04	27	N	N	N	N	N						RD
6/9/04	28	16A/4d	15A/5d	17A/3d	16A/4d	20A						LWS

OBSERVATION KEY

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BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - 4**

DATE	DAY	REPLICATE A	B	C	D	E						INIT
5/12/04	0	Loaded 20										CG
5/13/04	1	N	N	N	N	N						CG
5/14/04	2	N	N	N	N	N						CG
5/15/04	3	N	N	N	N	N						JA
5/16/04	4	N	N	N	N	N						JA
5/17/04	5	N	N	N	19A/1d	N						RD
5/18/04	6	N	N	N	18A/1d	19A/1d						RD
5/19/04	7	N	19A/1d	N	N	17A/3d						RD
5/20/04	8	N	N	N	N	16A/1d						RD
5/21/04	9	N	N	N	N	N						RD
5/22/04	10	19A/1d	N	N	17A/1d	N						WS
5/23/04	11	N	18A/1d	N	16A/1d	15A/1d						WS
5/24/04	12	N	N	N	N	14A/1d						RD
5/25/04	13	N	N	N	N	N						RD
5/26/04	14	N	N	N	N	N						CG
5/27/04	15	N	N	N	N	N						CG
5/28/04	16	N	N	N	N	N						CG
5/29/04	17	N	N	N	N	N						TT
5/30/04	18	N	N	N	N	N						TT
5/31/04	19	N	N	N	N	N						JA
6/1/04	20	N	N	N	N	N						CG
6/2/04	21	N	N	N	N	N						RD
6/3/04	22	N	N	N	N	N						CG
6/4/04	23	N	N	N	N	N						CG
6/5/04	24	N	N	N	N	N						CG
6/6/04	25	N	N	N	N	N						WS
6/7/04	26	N	N	N	N	N						RD
6/8/04	27	N	N	N	N	N						RD
6/9/04	28	16A/4d	15A/5d	11A/9d	14A/6d	12A/8d						CG

OBSERVATION KEY

INIT - Tech Initials
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MACTEC Engineering and Consulting, Inc.
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QA Form: 108G
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BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **E - PE04 - DUPE**

DATE	DAY	REPLICATE A	B	C	D	E						INIT
5/12/04	0	Loaded	20	→								CG
5/13/04	1	N	N	N	N	N						CG
5/14/04	2	N	N	N	N	N						CG
5/15/04	3	N	N	N	N	N						JA
5/16/04	4	N	N	N	N	N						JA
5/17/04	5	N	N	N	19A/1d	19A/1d						RD
5/18/04	6	N	19A/1d	N	N	N						RD
5/19/04	7	19A/1d	N	N	N	17A/2d						RD
5/20/04	8	N	N	N	N	N						RD
5/21/04	9	N	N	N	N	N						RD
5/22/04	10	N	N	N	18A/1d	N						WS
5/23/04	11	N	N	N	N	N						WS
5/24/04	12	N	N	N	N	N						RD
5/25/04	13	18A/1d	N	N	N	N						RD
5/26/04	14	N	N	N	N	N						CG
5/27/04	15	N	N	N	N	N						CG
5/28/04	16	N	N	N	N	N						CG
5/29/04	17	N	N	N	N	N						TT
5/30/04	18	N	N	N	N	N						TT
5/31/04	19	N	N	N	N	N						JA
6/1/04	20	N	N	N	N	N						CG
6/2/04	21	N	N	N	N	N						RD
6/3/04	22	N	N	N	N	N						CG
6/4/04	23	N	N	N	N	N						CG
6/5/04	24	N	N	N	N	N						CG
6/6/04	25	N	N	N	N	N						WS
6/7/04	26	N	N	N	N	N						RD
6/8/04	27	N	N	N	N	N						RD
6/9/04	28	12A/8d	14A/6d	12A/8d	15A/5d	13A/7d						CG

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
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BIOACCUMULATION TOXICITY DATA SHEET - SURVIVAL DATA

SPONSOR: PORT EVERGLADES
TEST SUBSTANCE: SEDIMENT

PROJECT NUMBER: 6063040017.0400
TEST SPECIES: *Nereis virens*

SAMPLE ID: **RS - PE04**

DATE	DAY	REPLICATE A	B	C	D	E						INIT
6/3/04	0	Loaded	20	→	→	→						CG
6/4/04	1	N	N	N	N	N						CG
6/5/04	2	N	N	N	N	N						CG
6/6/04	3	N	N	N	N	N						WS
6/7/04	4	N	N	N	N	N						RD
6/8/04	5	N	N	N	N	N						RD
6/9/04	6	N	N	N	N	N						CG
6/10/04	7	N	N	19A/1d	N	N						RD
6/11/04	8	N	N	N	N	N						JA
6/12/04	9	N	N	N	N	N						JA
6/13/04	10	N	N	N	N	N						WS
6/14/04	11	N	N	N	N	N						CG
6/15/04	12	N	N	N	N	N						TT
6/16/04	13	N	N	N	N	N						JA
6/17/04	14	N	N	N	N	N						WS
6/18/04	15	N	N	N	N	N						TT
6/19/04	16	N	N	N	N	N						TT
6/20/04	17	N	N	N	N	N						TT
6/21/04	18	N	N	N	N	N						WS
6/22/04	19	N	N	N	N	N						CG
6/23/04	20	N	N	N	N	N						RD
6/24/04	21	N	N	N	N	N						RD
6/25/04	22	N	N	N	N	N						RD
6/26/04	23	N	N	N	N	N						TT
6/27/04	24	N	N	N	N	N						WS
6/28/04	25	N	N	N	N	N						RD
6/29/04	26	N	N	N	N	N						CG
6/30/04	27	N	N	N	N	N						RD
7/1/04	28	19A/1d	20A	19A/1d	18A/2d	20A						CG

OBSERVATION KEY

INIT - Tech Initials
A - Number of Organisms Alive
D - Number of Organisms Dead
NF - Number of Organisms Not Found
LE - Loss of Equilibrium
HYP - Hyperactive
AS - Organisms at Surface of Water
RAR - Rapid Respiration
LT - Light Pigmentation

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097RTG
Revised: March 2004

REFERENCE TOXICANT TEST DESCRIPTION SHEET

SPONSOR: MISC.

PROJECT NUMBER: REF TOX

TEST MATERIAL

Amount of $CuSO_4$: 0.1 (g)

Volume of Milli-Q Water: 1000 (mL)

Date Prepared: 5/12/04

Batch Number: —

PROTOCOL/GUIDELINES FOLLOWED:

S-007

Test Concentration Based On: ( ) Active Ingredient (X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Nereis virens*

Lot Number: 2004-7

Age/Life Stage: adult

Date Acclimation/Maintenance Began: 5/12/04

See Page 111 of Organisms Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: <1%

TEST CONDITIONS

( ) Range Finder (X) Static

(X) Screening ( ) Flow - Through

( ) Definitive

Lighting: (X) Fluorescent ( ) Incandescent

Photoperiod: 16 Hours Light, 8 Hours Dark

Test Duration: 96 hrs.

Test Area Used: Water Bath

Test Temperature: ~~20 ± 2°C~~ 18 ± 2°C

Test Salintiy: 25 ± 2 ppt

Replicates per Concentration: 2

Organisms per Replicate: 5

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions (cm): 10lengthx10widthx15hieght

Test Solution Height (cm): 12

Test Vessels: ( ) Open (X) Covered

Test Container Volume: 1.0 L

Test Solution Volume: 0.9 L

TEST SOLUTION PREPARATION

Test Concentration (Units: g/L or ppt)	Control	156	312	624	1248	2496	4992	
Volume of Dilution Water Added (mL)	1800	1797.2	1794.4	1788.8	1778	1755	1710.2	
Volume of Effluent/ Stock Added (mL)	0	2.8	5.6	11.2	22	45	89.8	

ADDITIONAL OBSERVATIONS: All vessels have airlines which were started at test initiation. CG

DATA BY: CG 5/12/04

CG

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TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

PAGE:
QA FORM NO: 097RTNV REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 0 – 1

Client: Misc.	Project Number: Ref Tox	Species: Nereis virens

DAY 0 REF TOXICANT: $CuSO_4$

Nominal Concentration (mg/L)	Date: 5-12-04				Time: 1900		Analyst: RD	
	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	5 load	5 load	N	N	19.0	25	7.8	8.2
156	↓	↓	↓	↓	19.7	25	7.5	8.2
312	↓	↓	↓	↓	19.8	25	7.5	8.2
624	↓	↓	↓	↓	19.8	25	7.5	8.2
1248	↓	↓	↓	↓	20.2	25	7.5	8.2
2496	↓	↓	↓	↓	20.3	25	7.4	8.2
4992	↓	↓	↓	↓	20.6	25	7.4	8.1

DAY 1 Date: 5/13/04 Time: 1505 Analyst: CG

Nominal Concentration	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C) B	Sal (ppt) B	DO (mg/L) B	pH B
Control	5	5	N	N	17.2	25	6.7	7.6
156	5	5	N	N	17.2	25	5.6	7.4
312	5	5	N	N	17.2	25	5.0	7.3
624	5	5	N	N	17.2	26	5.7	7.5
1248	5	5	N	N	17.3	26	5.9	7.6
2496	5	5	N	N	17.3	26	6.4	7.4
4992	0	0	~~N~~ SD CG	~~N~~ SD CG	17.5	25	3.0	7.1

CG

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TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

PAGE:
QA FORM NO: 097RTNV REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 2 – 3

Client: Misc.	Project Number: Ref Tox	Species: Nereis virens

REF TOXICANT: $CuSO_4$

DAY 2	**Date:** 5/14/04				**Time:** 0800		**Analyst:** CG	
Nominal Concentration	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	5	5	N	N	16.4	25	7.9	7.9
156	5	5	N	N	16.3	26	7.6	7.8
312	5	5	N	N	16.3	26	7.3	7.5
624	5	5	N	N	16.2	26	7.3	7.8
1248	5	5	N	N	16.1	26	7.8	7.9
2496	5	5	N	N	16.2	26	6.7	7.7
4992	0	0	N	N	–	–	–	–

DAY 3	**Date:** 5/15/04				**Time:** 18:00		**Analyst:** TT	
Nominal Concentration	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C) B	Sal (ppt) B	DO (mg/L) B	pH B
Control	5	5	N	N	16.0	26	6.9	7.8
156	5	5	N	N	16.0	26	4.4	~~7.9~~ 7.5 TT
312	5	5	N	N	16.0	26	1.5	7.3
624	5	5	N	N	16.0	26	6.0	7.6
1248	4	3	1D	2D	16.0	25	4.6	7.6
2496	4	4	1D	1D	16.0	24	~~2.7~~	7.4
4992	0	0	N	N	–	–	–	–

CG

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TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

PAGE:
QA FORM NO: 097RTNV REFTOX
Revised: March 2001

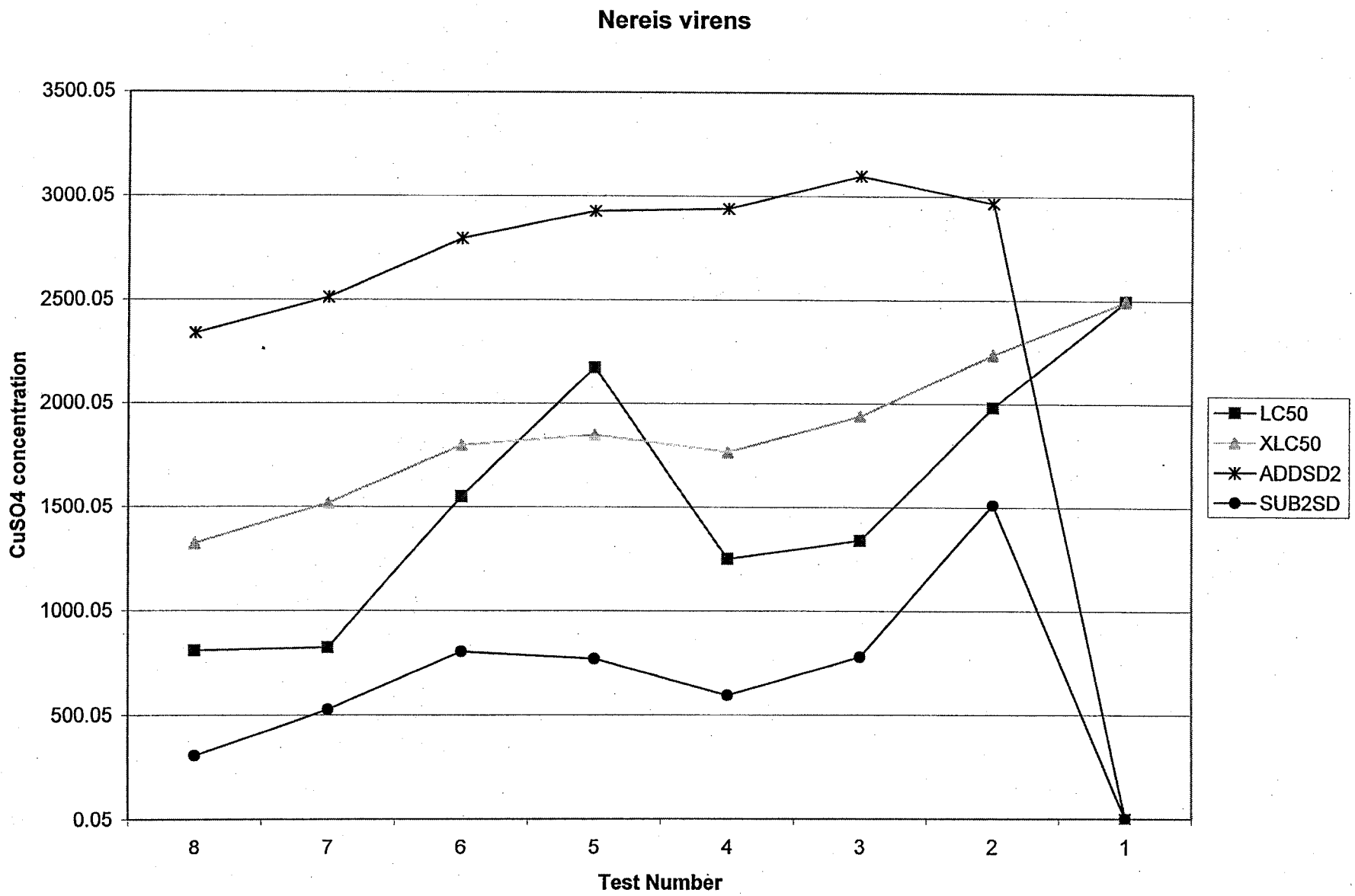
REFERENCE TOXICANT TEST DATA: DAY 4 and Summary								
Client: Misc.			Project Number: Ref Tox				Species: Nereis virens	
REF TOXICANT: $CuSO_4$								
DAY 4	**Date:** 5/16/04				**Time:** 17:15		**Analyst:** JM	
Nominal Concentration	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	5	5	N	N	16.7	26	7.1	7.9
156	2	5	30	N	16.0	26	1.8	7.5
312	3	5	20	N	16.1	26	1.1	7.6
624	4	1	10	40	15.7	26	5.4	7.6
1248	3	2	10	10	16.0	26	5.1	7.6
2496	0	0	ud	ud	16.1	26	1.2	7.1
4992	0	0	N	N	–	–	–	–

SUMMARY

Nominal Concentration	Number Dead A	Number Dead B
Control	0	
156	3	
312	2	
624	5	
1248	5	
2496	10	
4992	10	

COMMENTS:

CG


Nereis virens
3500.05
3000.05
2500.05
2000.05
1500.05
1000.05
500.05
0.05
CuSO4 concentration
8
7
6
5
4
3
2
1
Test Number
LC50
XLC50
ADDSD2
SUB2SD

TRIMMED SPEARMAN-KARBER METHOD. VERSION 1.5

DATE: 5/12/04 TEST NUMBER: REF TOX DURATION: 96 H
TOXICANT : CuSO4
SPECIES: N. virens

RAW DATA:

Concentration (mg/L)	Number Exposed	Mortalities
.00	10	0
156.00	10	3
312.00	10	2
624.00	10	5
1248.00	10	5
2496.00	10	10
4992.00	10	10

SPEARMAN-KARBER TRIM: 25.00%

SPEARMAN-KARBER ESTIMATES: LC50: 809.23
95% LOWER CONFIDENCE: 438.53
95% UPPER CONFIDENCE: 1493.30

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING.
ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

MACTEC Engineering and Consulting, Inc.
Gainesville, FL

QA Form: 097RTG
Revised: March 2004

REFERENCE TOXICANT TEST DESCRIPTION SHEET

SPONSOR: MISC.

PROJECT NUMBER: REF TOX

TEST MATERIAL

Amount of $CuSO_4$: 0.1 (g)

Volume of Milli-Q Water: 1000 (mL)

Date Prepared: 6/3/04

Batch Number: —

PROTOCOL/GUIDELINES FOLLOWED:

SOP# S-007

Test Concentration Based On: ( ) Active Ingredient (X) Whole Material

TEST ORGANISM HISTORY

Test Species: *Nereis virens*

Lot Number: 2004-15

Age/Life Stage: adult

Date Acclimation/Maintenance Began: 6/3/04

See Page 111 of Organisms Receipt Log for Data.

Mortality (%) During 48 hours Prior to Test Initiation: <1%

TEST CONDITIONS

( ) Range Finder (X) Static

(X) Screening ( ) Flow - Through

( ) Definitive

Lighting: (X) Fluorescent ( ) Incandescent

Photoperiod: 16 Hours Light, 8 Hours Dark

Test Duration: 96 hrs.

Test Area Used: Water Bath

Test Temperature: 18 ± 2°C

Test Salintiy: 25 ± 2 ppt

Replicates per Concentration: 2

Organisms per Replicate: 5

Dilution Water: Natural Filtered Seawater

TEST VESSELS

Dimensions (cm):10lengthx10widthx15hieght

Test Solution Height (cm): 12

Test Vessels: ( ) Open (X) Covered

Test Container Volume: 1.0 L

Test Solution Volume: 0.9 L

TEST SOLUTION PREPARATION

Test Concentration (Units: µg/L or ppt)	Control	156	312	624	1248	2496	4992	
Volume of Dilution Water Added (mL)	1800	1797.2	1794.4	1788.8	1778	1755	1710.2	
Volume of Effluent/ Stock Added (mL)	0	2.8	5.6	11.2	22	45	89.8	

ADDITIONAL OBSERVATIONS: Reference Toxicant Test for (Reference sample) new batch of organisms.

DATA BY: CG 6/3/04

CG

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GAINESVILLE, FLORIDA

PAGE:
QA FORM NO: 097RTNV REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 0 – 1

Client: Misc.	Project Number: Ref Tox	Species: Nereis virens

DAY 0 REF TOXICANT: CuSO4

Nominal Concentration (mg/L)	Date: 6/3/04		Time: 14:05		Analyst: WS			
	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	loaded 5		5	5	19.6	26	8.0	8.1
156			5	5	19.5	26	8.1	8.1
312			5	5	19.3	26	8.0	8.1
624			5	5	19.5	25	8.0	8.1
1248			5	5	19.3	26	8.1	8.1
2496			5	5	19.7	25	7.9	8.0
4992			5	5	19.2	26	8.1	8.1

DAY 1 Date: 6/4/05 Time: 0835 Analyst: CG

Nominal Concentration	# Alive A	# Alive B	Observ. A	Observ. B	Temp. (°C) B	Sal (ppt) B	DO (mg/L) B	pH B
Control	5	5	N	N	16.9	26	7.4	7.6
156	5	5	N	N	17.2	26	8.0	7.8
312	5	5	N	N	17.0	26	8.0	7.8
624	5	5	N	N	17.2	26	7.6	7.7
1248	5	5	N	N	17.1	26	7.6	7.9
2496	5	5	N	N	17.4	25	8.1	7.9
4992	5	5	N	N	17.3	25	8.1	7.9

CG

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GAINESVILLE, FLORIDA

PAGE:
QA FORM NO: 097RTNV REFTOX
Revised: March 2001

REFERENCE TOXICANT TEST DATA: DAY 2 – 3								
Client: Misc.			Project Number: Ref Tox				Species: Nereis virens	
REF TOXICANT: $CuSO_4$								
DAY 2	**Date:** 6/5/04				**Time:** 1850		**Analyst:** CG	
Nominal Concentration	A # Alive	B	A Observ.	B	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	5	5	N	N	16.0	26	8.5	8.0
156	5	5	N	N	15.8	27	8.5	8.0
312	5	5	N	N	16.0	27	8.4	8.1
624	5	5	N	N	16.0	27	8.3	8.0
1248	5	5	N	N	16.1	27	8.4	8.0
2496	5	5	N	N	16.0	27	7.7	6.3
4992	5	5	N	N	15.8	27	6.1	7.3
DAY 3	**Date:** 6/6/04				**Time:** 1645		**Analyst:** WS	
Nominal Concentration	A # Alive	B	A Observ.	B	Temp. (°C) B	Sal (ppt) B	DO (mg/L) B	pH B
Control	5	5	N	N	16.3	26	8.4	8.0
156	5	5	N	N	16.0	26	8.6	8.1
312	5	5	N	N	15.7	27	8.8	8.2
624	5	5	N	N	15.8	27	8.5	8.1
1248	5	5	N *	N *	15.7	27	8.7	8.2
2496	5	5	N *	N *	16.1	27	4.3	7.36
4992	5	5	N *	N *	16.1	27	3.6	7.58

* very cloudy

CG

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TOXICOLOGY LABORATORY
GAINESVILLE, FLORIDA

PAGE:
QA FORM NO: 097RTNV REFTOX
Revised: March 2001

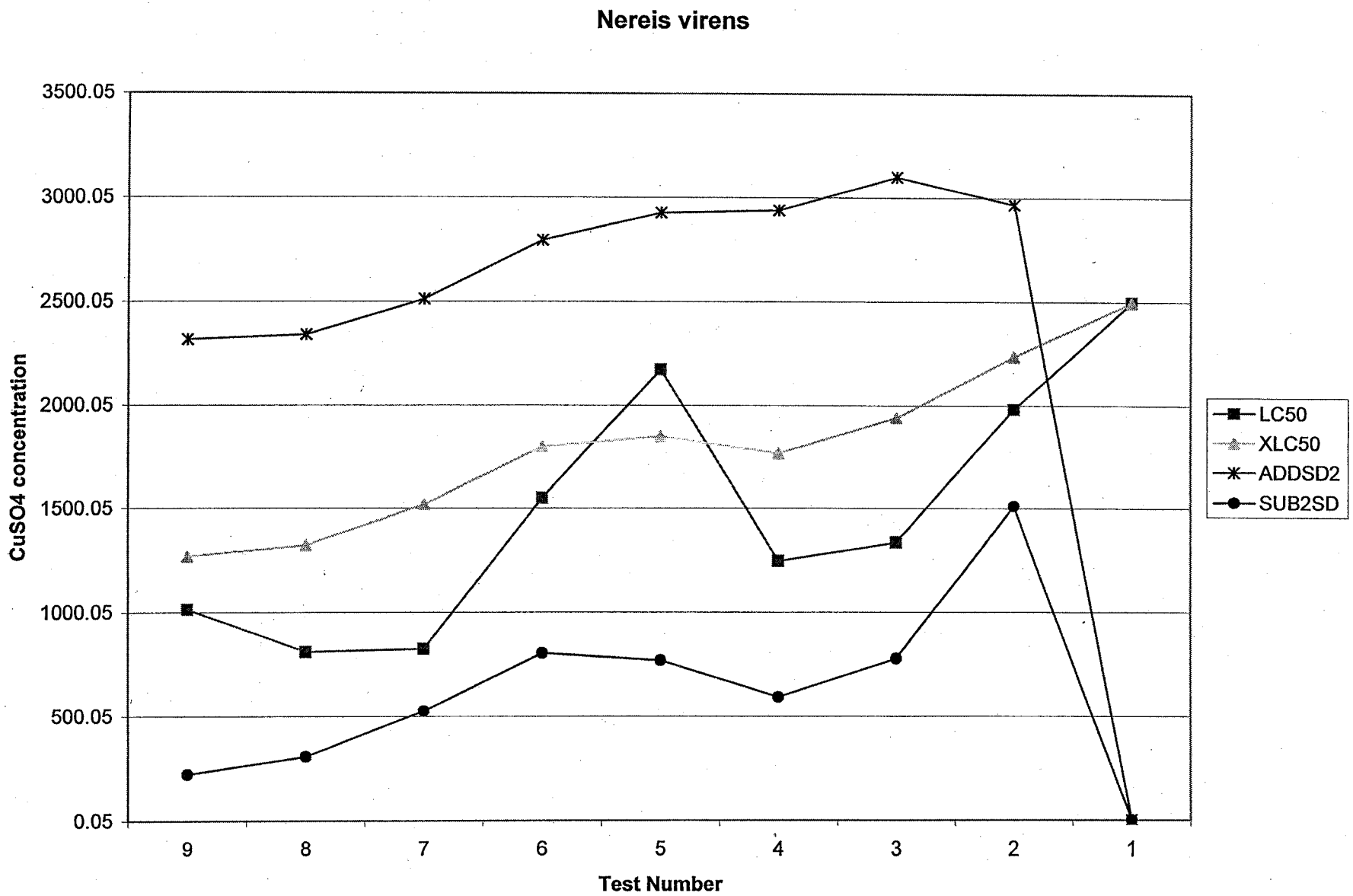
REFERENCE TOXICANT TEST DATA: DAY 4 and Summary								
Client: Misc.			Project Number: Ref Tox				Species: Nereis virens	
REF TOXICANT: $CuSO_4$								
DAY 4	**Date:** 6/7/04				**Time:** 1045		**Analyst:** RD	
Nominal Concentration	A # Alive	B	A Observ.	B	Temp. (°C) A	Sal (ppt) A	DO (mg/L) A	pH A
Control	5	5	N	N	16.8	27	8.3	7.9
156	5	5	N	N	16.8	27	8.4	8.0
312	5	4	N	1d	16.6	27	8.4	7.9
624	5	4	N	1d	16.7	27	8.3	7.9
1248	3	1	2d	4d	16.7	27	5.4	7.5
2496	0	0	5d	5d	17.0	27	6.2	7.5
4992	0	0	5d	5d	17.2	27	5.0	7.6

SUMMARY

Nominal Concentration	Number Dead	
Control	~~10~~ CG 0	
156	~~10~~ CG 0	
312	1	
624	1	
1248	6	
2496	10	
4992	10	

COMMENTS:

CG


Nereis virens
3500.05
3000.05
2500.05
2000.05
1500.05
1000.05
500.05
0.05
CuSO4 concentration
9
8
7
6
5
4
3
2
1
Test Number
LC50
XLC50
ADDSD2
SUB2SD

TRIMMED SPEARMAN-KARBER METHOD, VERSION 1.5

DATE: 6/3/04 TEST NUMBER: REF TOX DURATION: 96 H
TOXICANT : CuSO4
SPECIES: N. virens

RAW DATA: ---	Concentration (mg/L)	Number Exposed	Mortalities
	.00	10	0
	156.00	10	0
	312.00	10	1
	624.00	10	1
	1248.00	10	6
	2496.00	10	10
	4992.00	10	10

SPEARMAN-KARBER TRIM: .00%

SPEARMAN-KARBER ESTIMATES: LC50: 1013.69
95% LOWER CONFIDENCE: 762.99
95% UPPER CONFIDENCE: 1346.76

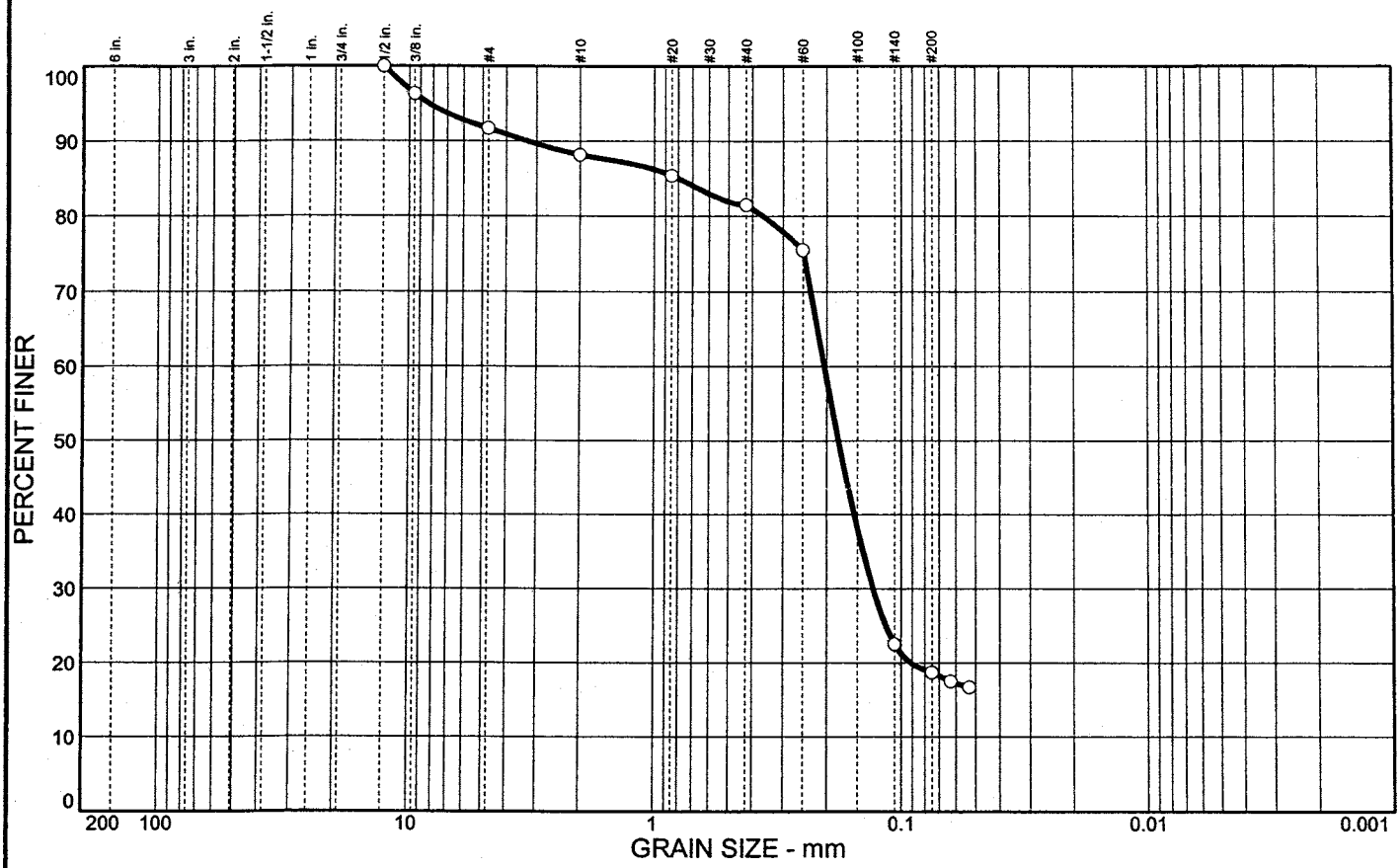
APPENDIX F

Physical Testing Data

APPENDIX F

Physical Testing Data

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		8.3	73.0	18.7		SM	A-2-4(0)		

SIEVE inches size	PERCENT FINER ○		
.5	100.0		
.375	96.3		
	GRAIN SIZE		
D_{60}	0.205		
D_{30}	0.130		
D_{10}			
	COEFFICIENTS		
C_C			
C_U			

SIEVE number size	PERCENT FINER ○		
#4	91.7		
#10	88.2		
#20	85.4		
#40	81.5		
#60	75.5		
#140	22.5		
#200	18.7		
#230	17.5		
#270	16.7		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, little silt, few fine gravel size shlee fragments & medium sand size shell fragments, trace of coarse sand size shell fragments, dark brown

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity: 2.688

○ Source: E-PE04-1

Sample No.: 254314

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

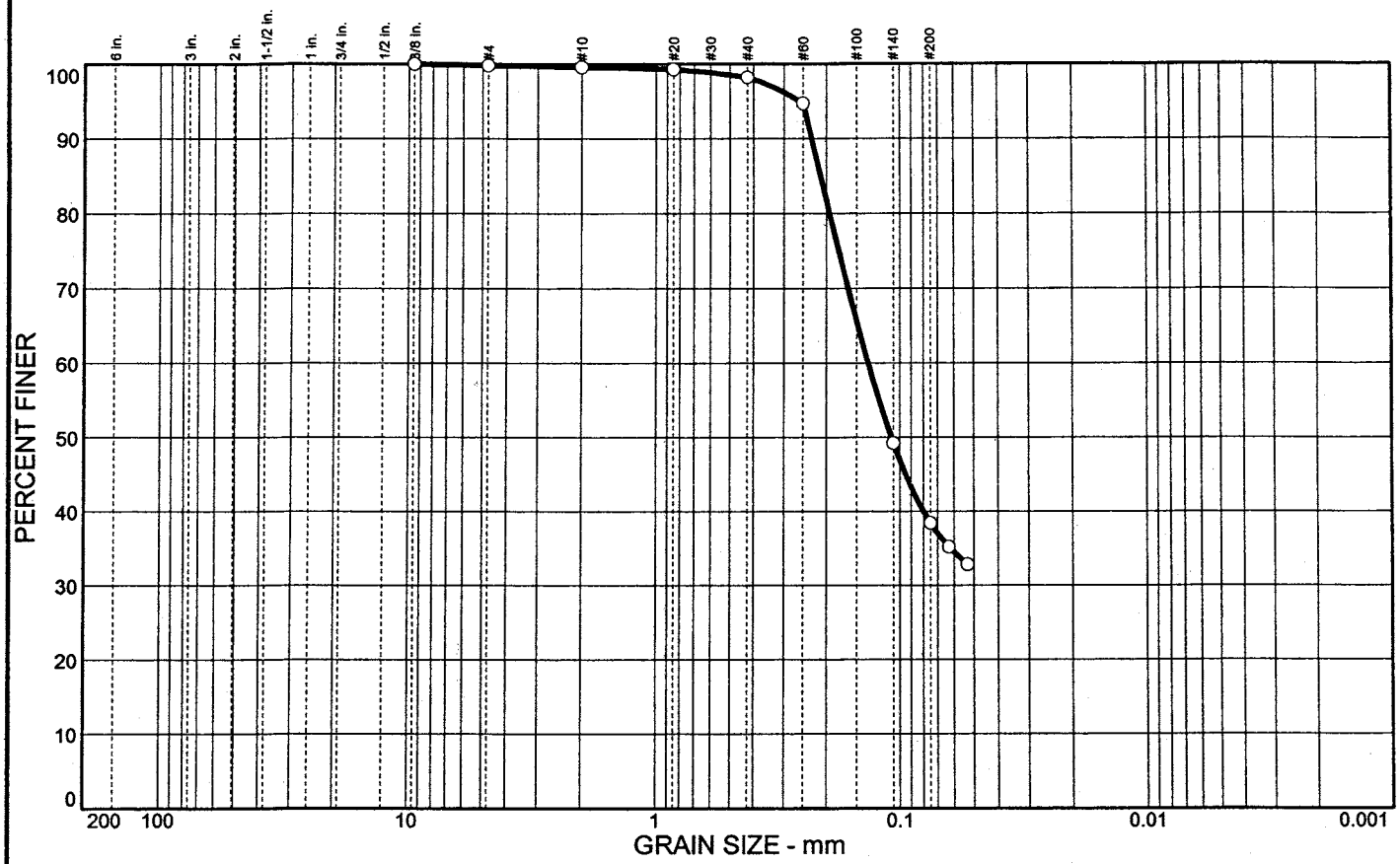
Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Jeffrey S. Samuels 5-18-04

Jeffrey S. Samuels, P.E.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		0.2	61.4	38.4		SM	A-4(0)	32	38

SIEVE inches size	PERCENT FINER ○		
.375	100.0		
	GRAIN SIZE		
D_{60}	0.135		
D_{30}			
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	99.8		
#10	99.6		
#20	99.3		
#40	98.2		
#60	94.7		
#140	49.2		
#200	38.4		
#230	35.2		
#270	32.8		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, some silt, brown-gray

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity: 2.717

○ Source: E-PE04-2

Sample No.: 254316

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

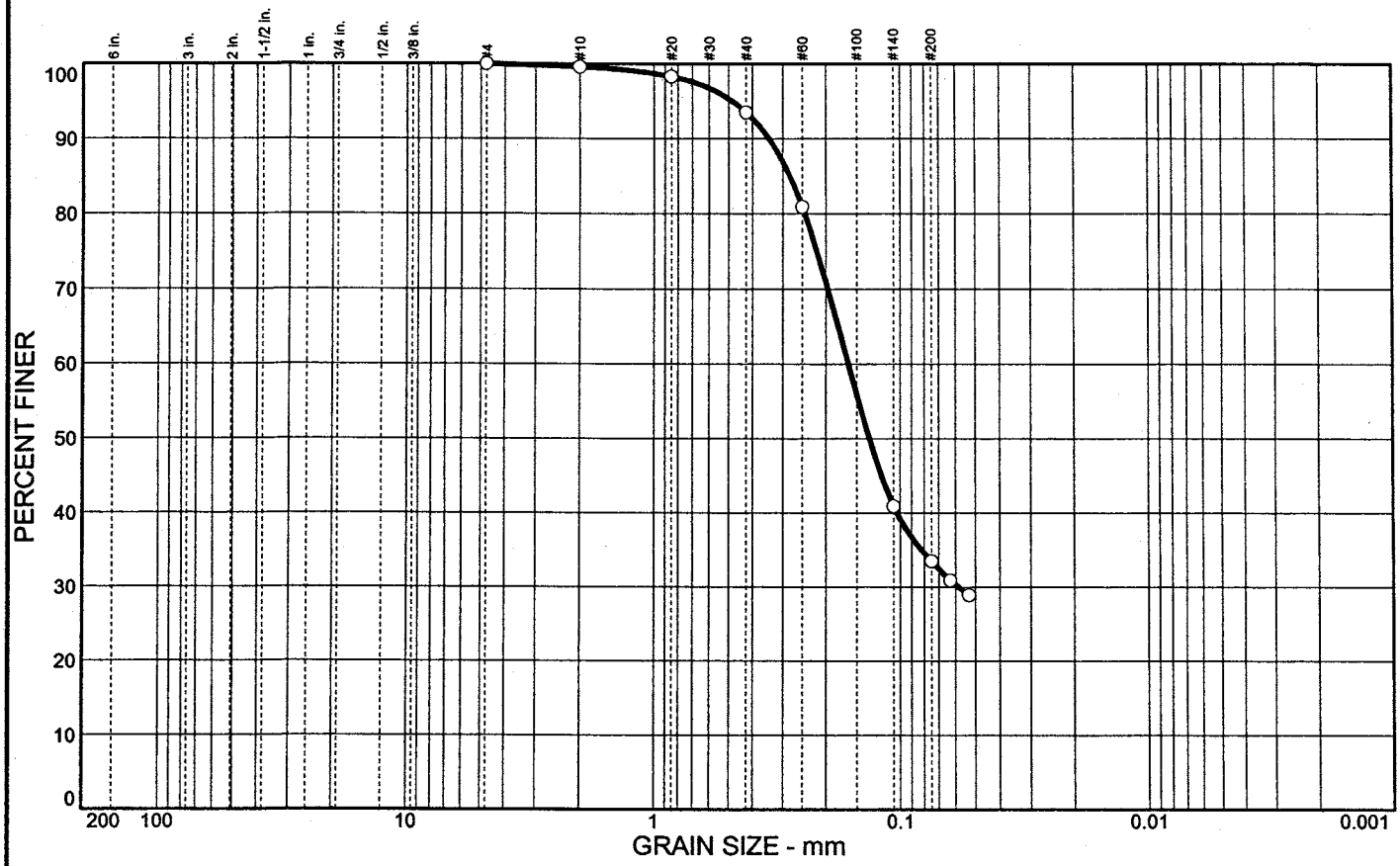
Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Jeffrey S. Samuels 5-18-04

Jeffrey S. Samuels, P.E.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			66.5	33.5		SM	A-2-4(0)	28	31

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.162		
D_{30}	0.0586		
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#10	99.6		
#20	98.3		
#40	93.5		
#60	80.9		
#140	40.9		
#200	33.5		
#230	30.9		
#270	28.9		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, some silt, few medium sand size shell fragments, brown-gray

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity 2.701

○ Source: E-PE04-3

Sample No.: 254317

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

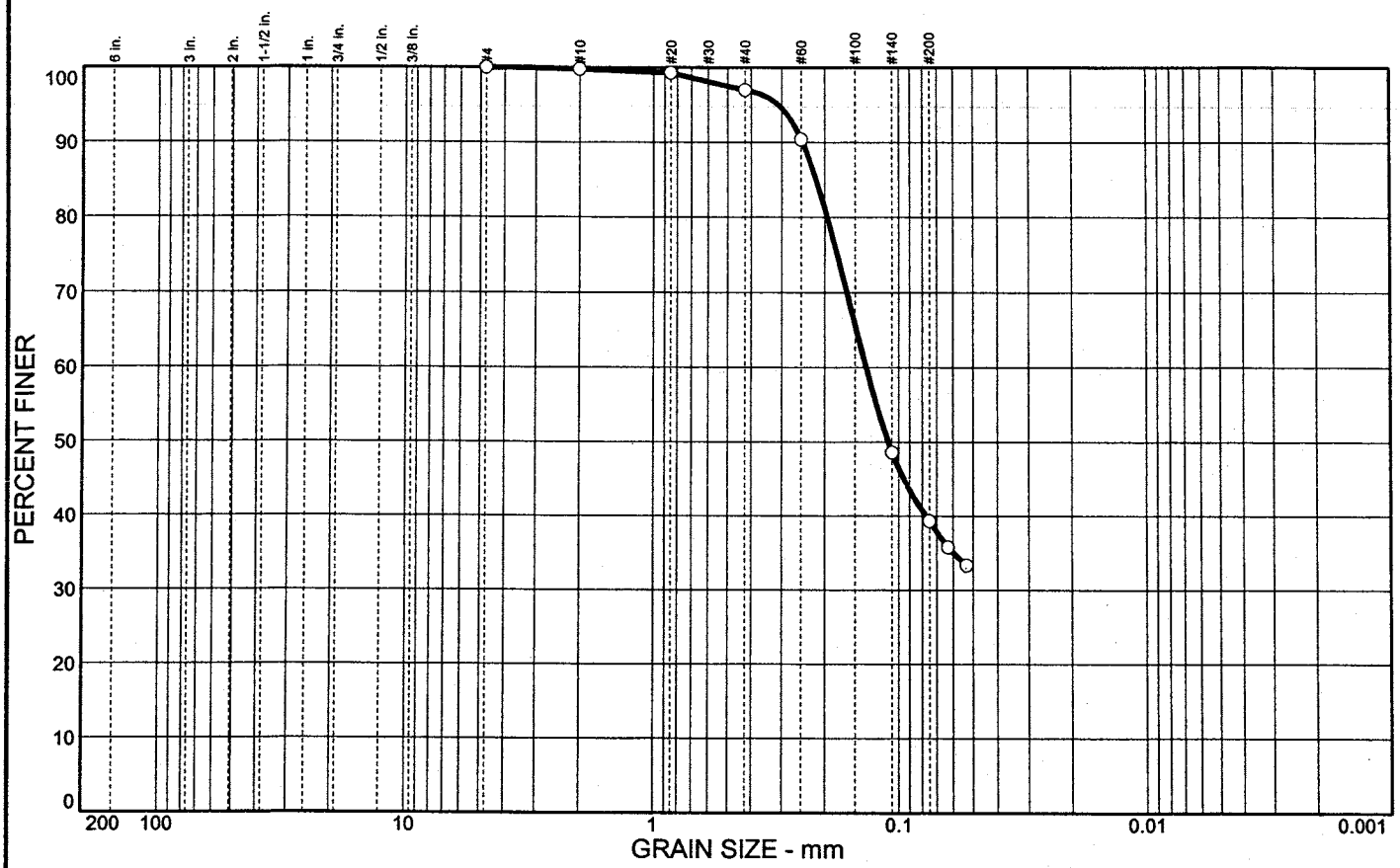
Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Jeffrey S. Samuels 5-18-09

Jeffrey S. Samuels, P.E.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			60.7	39.3		SM	A-4(0)	35	37

SIEVE inches size	PERCENT FINER ○		
	GRAIN SIZE		
D_{60}	0.135		
D_{30}			
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#10	99.8		
#20	99.3		
#40	97.0		
#60	90.4		
#140	48.6		
#200	39.3		
#230	35.8		
#270	33.3		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, some silt, trace of medium sand size shell fragments, gray

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity: 2.710

○ Source: E-PE04-4

Sample No.: 254318

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

Project: USACE Port Everglades

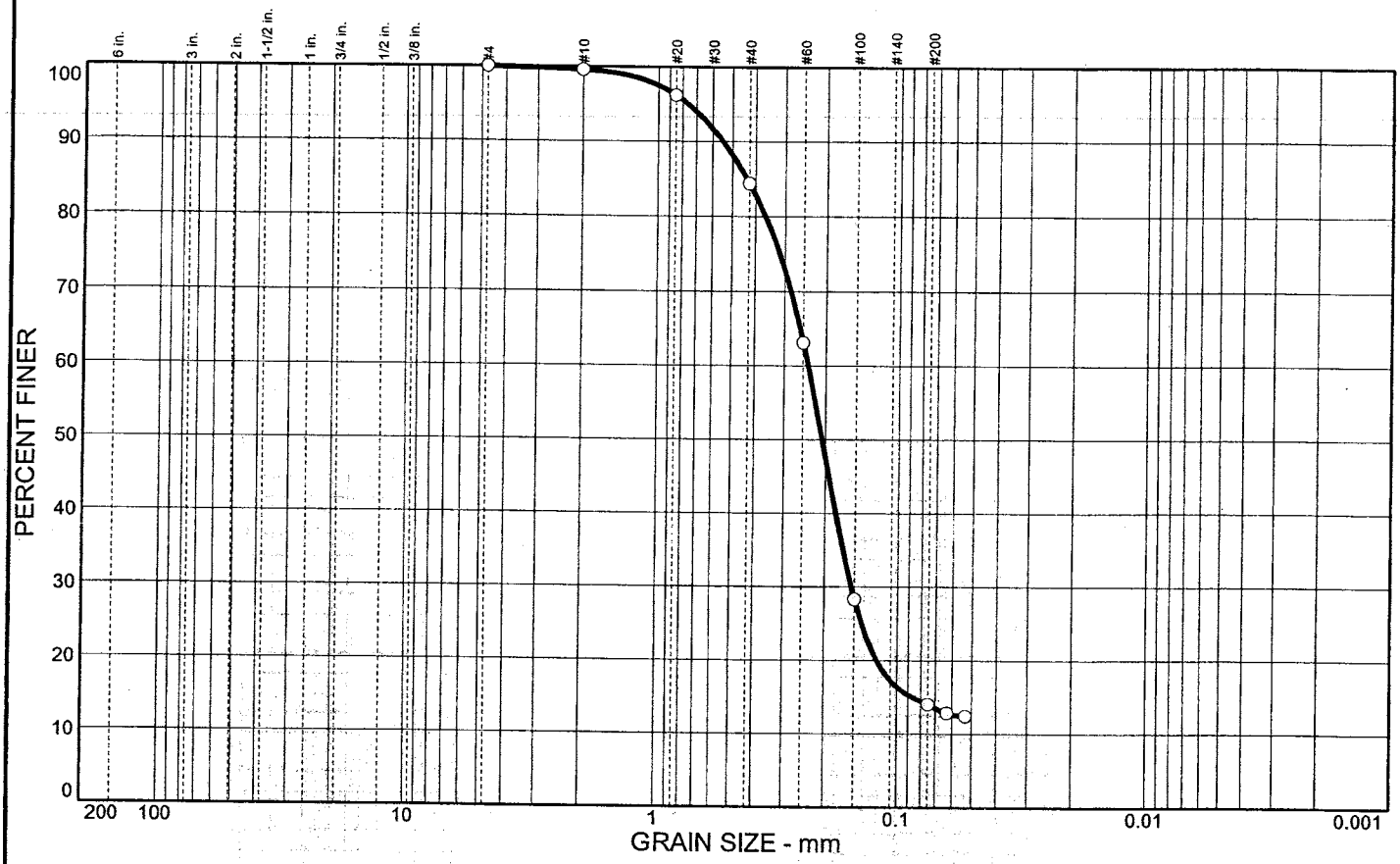
Project No.: 6738-04-4477-02

Jeffrey S. Samuels 5-18-04

Reviewed By:

Jeffrey S. Samuels, P.E.

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○			86.0	14.0		SM	A-2-4(0)		

SIEVE inches size	PERCENT FINER ○		
GRAIN SIZE			
D_{60}	0.238		
D_{30}	0.155		
D_{10}			
COEFFICIENTS			
C_c			
C_u			

○ Source: RS-PE04

SIEVE number size	PERCENT FINER ○		
#4	100.0		
#10	99.6		
#20	96.2		
#40	84.4		
#60	63.1		
#100	28.3		
#200	14.0		
#230	12.8		
#270	12.4		

Sample No.: 254319

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, little medium sand size shell fragments, little silt, light brown

REMARKS:

○ Specific Gravity: 2.708; Date Tested: 6/8/04

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

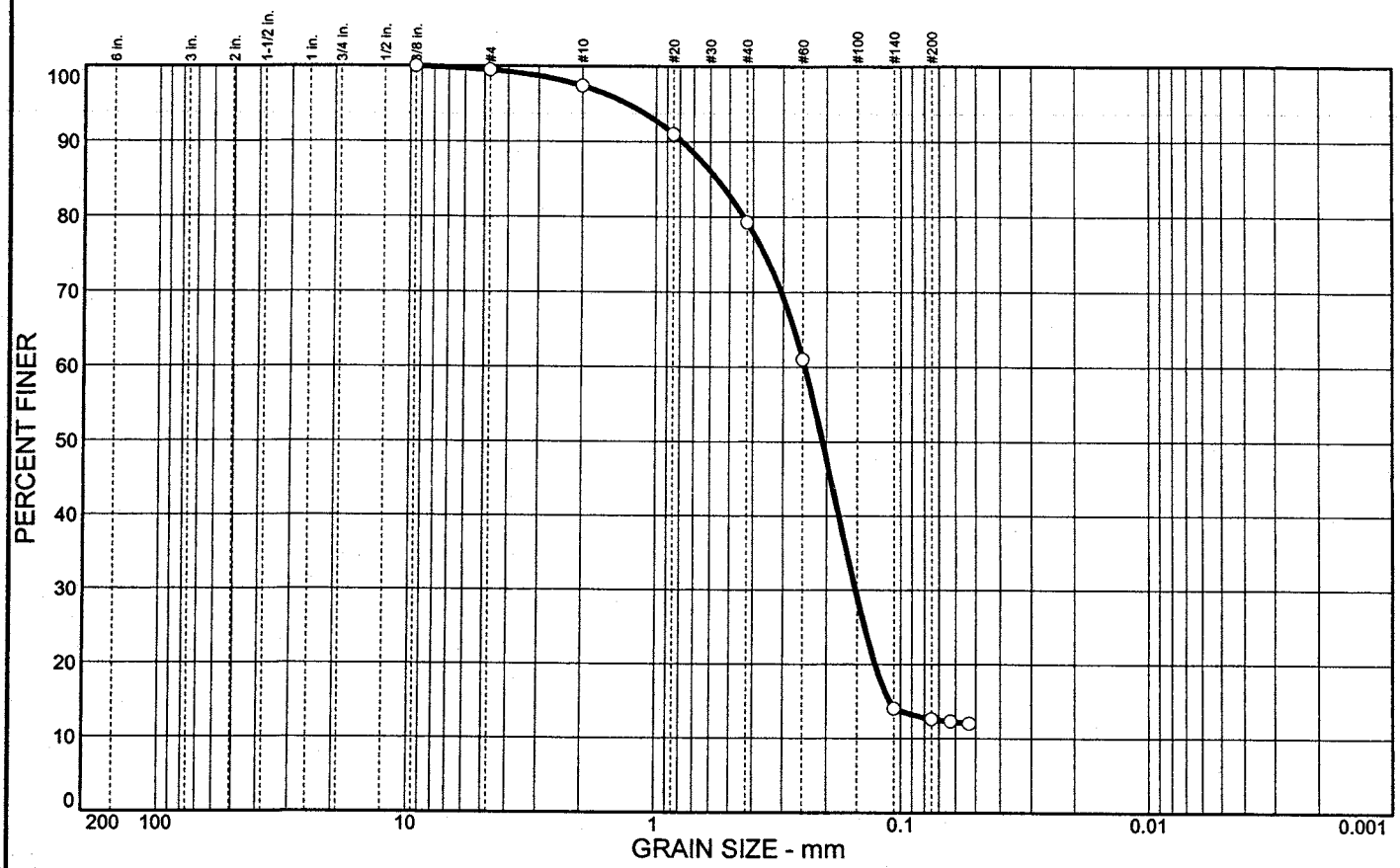
Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Michael J. Hahn

Michael J. Hahn

Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
○		0.5	86.9	12.6		SM	A-2-4(0)		

SIEVE inches size	PERCENT FINER ○		
.375	100.0		
	GRAIN SIZE		
D_{60}	0.245		
D_{30}	0.152		
D_{10}			
	COEFFICIENTS		
C_c			
C_u			

SIEVE number size	PERCENT FINER ○		
#4	99.5		
#10	97.4		
#20	91.0		
#40	79.3		
#60	61.0		
#140	14.0		
#200	12.6		
#230	12.3		
#270	12.0		

SOIL DESCRIPTION

○ SAND, mostly fine sand size quartz, little medium sand size shell fragments & silt, trace of coarse sand size shell fragments, dark gray

REMARKS:

○ Date Tested: 5/13/04; Specific Gravity: 2.696

○ Source: E-PE04-Control

Sample No.: 254320

MACTEC ENGINEERING. AND CONSULTING, INC.

Client: PPB Environmental

Project: USACE Port Everglades

Project No.: 6738-04-4477-02

Reviewed By: Jeffrey S. Samuels 5-18-04

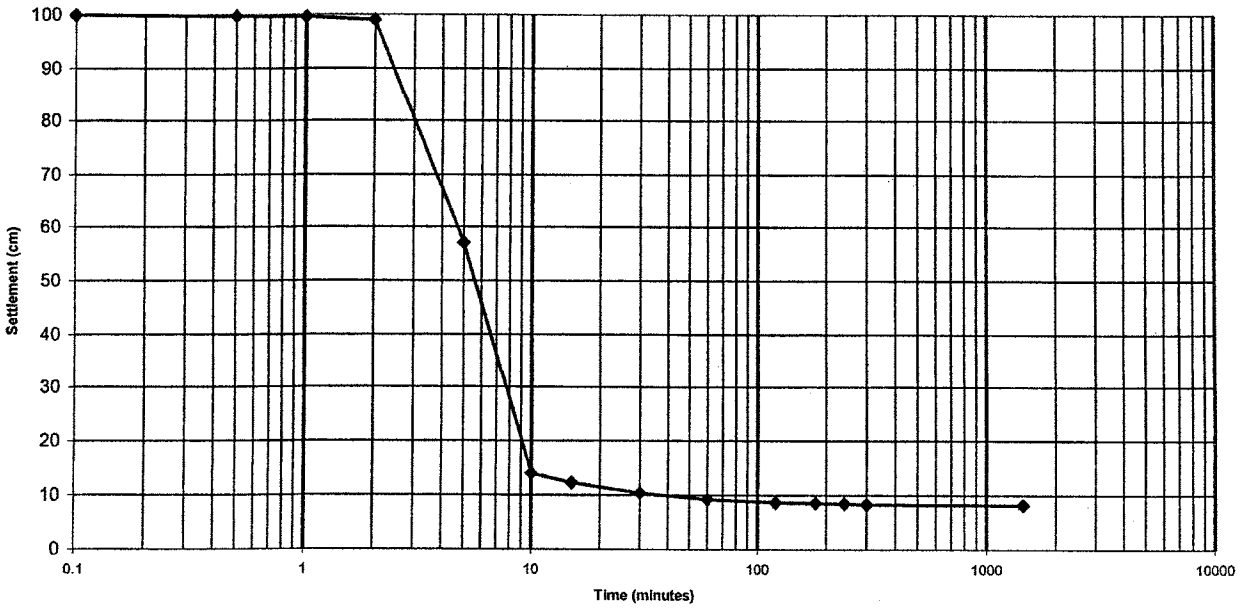
Jeffrey S. Samuels, P.E.

MACTEC

REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION E-PE04-1
SAMPLE NO: 254314
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	10.4
0.5	99.7	60	9.2
1	99.6	120	8.7
2	99.0	180	8.6
5	57.0	240	8.5
10	14.0	300	8.3
15	12.3	1440	8.2

Final Concentration: 1219.5 g/L

5-13-04

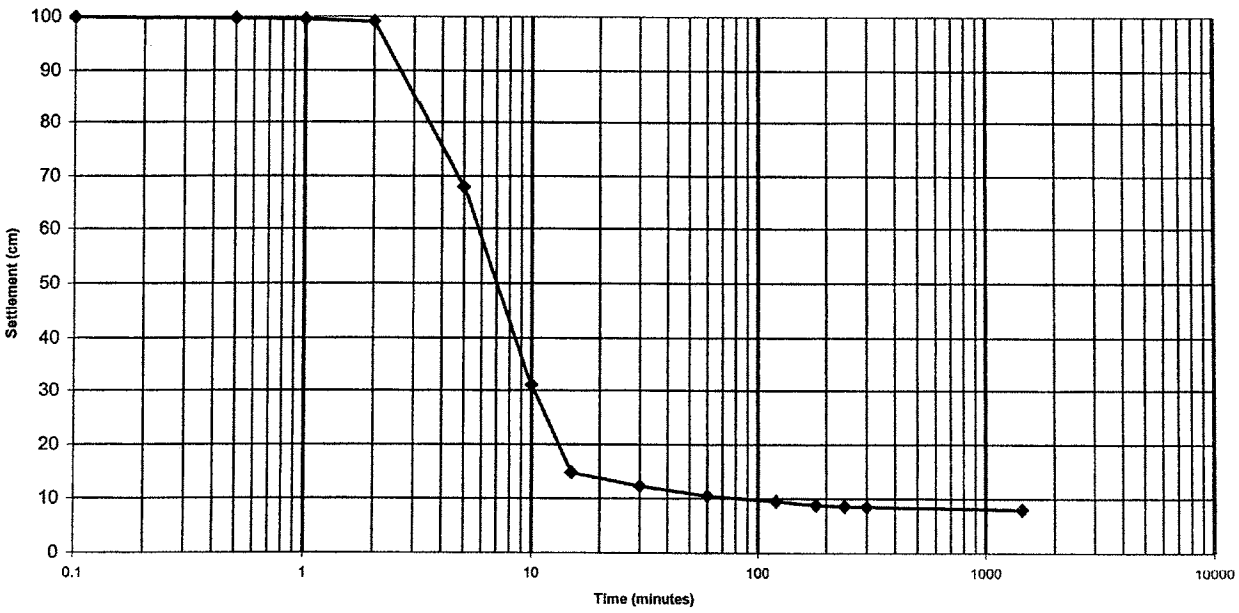
MACTEC Engineering and Consulting, Inc.
3901 Carmichael Avenue
Jacksonville, Florida 32207
(904) 396-5173

MACTEC

REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION E-PE04-2
SAMPLE NO: 254316
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	12.3
0.5	99.7	60	10.5
1	99.5	120	9.5
2	99.1	180	8.8
5	68.0	240	8.6
10	31.0	300	8.5
15	14.8	1440	8.0

Final Concentration: 1250 g/L

JDL 5-18-04

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3901 Carmichael Avenue
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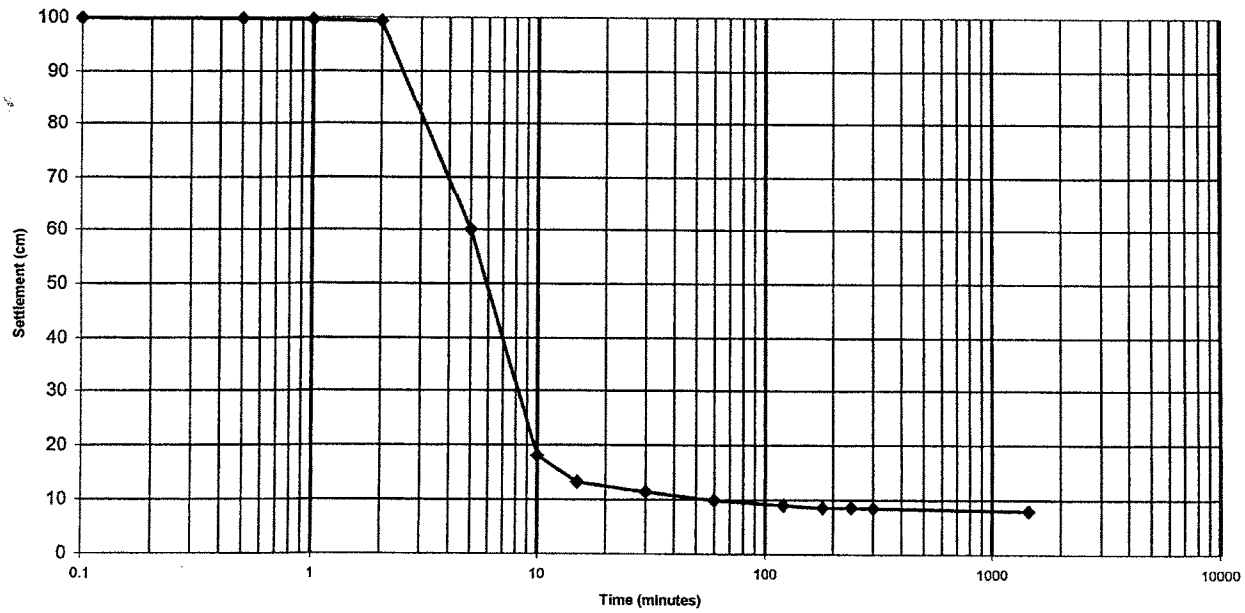
(904) 396-5173

MACTEC

REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION E-PE04-3
SAMPLE NO: 254317
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	11.4
0.5	99.8	60	9.9
1	99.5	120	9.0
2	99.3	180	8.6
5	60.0	240	8.6
10	18.0	300	8.5
15	13.2	1440	8.0

Final Concentration: 1250 g/L

5-18-04

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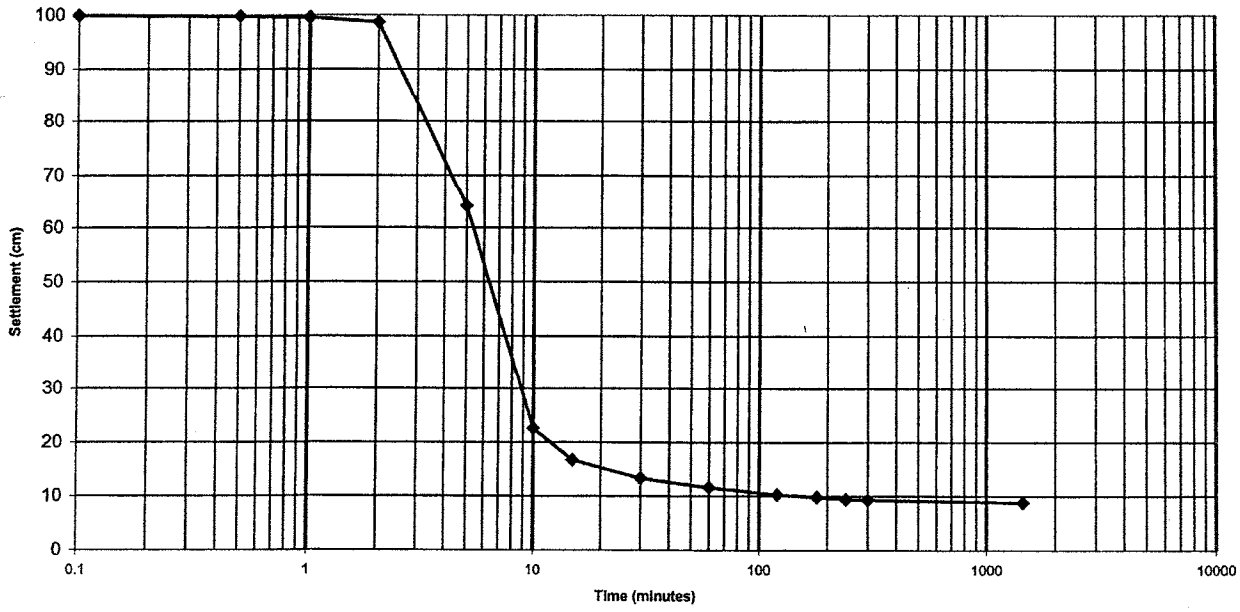
REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO:	6738-04-4477-02	STATION	E-PE04-4
PROJECT:	USACE Port Everglades	SAMPLE NO:	254318
CLIENT:	PPB Environmental	CONCENTRATION:	100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	13.3
0.5	99.8	60	11.6
1	99.5	120	10.3
2	98.7	180	9.8
5	64.0	240	9.4
10	22.5	300	9.3
15	16.7	1440	8.8

Final Concentration: 1136.4 g/L

JBL 5-18-09

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Jacksonville, Florida 32207
(904) 396-5173

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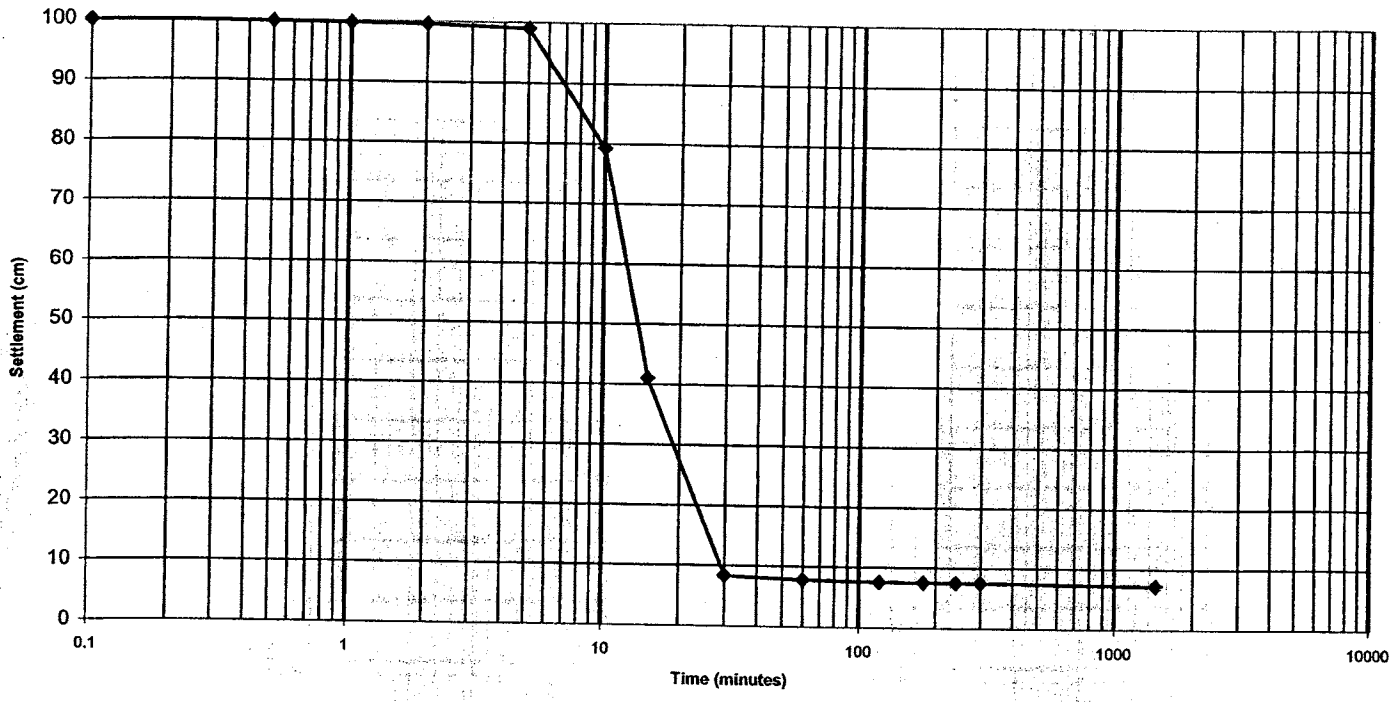
REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION RS-PE04
SAMPLE NO: 254319
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	8.3
0.5	99.8	60	7.8
1	99.7	120	7.6
2	99.6	180	7.5
5	99.0	240	7.5
10	79.3	300	7.5
15	41.0	1440	7.2

Final Concentration: 1388.9 g/L

Performed By: WV
Date: 6/8/04

Respectfully Submitted,
Michael J. Holm

MACTEC Engineering and Consulting, Inc.
3901 Carmichael Avenue
Jacksonville, Florida 32207
(904) 396-5173

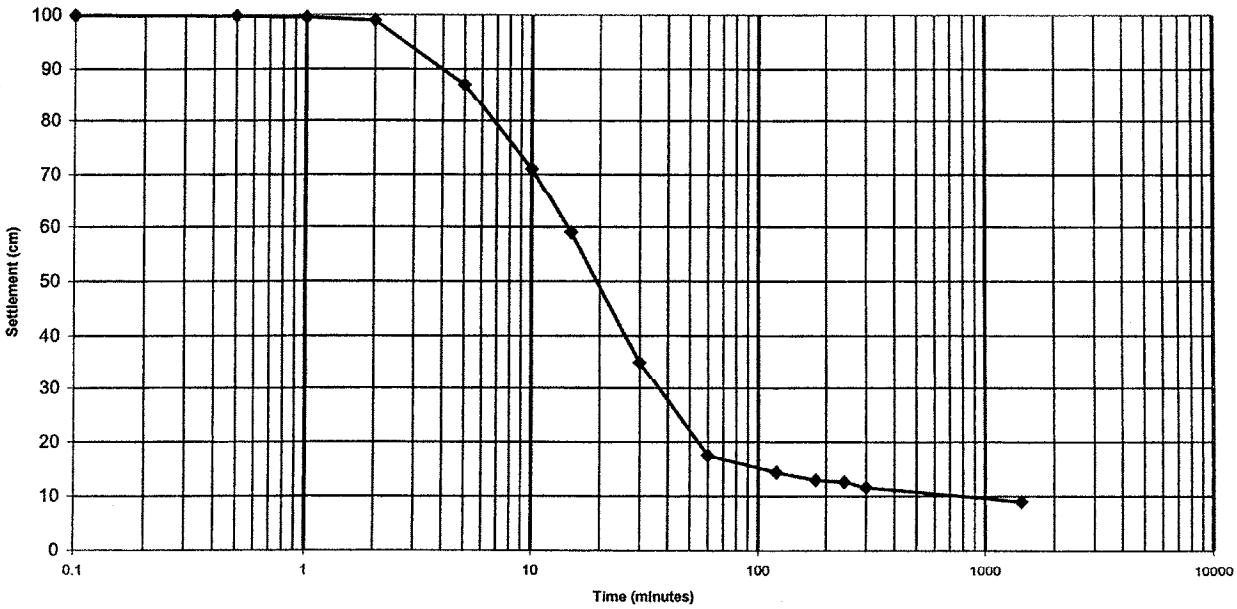
Michael J. Holm

MACTEC

REPORT OF SETTLING RATE TESTING

MACTEC PROJECT NO: 6738-04-4477-02
PROJECT: USACE Port Everglades
CLIENT: PPB Environmental

STATION E-PE04-Control
SAMPLE NO: 254320
CONCENTRATION: 100 g/L



TIME (min)	INTERFACE (cm)	TIME (min)	INTERFACE (cm)
0.1	99.9	30	35.0
0.5	99.8	60	17.5
1	99.5	120	14.4
2	99.0	180	13.0
5	87.0	240	12.6
10	71.0	300	11.6
15	59.0	1440	9.0

Final Concentration: 1111.1 g/L

J.Dl 5-18-09

MACTEC Engineering and Consulting, Inc.
3901 Carmichael Avenue
Jacksonville, Florida 32207
(904) 396-5173

APPENDIX G

Sediment, Elutriate and Tissue
Laboratory Data Reports

PPB ENVIRONMENTAL LABORATORIES, INC.

6821 SW Archer Road, Gainesville, FL 32608 Ph: (352) 377-2349 Fax: (352) 395-6639 E-mail: ppb@ppb-envlabs.com NELAP Certified—FDH # E82001

REPORT OF ANALYSES (SN-00003448)

US ARMY CORPS OF ENGINEERS
PRUDENTIAL OFFICE BLD
701 SAN MARCO BLVD.
JACKSONVILLE, FL 32207-8175
Attn: MR. GLENN SCHUSTER

DATE: 07/22/04
FDH # E82001
DEP CQAP # 870017G

PORT EVERGLADES 2004 SEDIMENT DATA (Page 1 of 1)

	SAMPLE			DELIVERY TO LAB		
LAB No.	DATE	TIME	SAMPLER	DATE	TIME	MATRIX
254314	04/22/04	0900	CSA	04/24/04	1200	SO
254315	04/22/04	1000	CSA	04/24/04	1200	SO
254316	04/22/04	1240	CSA	04/24/04	1200	SO
254317	04/22/04	0800	CSA	04/24/04	1200	SO
254318	04/22/04	1030	CSA	04/24/04	1200	SO
254319	04/22/04		CSA	04/24/04	1200	SO
254320	04/22/04		CSA	04/24/04	1200	SO

CLIENT STATION ID	LAB NUMBER	CN-SED ug/g	NH3-SED ug/g	%SOLIDS %
E-PE04-1	254314	1.0 U	3.08	65.0
E-PE04-1-DUP	254315	1.0 U	3.37	64.0
E-PE04-2	254316	1.0 U	6.67	61.8
E-PE04-3	254317	1.0 U	18.64	63.2
E-PE04-4	254318	1.0 U	18.42	52.1
RS-PE04	254319	1.0 U	1.59	63.6
E-PE04-CONTROL	254320	1.0 U	13.26	67.8

U = Result below detection limit

PROJECT MANAGER

PPB ENVIRONMENTAL LABORATORIES, INC.

6821 SW Archer Road, Gainesville, FL 32608 Ph: (352) 377-2349 Fax: (352) 395-6639 E-mail: ppb@ppb-envlabs.com NELAP Certified--FDH # E82001

CYANIDE SEDIMENT ug/g SO Method: EPA 335.2 Alt. Method: None

Duplicates

PPB Number	Client ID	Value 1	Value 2	Range	% RSD	QC Control Limit
254314	E-PE04-1	0.58	0.59	0.010	1.21	NO DATA
254319	RS-PE04	<1.0	<1.0	0	0.00	114.03

Spikes

PPB Number	Client ID	% MS	% MSD	Spike Recovery Control Limits	% RSD	% RSD Control Limit
254319	RS-PE04	131	---	70 TO 145	----	----
254320	E-PE04-CONTROL	125	---	73 TO 136	----	----

References

Reference ID	Target	Found	% Recovery	Control Limits
SOIL 40	398	191	48	46 TO 195
SOIL 40	398	198	50	27 TO 206

Method Blanks

Blank Concentration	Analytical Batch #	Sample Numbers in Batch
<0.004	62479	254314-254318, 254320,
<1.0	62722	254319,

AMMONIA NITROGEN IN SEDIMENT ug/g SO Method: EPA 350.1 Alt. Method: None

NO DUPLICATE QC DATA FOUND

PPB ENVIRONMENTAL LABORATORIES, INC.

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Spikes

PPB Number	Client ID	% MS	% MSD	Spike Recovery Control Limits	% RSD	% RSD Control Limit
254316	E-PE04-2	87	---	58 TO 134	----	----
254319	RS-PE04	89	---	57 TO 133	----	----
254319	RS-PE04	10	---	57 TO 133	----	----

NO REFERENCE QC DATA FOUND

Method Blanks

Blank Concentration	Analytical Batch #	Sample Numbers in Batch
-0.007	62560	254314-254315, 254317-254318, 254320,
0.08	62666	254316,
0.008	62708	254319,

TOTAL SOLIDS % SO Method: EPA 160.3 Alt. Method: None

Duplicates

PPB Number	Client ID	Value 1	Value 2	Range	% RSD	QC Control Limit
254319	RS-PE04	63.6	64.4	0.80	0.88	15.89
254319	RS-PE04	63.6	64.4	0.80	0.88	15.89
254320	E-PE04-CONTROL	67.8	69.6	1.8	1.85	12.73

NO SPIKE QC DATA FOUND

NO REFERENCE QC DATA FOUND

Method Blanks

Blank Concentration	Analytical Batch #	Sample Numbers in Batch
<2	62686	254319,

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DATE, TIME, ANALYST REPORT

ANALYSIS	METHOD	PREP DATE	PREP BY	ANALYSIS DATE	ANALYSIS TIME	ANALYSIS BY	MATRIX
%SOLIDS	EPA 160.3	/ /		05/07/04	1340	MG	SO
%SOLIDS	EPA 160.3	/ /		05/28/04	1445	MG	SO
CN-SED	EPA 335.2	/ /		05/12/04	1038	AJS	SO
CN-SED	EPA 335.2	/ /		06/02/04	1030	AJS	SO
NH3-SED	EPA 350.1	/ /		05/19/04	0900	EAJ	SO
NH3-SED	EPA 350.1	/ /		05/27/04		SEA	SO
NH3-SED	EPA 350.1	/ /		06/01/04	0900	SEA	SO

PPB ENVIRONMENTAL LABORATORIES, INC.

6821 SW Archer Road, Gainesville, FL 32608 Ph: (352) 377-2349 Fax: (352) 395-6639 E-mail: ppb@ppb-envlabs.com NELAP Certified—FDH # E82001

REPORT OF ANALYSES (SN-00003449)

US ARMY CORPS OF ENGINEERS
PRUDENTIAL OFFICE BLD
701 SAN MARCO BLVD.
JACKSONVILLE, FL 32207-8175
Attn: MR. GLENN SCHUSTER

DATE: 07/22/04
FDH # E82001
DEP CQAP # 870017G

PORT EVERGLADES 2004 ELUTRIATES (Page 1 of 1)

	SAMPLE			DELIVERY TO LAB		
LAB No.	DATE	TIME	SAMPLER	DATE	TIME	MATRIX
254381	04/29/04	1200	PPB	04/29/04	1200	WA
254382	04/29/04	1200	PPB	04/29/04	1200	WA
254383	04/29/04	1200	PPB	04/29/04	1200	WA
254384	04/29/04	1200	PPB	04/29/04	1200	WA
254385	04/29/04	1200	PPB	04/29/04	1200	WA
254386	04/29/04	1200	PPB	04/29/04	1200	WA
254387	04/29/04	1200	PPB	04/29/04	1200	WA
254388	04/29/04	1200	PPB	04/29/04	1200	WA

CLIENT STATION ID	LAB NUMBER	TOC mg/L	CN- mg/L	NH3 mg/L	S= mg/L
E-PE04-1 ELUTRIATE	254381	6.60	0.007 I	0.236	3.8 I
E-PE04-1 DUP ELUTRIATE	254382	5.08	0.021	0.246	2.0 I
E-PE04-2 ELUTRIATE	254383	8.88	0.005 I	0.519	2.4 I
E-PE04-3 ELUTRIATE	254384	7.95	0.005 I	0.609	2.2 I
E-PE04-4 ELUTRIATE	254385	8.29	0.004 I	0.856	2.4 I
RS-PE04 ELUTRIATE	254386	3.55 I	0.004 U	0.101	2.4 I
E-PE04-CONTROL ELUTRIATE	254387	4.71	0.005 I	0.525	5.2
E-PE04-BACKGROUND ELUTRIATE	254388	2.83 I	0.010	0.01 U	3.8 I

U = Result below detection limit
I = Result between detection limit and practical quantitation limit

PROJECT MANAGER

PPB ENVIRONMENTAL LABORATORIES, INC.

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TOT.ORGANIC CARBON mg/L WA Method: EPA 415.1 Alt. Method: None

Duplicates

PPB Number	Client ID	Value 1	Value 2	Range	% RSD	QC Control Limit
254382	E-PE04-1 DUP ELUTRIATE	5.08	4.89	0.19	2.70	12.60
254386	RS-PE04 ELUTRIATE	3.55	3.35	0.20	4.10	NO DATA

Spikes

PPB Number	Client ID	% MS	% MSD	Spike Recovery Control Limits	% RSD	% RSD Control Limit
254381	E-PE04-1 ELUTRIATE	112	---	71 TO 131	----	----
254386	RS-PE04 ELUTRIATE	103	---	71 TO 133	----	----

References

Reference ID	Target	Found	% Recovery	Control Limits
REF1-40-D	68.7	74.2	108	81 TO 113
REF1-45-D	44.9	46.7	104	79 TO 115

Method Blanks

Blank Concentration	Analytical Batch #	Sample Numbers in Batch
<2.0	62516	254381-254385, 254387-254388,
<2.0	62748	254386,

CYANIDE,TOTAL mg/L WA Method: EPA 335.2 Alt. Method: None

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Duplicates

PPB Number	Client ID	Value 1	Value 2	Range	% RSD	QC Control Limit
254381	E-PE04-1 ELUTRIATE	0.007	0.006	0.0010	10.88	NO DATA
254386	RS-PE04 ELUTRIATE	<0.004	<0.004	0	0.00	NO DATA

Spikes

PPB Number	Client ID	% MS	% MSD	Spike Recovery Control Limits	% RSD	% RSD Control Limit
254384	E-PE04-3 ELUTRIATE	105	---	2 TO 178	----	----
254386	RS-PE04 ELUTRIATE	134	---	2 TO 177	----	----

References

Reference ID	Target	Found	% Recovery	Control Limits
WP88	0.308	0.222	72	40 TO 148
WP88	0.308	0.256	83	39 TO 149

Method Blanks

Blank Concentration	Analytical Batch #	Sample Numbers in Batch
<0.004	62490	254381-254385, 254387-254388,
<0.004	62723	254386,
<0.004	62723	254386,

AMMONIA NITROGEN mg/L WA Method: EPA 350.1 Alt. Method: None

Duplicates

PPB Number	Client ID	Value 1	Value 2	Range	% RSD	QC Control Limit
254381	E-PE04-1 ELUTRIATE	0.236	0.237	0.0010	0.30	9.33
254386	RS-PE04 ELUTRIATE	0.101	0.100	0.0010	0.70	8.22

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Spikes

PPB Number	Client ID	% MS	% MSD	Spike Recovery Control Limits	% RSD	% RSD Control Limit
254386	RS-PE04 ELUTRIATE	101	---	78 TO 127	----	----

References

Reference ID	Target	Found	% Recovery	Control Limits
icv	18.3	19.7	108	92 TO 116
icv	18.3	19.1	104	94 TO 116

SULFIDE mg/L WA Method: EPA 376.1 Alt. Method: None

Duplicates

PPB Number	Client ID	Value 1	Value 2	Range	% RSD	QC Control Limit
254381	E-PE04-1 ELUTRIATE	3.8	3.8	0	0.00	NO DATA
254386	RS-PE04 ELUTRIATE	2.4	2.4	0	0.00	NO DATA

NO SPIKE QC DATA FOUND

References

Reference ID	Target	Found	% Recovery	Control Limits
REF-TV=8.8	8.8	8.4	95	85 TO 124

Method Blanks

Blank Concentration	Analytical Batch #	Sample Numbers in Batch
<1.0	62469	254381-254385, 254387-254388,
<1.0	62824	254386,

PPB ENVIRONMENTAL LABORATORIES, INC.

6821 SW Archer Road, Gainesville, FL 32608 Ph: (352) 377-2349 Fax: (352) 395-6639 E-mail: ppb@ppb-envlabs.com NELAP Certified—FDH # E82001

DATE, TIME, ANALYST REPORT

ANALYSIS	METHOD	PREP DATE	PREP BY	ANALYSIS DATE	ANALYSIS TIME	ANALYSIS BY	MATRIX
CN-	EPA 335.2	/ /		05/13/04	1038	AJS	WA
CN-	EPA 335.2	/ /		06/02/04	1030	AJS	WA
NH3	EPA 350.1	/ /		05/13/04	1116	EAJ	WA
NH3	EPA 350.1	/ /		06/03/04	1342	SEA	WA
S=	EPA 376.1	/ /		05/12/04	0006	DAL	WA
S=	EPA 376.1	/ /		06/08/04	1231	DAL	WA
TOC	EPA 415.1	/ /		05/15/04	1131	KTB	WA
TOC	EPA 415.1	/ /		06/03/04	1358	KTB	WA

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

Columbia Analytical Services INC.
An Employee - Owned Company

June 18, 2004

Service Request No: K2403972

Bryan Cottor
PPB Environmental Laboratories, Inc.
6821 SW Archer Road
Gainesville, FL 32608

RE: COE Ref Sample

Dear Bryan:

Enclosed are the results of the sample(s) submitted to our laboratory on May 29, 2004. For your reference, these analyses have been assigned our service request number K2403972.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Harvey Jacky
Project Chemist

HJ/jeb

NELAP Accredited ACIL Seal of Excellence Award

Acronyms

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

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

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

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	PPB Environmental	**Service Request No.:**	K2403972
Project:	COE Ref. Sample	**Date Received:**	5/29/04
Sample Matrix:	Sediment / Water		

CASE NARRATIVE

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

Sample Receipt

Two samples, one sediment and one water, were received for analysis at Columbia Analytical Services on 5/29/04. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Total Sulfide by EPA Method 9030M:
The matrix spike recovery of Sulfide for sample RS-PE04 Elutriate was outside control criteria because of suspected matrix interference. The distillate turned yellow upon addition of the color reagent instead of the normal blue color associated with the method. As a result of the interference, the results for this Sulfide might contain a low bias. No further corrective action was taken.

Total Metals

General Comments:
Initial evaluation of the Inductively Coupled Plasma – Mass Spectroscopy (ICP-MS) data for Nickel indicated the presence of an isobaric interference on the primary Nickel isotope (^{60}Ni). The source of the interference was determined to be calcium. During the ionization process in the plasma, calcium oxide ($^{44}Ca^{16}O^{+}$) is formed, which has the same nominal mass-to-charge ratio as ^{60}Ni. The situation results in a high bias when quantifying Nickel using the primary isotope. Therefore, Nickel was quantified by Inductively Coupled Plasma – Optical Emission Spectroscopy (ICP-OES).

Insufficient sample was provided to prepare duplicate or matrix spike samples for the reductive precipitation procedure. The Laboratory Control Sample (LCS) was prepared and analyzed in duplicate.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Aluminum for sample RS-PE0 4 was outside the CAS control criteria. Since the unspiked sample contained high analyte concentration relative to the amount spiked, the variability between aliquots was sufficient to bias the percent recoveries outside normal CAS control criteria. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicate the analysis was in control. No further corrective action was appropriate.

The control criteria for matrix spike recovery of Iron for sample RS-PE0 4 is not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Oil and Grease by EPA Method 1664

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

Approved by HS **Date** 6/22/04

Oil and Grease by EPA Method 9071

Matrix Spike Recovery Exceptions:
The matrix spike/duplicate matrix spike recovery of Oil and Grease, Total (HEM) for sample RS-PE04 was 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 bias in this matrix. No further corrective action was appropriate.

Organotin Compounds

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

Organochlorine Pesticides by EPA Method 8081A

Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) 0611F037 and 0611F060, 0611F061: Tetrachloro-m-xylene, alpha-BHC, 4,4-DDD, Endrin Aldehyde, 4,4'-DDT, Methoxychlor, Toxaphene. 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.

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

Elevated Method Reporting Limits:
The detection/reporting limit is elevated for several analytes in samples RS-PE04-Elutriate, RS-PE04. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection/reporting limit. The results are flagged to indicate the matrix interference.

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Methoxychlor for sample RS-PE04 is not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

PCB Aroclors by EPA Method 8082

Continuing Calibration Verification (CCV) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in CCV 0608F009, 0608F025: 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.

Results for Decachlorobiphenyl in samples KWG0407907-3 (Method Blank), KWG0407907-1 (Lab Control Sample), KWG0407907-2 (Duplicate Lab Control Sample), RS-PE04 Elutriate have been reported from a column using average percent recovery of all analytes in the verification standard.

Approved by HS **Date** 6/22/04

PCB Congeners by EPA Method 8082

Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Continuing Calibration Verifications (CCVs) 0608R005, 0608R014, 0614R005, 0614F005, 0614R019 and 0614F019: Tetrachloro-m-xylene; 0608F005 and 0608F014: PCB 18 and Tetrachloro-m-xylene. 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 Tetrachloro-m-xylene have been reported from a column using average percent recovery of all analytes in the verification standard.

Laboratory Control Sample (LCS) Exceptions:
The recovery of PCB 52 in Lab Control Sample (LCS) KWG0407908-3 was outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed are in the range expected for this procedure. No further corrective action was taken.

The advisory criterion was exceeded for PCB 18 in Laboratory Control Sample (LCS) KWG0407908-3. 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.

Sample Notes and Discussion:
The detection limit is elevated for PCB 8 in sample RS-PE04-Elutriate. 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.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270C

Initial Calibration (ICAL) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in ICAL ID CAL3563: Fluoranthene, 3-Methylcholanthrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene. 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 9.3%. 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 HG **Date** 6/22/04

Chain of Custody Documentation

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

IC2403972

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor
		Shipping Method

CLIENT NAME: PPB LABS.

CLIENT PROJECT: COE REF SAMPLE

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): BRIAN COTTER

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
254314			X		RS-PEO4	SOIL	3	
254386					RS-PEO4 ELUTRATE	H_2O	11	

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
		[signature]	5/29/04 0915
Relinquished by: *(Signature)* [signature]	Date / Time 5-28-04 15:00	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

Columbia Analytical Services Inc.
Cooler Receipt and Preservation Form

Project/Client PPB Env. Work Order K240 3972

Cooler received on 5/29/04 and opened on 5/29/04 by A Jurell

1.	Were custody seals on outside of coolers?	Y	(N)
	If yes, how many and where?		
2.	Were seals intact and signature & date correct?	~~Y~~	~~N~~
3.	Is the shipper's airbill available and filed? If no, record airbill number: enclosed	(Y)	N
4.	COC#		
	Temperature of cooler(s) upon receipt: -0.4		
	Temperature Blank: NA		
5.	Were custody papers properly filled out (ink, signed, etc.)?	(Y)	N
6.	Type of packing material present bwrap, ice, sleeves		
7.	Did all bottles arrive in good condition (unbroken)?	(Y)	N
8.	Were all bottle labels complete (i.e analysis, preservation, etc.)?	(Y)	N
9.	Did all bottle labels and tags agree with custody papers?	(Y)	N
10.	Were the correct types of bottles used for the tests indicated?	(Y)	N
11.	Were all of the preserved bottles received at the lab with the appropriate pH?	~~Y~~	~~N~~
12.	Were VOA vials checked for absence of air bubbles, and if present, noted below?	~~Y~~	~~N~~
13.	Did the bottles originate from CAS/K or a branch laboratory?	(Y)	N
14.	Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?	~~Y~~	~~N~~
15.	Was C12/Res negative? yes	AJ (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 Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972

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
RS-PE04	K2403972-001	NA	05/29/2004	06/04/2004	66.0	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	05/29/2004
		Date Analyzed:	06/04/2004

Duplicate Sample Summary

Total Solids

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

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
RS-PE04	K2403972-001	66.0	65.1	65.6	1	

General Chemistry Parameters

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : PPB Environmental
Project Name : COE Ref Sample
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K2403972
Date Collected : NA
Date Received : 05/29/04

Sulfide, Total

Analysis Method 9030M
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
RS-PE04	K2403972-001	2.4	0.05	1	06/03/04	ND	
Method Blank	K2403972-MB	2.4	0.05	1	06/03/04	ND	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : PPB Environmental
Project Name : COE Ref Sample
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K2403972
Date Collected :
Date Received : 05/29/04
Date Extracted : NA
Date Analyzed : 06/03/04

Duplicate Summary
Inorganic Parameters

Sample Name : RS-PE04
Lab Code : K2403972-001DUP
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Sulfide, Total	9030M	2.4	ND	ND	ND	-	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : PPB Environmental
Project Name : COE Ref Sample
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K2403972
Date Collected :
Date Received : 05/29/04
Date Extracted : NA
Date Analyzed : 06/03/04

Matrix Spike Summary
Inorganic Parameters

Sample Name : RS-PE04
Lab Code : K2403972-001MS
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Sulfide, Total	9030M	240	2500	ND	2480	99	60-130	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : PPB Environmental
Project Name : COE Ref Sample
Project Number : NA
Sample Matrix : WATER

Service Request : K2403972
Date Collected : NA
Date Received : 05/29/04

Carbon, Total Organic

Analysis Method 415.1
Test Notes :

Units : mg/L (ppm)
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
RS-PE04 Elutriate	K2403972-002	0.5	0.14	2	06/08/04	3.8	
Method Blank	K2403972-MB	0.5	0.07	1	06/08/04	ND	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : PPB Environmental
Project Name : COE Ref Sample
Project Number : NA
Sample Matrix : WATER

Service Request : K2403972
Date Collected :
Date Received : 05/29/04
Date Extracted : NA
Date Analyzed : 06/08/04

Duplicate Summary
Inorganic Parameters

Sample Name : RS-PE04 Elutriate
Lab Code : K2403972-002DUP
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	415.1	0.5	3.8	3.4	3.6	11	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : PPB Environmental
Project Name : COE Ref Sample
Project Number : NA
Sample Matrix : WATER

Service Request : K2403972
Date Collected :
Date Received : 05/29/04
Date Extracted : NA
Date Analyzed : 06/08/04

Matrix Spike Summary
Inorganic Parameters

Sample Name : RS-PE04 Elutriate
Lab Code : K2403972-002MS
Test Notes :

Units : mg/L (ppm)
Basis : NA

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	415.1	0.5	50.0	3.8	57.8	108	76-121	

Report By: AYaple

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	05/29/04

Carbon, Total Organic

Prep Method:	NONE	Units:	PERCENT
Analysis Method:	PSEP	Basis:	Dry
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
RS-PE04	K2403972-001	0.05	0.02	1	NA	06/09/04	0.34	
Method Blank	K2403972-MB	0.05	0.02	1	NA	06/09/04	ND	

Approved By: _____ Date: 6/16/04

1A/020597p

03972WET.AY1 - Sample 06/16/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 06/09/04

Duplicate Summary
Inorganic Parameters

Sample Name: Batch QC
Lab Code: K2403906-034DUP
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	NONE	PSEP	0.05	8.94	8.82	8.88	1	

Approved By: _____ Date: 6/16/04

DUP/020597p
03972WET.AY1 - DUP 06/16/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 06/09/04

Triplicate Summary
Inorganic Parameters

Sample Name: Batch QC
Lab Code: K2403906-034TRP
Test Notes:

Units: PERCENT
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Triplicate Sample Result	Average	Relative Standard Deviation	Result Notes
Carbon, Total Organic	NONE	PSEP	0.05	8.94	8.82	8.53	8.76	2	

Approved By: _____ Date: 6/16/04

DUP/020597p
03972WET.AY1 - TRP 06/16/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	06/09/04

Matrix Spike Summary
Inorganic Parameters

Sample Name:	Batch QC	Units:	PERCENT
Lab Code:	K2403906-034MS	Basis:	Dry
Test Notes:			

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	NONE	PSEP	0.05	34.1	8.94	41.7	96	75-125	

Approved By: _____ Date: 6/16/04

MS/020597p
03972WET.AY1 - MS 06/16/04

Page No.:

Metals

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: COE Ref Sample
Matrix: WATER

Service Request: K2303972
Date Collected: //
Date Received: 05/29/04
Units: µG/L
Basis: NA

Sample Name: RS-PE04 Elutriate
Lab Code: K2403972-002

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	1.00	0.12	1	6/16/04	6/16/04	0.41	B	
Arsenic	200.8	0.50	0.02	1	6/15/04	6/16/04	1.78		
Cadmium	200.8	0.020	0.003	1	6/15/04	6/16/04	0.134		
Chromium	200.8	0.20	0.04	1	6/15/04	6/16/04	0.13	B	
Copper	200.8	0.10	0.01	1	6/15/04	6/16/04	1.12		
Iron	6010B	20.0	10.0	1	6/15/04	6/16/04	32.0		
Lead	200.8	0.020	0.009	1	6/15/04	6/16/04	0.252		
Mercury	7470A	0.20	0.04	1	6/7/04	6/8/04	0.04	U	
Nickel	200.8	0.20	0.02	1	6/15/04	6/16/04	1.07		
Silver	200.8	0.020	0.005	1	6/15/04	6/16/04	0.035		
Zinc	200.8	0.50	0.02	1	6/15/04	6/16/04	3.38		

% Solids: 0.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: COE Ref Sample
Matrix: WATER

Service Request: K2303972
Date Collected:
Date Received:
Units: µG/L
Basis: NA

Sample Name: Method Blank
Lab Code: K2403972-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	1.00	0.12	1	6/16/04	6/16/04	0.12	U	
Arsenic	200.8	0.50	0.02	1	6/15/04	6/16/04	0.02	U	
Cadmium	200.8	0.020	0.003	1	6/15/04	6/16/04	0.003	U	
Chromium	200.8	0.20	0.04	1	6/15/04	6/16/04	0.04	U	
Copper	200.8	0.10	0.01	1	6/15/04	6/16/04	0.01	U	
Iron	6010B	20.0	10.0	1	6/15/04	6/16/04	10.0	U	
Lead	200.8	0.020	0.009	1	6/15/04	6/16/04	0.009	U	
Mercury	7470A	0.20	0.04	1	6/7/04	6/8/04	0.04	U	
Nickel	200.8	0.20	0.02	1	6/15/04	6/16/04	0.04	B	
Silver	200.8	0.020	0.005	1	6/15/04	6/16/04	0.005	U	
Zinc	200.8	0.50	0.02	1	6/15/04	6/16/04	0.02	B	

% Solids: 0.0

Comments:

METALS

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: PPB Environmental

Service Request: K2303972

Project No.:

Project Name: COE Ref Sample

Sample No.	Lab Sample ID.
RS-PE04	K2403972-001
RS-PE04D	K2403972-001D
RS-PE04S	K2403972-001S
Method Blank	K2403972-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: 6/17/04

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: COE Ref Sample
Matrix: SEDIMENT

Service Request: K2303972
Date Collected: //
Date Received: 05/29/04
Units: MG/KG
Basis: Dry

Sample Name: RS-PE04
Lab Code: K2403972-001

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	10.8	8.7	2	6/15/04	6/16/04	1360		N
Antimony	200.8	0.05	0.02	5	6/15/04	6/15/04	0.31		
Arsenic	200.8	0.5	0.1	5	6/15/04	6/16/04	2.3		
Cadmium	200.8	0.054	0.008	5	6/15/04	6/16/04	0.145		
Chromium	200.8	0.22	0.04	5	6/15/04	6/16/04	13.8		
Copper	200.8	0.11	0.02	5	6/15/04	6/16/04	4.27		
Iron	6010B	4.3	0.6	2	6/15/04	6/16/04	3130		
Lead	200.8	0.05	0.02	5	6/15/04	6/16/04	2.12		
Mercury	7471A	0.02	0.01	1	6/7/04	6/8/04	0.01	B	
Nickel	6010B	4.3	0.4	2	6/15/04	6/16/04	2.2	B	
Silver	200.8	0.022	0.003	5	6/15/04	6/15/04	0.055		
Zinc	200.8	0.5	0.2	5	6/15/04	6/16/04	5.5		

% Solids: 66.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: COE Ref Sample
Matrix: SEDIMENT

Service Request: K2303972
Date Collected:
Date Received:
Units: MG/KG
Basis: Dry

Sample Name: Method Blank
Lab Code: K2403972-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	10.0	8.0	2	6/15/04	6/16/04	8.0	U	N
Antimony	200.8	0.05	0.02	5	6/15/04	6/15/04	0.02	U	
Arsenic	200.8	0.5	0.1	5	6/15/04	6/16/04	0.1	U	
Cadmium	200.8	0.050	0.007	5	6/15/04	6/16/04	0.007	U	
Chromium	200.8	0.20	0.04	5	6/15/04	6/16/04	0.07	B	
Copper	200.8	0.10	0.02	5	6/15/04	6/16/04	0.02	U	
Iron	6010B	4.0	0.6	2	6/15/04	6/16/04	0.6	U	
Lead	200.8	0.05	0.02	5	6/15/04	6/16/04	0.02	U	
Mercury	7471A	0.02	0.01	1	6/7/04	6/8/04	0.01	U	
Nickel	6010B	4.0	0.4	2	6/15/04	6/16/04	0.4	U	
Silver	200.8	0.020	0.003	5	6/15/04	6/15/04	0.003	U	
Zinc	200.8	0.5	0.2	5	6/15/04	6/16/04	0.3	B	

% Solids: 100.0

Comments:

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2303972

Project No.:

Project Name: COE Ref Sample

ICV Source: Inorganic Ventures

CCV Source: Various

Concentration Units: ug/I

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Aluminum	5000	5000	100	5000	5170	103	5180	104	6010B
Antimony	25.0	26.3	105	25.0	25.1	100	24.8	99	200.8
Arsenic	50.0	50.9	102	25.0	24.8	99	25.3	101	200.8
Cadmium	25.0	25.4	102	25.0	24.5	98	24.8	99	200.8
Chromium	20.0	20.1	101	25.0	25.0	100	25.3	101	200.8
Copper	25.0	25.6	102	25.0	25.0	100	25.3	101	200.8
Iron	2500	2590	104	500	498	100	497	99	6010B
Iron	25000	25100	100	25000	25200	101	25500	102	6010B
Lead	50.0	50.0	100	25.0	25.2	101	25.0	100	200.8
Mercury	5.0	4.89	98	5.0	4.96	99	5.14	103	7471A
Nickel	1250	1260	101	500	500	100	496	99	6010B
Silver	12.5	12.2	98	25.0	24.9	100	25.1	100	200.8
Zinc	50.0	51.7	103	25.0	24.5	98	25.1	100	200.8

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2303972

Project No.:

Project Name: COE Ref Sample

ICV Source:

CCV Source: Various

Concentration Units: ug/I

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony				25.0	25.0	100			200.8
Arsenic				25.0	24.8	99	24.9	99	200.8
Cadmium				25.0	24.6	98	24.6	98	200.8
Chromium				25.0	25.5	102	25.8	103	200.8
Copper				25.0	25.6	102	25.9	103	200.8
Lead				25.0	24.9	100	25.1	100	200.8
Mercury				5.0	5.48	110			7471A
Silver				25.0	25.0	100			200.8
Zinc				25.0	25.2	101	25.1	100	200.8

METALS
- 2b -
CRDL STANDARD FOR AA AND ICP

Client: PPB Environmental

Service Request: K2303972

Project No.:

Project Name: COE Ref Sample

Concentration Units: ug/l

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum				50	41.3	83		
Antimony				0.10	0.09	93		
Arsenic				1.0	1.02	102		
Cadmium				0.10	0.097	97		
Chromium				0.40	0.38	94		
Copper				0.20	0.20	97		
Iron				20	21.4	107		
Lead				0.04	0.04	93		
Mercury	0.20	0.24	119					
Nickel				20	20.9	104		
Silver				0.04	0.044	110		
Zinc				1.0	1.05	104		

METALS
- 5a -
SPIKE SAMPLE RECOVERY

Client: PPB Environmental
Project No.:
Project Name: COE Ref Sample
Matrix: SEDIMENT

Service Request: K2303972
Units: mg/kg
Basis: Dry
% Solids: 66.0

Sample Name: RS-PE04S
Lab Code: K2403972-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Aluminum	75 - 125	2030		1360		427	157	N	6010B
Antimony	70 - 130	79.4		0.31		107	74		200.8
Arsenic	70 - 130	104		2.3		106	96		200.8
Cadmium	70 - 130	9.640		0.145		10.6	90		200.8
Chromium	70 - 130	63.0		16.7		42.4	109		200.8
Copper	70 - 130	48.3		4.27		53.0	83		200.8
Iron		3540		3130		213	197		6010B
Lead	70 - 130	93.6		2.12		106	86		200.8
Mercury	55 - 137	0.43		0.01	B	0.48	88		7471A
Nickel	79 - 125	92.3		2.2	B	107	84		6010B
Silver	70 - 130	10.3		0.055		10.7	95		200.8
Zinc	70 - 130	87.4		5.5		106	77		200.8

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

Butyltins

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected:
Date Received: 05/29/2004

Butyltins (as cation)

Sample Name: RS-PE04 Elutriate
Lab Code: K2403972-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	06/02/04	06/09/04	KWG0407887	
Tri-n-butyltin	ND	U	0.020	0.0071	1	06/02/04	06/09/04	KWG0407887	
Di-n-butyltin	ND	U	0.050	0.0050	1	06/02/04	06/09/04	KWG0407887	
n-Butyltin	ND	U	0.050	0.0047	1	06/02/04	06/09/04	KWG0407887	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	90	19-146	06/09/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected: NA
Date Received: NA

Butyltins (as cation)

Sample Name: Method Blank
Lab Code: KWG0407887-4

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	06/02/04	06/09/04	KWG0407887	
Tri-n-butyltin	ND	U	0.020	0.0071	1	06/02/04	06/09/04	KWG0407887	
Di-n-butyltin	ND	U	0.050	0.0050	1	06/02/04	06/09/04	KWG0407887	
n-Butyltin	ND	U	0.050	0.0047	1	06/02/04	06/09/04	KWG0407887	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	85	19-146	06/09/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	
Sample Matrix:	Sediment	**Date Received:**	05/29/2004

Butyltins (as cation)

Sample Name:	RS-PE04	**Units:**	ug/Kg
Lab Code:	K2403972-001	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.6	0.19	1	06/08/04	06/11/04	KWG0408211	
Tri-n-butyltin	ND	U	1.6	0.25	1	06/08/04	06/11/04	KWG0408211	
Di-n-butyltin	ND	U	1.6	0.063	1	06/08/04	06/11/04	KWG0408211	
n-Butyltin	ND	U	1.6	0.11	1	06/08/04	06/11/04	KWG0408211	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	74	10-132	06/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Butyltins (as cation)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG0408211-4	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.12	1	06/08/04	06/11/04	KWG0408211	
Tri-n-butyltin	ND	U	1.0	0.16	1	06/08/04	06/11/04	KWG0408211	
Di-n-butyltin	ND	U	1.0	0.041	1	06/08/04	06/11/04	KWG0408211	
n-Butyltin	ND	U	1.0	0.071	1	06/08/04	06/11/04	KWG0408211	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	69	10-132	06/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972

Surrogate Recovery Summary
Butyltins (as cation)

Extraction Method: EPA 3520C
Analysis Method: Krone

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RS-PE04 Elutriate	K2403972-002	90
RS-PE04 ElutriateDUP	KWG0407887-1	96
Method Blank	KWG0407887-4	85
Lab Control Sample	KWG0407887-2	79
Duplicate Lab Control Sample	KWG0407887-3	85

Surrogate Recovery Control Limits (%)

Sur1 = Tri-n-propyltin 19-146

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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972

Surrogate Recovery Summary
Butyltins (as cation)

Extraction Method: METHOD
Analysis Method: Krone

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RS-PE04	K2403972-001	74
Method Blank	KWG0408211-4	69
Batch QC	K2404022-006	78
Batch QCMS	KWG0408211-1	71
Batch QCDMS	KWG0408211-2	71
Lab Control Sample	KWG0408211-3	67

Surrogate Recovery Control Limits (%)

Sur1 = Tri-n-propyltin 10-132

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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Extracted: 06/08/2004
Date Analyzed: 06/11/2004

Matrix Spike/Duplicate Matrix Spike Summary
Butyltins (as cation)

Sample Name: Batch QC
Lab Code: K2404022-006

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low
Extraction Lot: KWG0408211

Analyte Name	Sample Result	Batch QCMS KWG0408211-1 Matrix Spike			Batch QCDMS KWG0408211-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Tetra-n-butyltin	ND	21.9	31.1	70	21.8	30.9	71	10-153	0	50
Tri-n-butyltin	0.42	20.4	27.6	72	20.7	27.4	74	10-152	1	50
Di-n-butyltin	0.63	17.7	23.9	72	17.8	23.7	72	10-153	1	50
n-Butyltin	0.30	5.89	19.4	29	5.89	19.3	29	10-99	0	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.

Oil & Grease
EPA Method 1664

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	
Sample Matrix:	Water	**Date Received:**	05/29/04

Oil and Grease

Sample Name:	RS-PE04 Elutriate	Units:	mg/L (ppm)
Lab Code:	K2403972-002	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	06/09/04	06/09/04	ND	

Approved By: _____ Date: 6/10/04

1S22/020597p

03972PHC.JW1 - 1 06/11/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Oil and Grease

Sample Name:	Method Blank	Units:	mg/L (ppm)
Lab Code:	K040609-WB	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	06/09/04	06/09/04	ND	

Approved By: _____ Date: 6/1/04

1S22/020597p

03972PHC.JW1 - MB 06/11/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	6/9/04
		Date Analyzed:	6/9/04

Matrix Spike Summary
Oil and Grease

Sample Name:	Batch QC	Units:	mg/L (ppm)
Lab Code:	K2404039-002MS	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	38	ND	31.7	83	78-114	

Approved By: _____ Date: 6/11/04

MS/072898p
03972PHC.JW1 - MS 6/11/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	6/9/04
		Date Analyzed:	6/9/04

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary
Oil and Grease

Sample Name:	Lab Control Sample	Units:	mg/L (ppm)
Lab Code:	K040609-WL1, K040609-WL2	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	True Value LCS	True Value DLCS	Result LCS	Result DLCS	Percent Recovery LCS	Percent Recovery DLCS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	40	40	32.8	33.7	82	84	78-114	3	

Approved By: _____ Date: 6/11/04

DLCS/072898p
03972PHC.JW1 - DLCS 6/11/04

Page No.:

Oil & Grease
EPA Method 9071

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	
Sample Matrix:	Sediment	**Date Received:**	5/29/04

Oil and Grease

Sample Name:	RS-PE04	Units:	mg/Kg (ppm)
Lab Code:	K2403972-001	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	6/4/04	6/9/04	ND	

Approved By: _____ Date: 6/10/04

1S22/020597p

03972PHC.JW2 - 1 6/11/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Oil and Grease

Sample Name:	Method Blank	Units:	mg/Kg (ppm)
Lab Code:	K040604-SB	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	6/4/04	6/9/04	ND	

Approved By: CG Date: 6/11/04

1S22/020597p

03972PHC.JW2 - MB 6/11/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	
Sample Matrix:	Sediment	**Date Received:**	5/29/04
		Date Extracted:	6/4/04
		Date Analyzed:	6/9/04

Matrix Spike/Duplicate Matrix Spike Summary
Oil and Grease

Sample Name:	RS-PE04		Units:	mg/Kg (ppm)
Lab Code:	K2403972-001MS,	K2403972-001DMS	Basis:	Dry
Test Notes:				

				Spike Level		Sample	Spike Result		Percent Recovery		CAS	Relative
Analyte	**Prep Method**	**Analysis Method**	**MRL**	MS	DMS	**Result**	MS	DMS	MS	DMS	Acceptance Limits	**Percent Difference**
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	3000	3000	ND	2250	2260	75*	75*	78-114	#VALUE!

Approved By: CG Date: 6/11/04

DMS/072898p03972PHC.JW2 - DMS 6/11/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403972
Project:	COE Ref Sample	**Date Collected:**	NA
LCS Matrix:	Sediment	**Date Received:**	NA
		Date Extracted:	6/4/04
		Date Analyzed:	6/9/04

Laboratory Control Sample Summary
Oil and Grease

Sample Name:	Lab Control Sample	Units:	mg/Kg (ppm)
Lab Code:	K040604-SL	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	2000	2020	101	78-114	

Approved By: _____ Date: 6/10/04

LCS/071499p
03972PHC.JW2 - LCS 6/11/04

Page No.:

Organochlorine Pesticides
EPA Method 8081

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected:
Date Received: 05/29/2004

Organochlorine Pesticides

Sample Name: RS-PE04 Elutriate
Lab Code: K2403972-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	**0.0021**	JP	0.011	0.0012	1	06/02/04	06/12/04	KWG0407909	
beta-BHC	ND	Ui	0.011	0.011	1	06/02/04	06/12/04	KWG0407909	
gamma-BHC (Lindane)	ND	U	0.011	0.00080	1	06/02/04	06/12/04	KWG0407909	
delta-BHC	ND	U	0.011	0.0017	1	06/02/04	06/12/04	KWG0407909	
Heptachlor	ND	Ui	0.011	0.011	1	06/02/04	06/12/04	KWG0407909	
Aldrin	ND	U	0.011	0.00091	1	06/02/04	06/12/04	KWG0407909	
Heptachlor Epoxide	ND	U	0.011	0.00063	1	06/02/04	06/12/04	KWG0407909	
Endosulfan I	ND	Ui	0.011	0.011	1	06/02/04	06/12/04	KWG0407909	
Dieldrin	ND	Ui	0.011	0.0021	1	06/02/04	06/12/04	KWG0407909	
4,4'-DDE	ND	U	0.011	0.0016	1	06/02/04	06/12/04	KWG0407909	
Endrin	ND	Ui	0.011	0.0014	1	06/02/04	06/12/04	KWG0407909	
Endosulfan II	ND	Ui	0.011	0.0027	1	06/02/04	06/12/04	KWG0407909	
4,4'-DDD	ND	U	0.011	0.0020	1	06/02/04	06/12/04	KWG0407909	
Endrin Aldehyde	ND	U	0.011	0.0024	1	06/02/04	06/12/04	KWG0407909	
Endosulfan Sulfate	ND	U	0.011	0.0031	1	06/02/04	06/12/04	KWG0407909	
4,4'-DDT	**0.0040**	J	0.011	0.00067	1	06/02/04	06/12/04	KWG0407909	
Methoxychlor	ND	U	0.011	0.00094	1	06/02/04	06/12/04	KWG0407909	
Toxaphene	ND	Ui	0.53	0.33	1	06/02/04	06/12/04	KWG0407909	
Chlordane	ND	U	0.21	0.041	1	06/02/04	06/12/04	KWG0407909	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	57	17-128	06/12/04	Acceptable
Decachlorobiphenyl	58	10-136	06/12/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0407909-3

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.0096	0.0011	1	06/02/04	06/12/04	KWG0407909	
beta-BHC	ND	U	0.0096	0.0029	1	06/02/04	06/12/04	KWG0407909	
gamma-BHC (Lindane)	ND	U	0.0096	0.00076	1	06/02/04	06/12/04	KWG0407909	
delta-BHC	ND	U	0.0096	0.0016	1	06/02/04	06/12/04	KWG0407909	
Heptachlor	ND	U	0.0096	0.0011	1	06/02/04	06/12/04	KWG0407909	
Aldrin	ND	U	0.0096	0.00087	1	06/02/04	06/12/04	KWG0407909	
Heptachlor Epoxide	ND	U	0.0096	0.00060	1	06/02/04	06/12/04	KWG0407909	
Endosulfan I	ND	U	0.0096	0.0012	1	06/02/04	06/12/04	KWG0407909	
Dieldrin	ND	U	0.0096	0.0013	1	06/02/04	06/12/04	KWG0407909	
4,4'-DDE	ND	U	0.0096	0.0015	1	06/02/04	06/12/04	KWG0407909	
Endrin	ND	U	0.0096	0.00065	1	06/02/04	06/12/04	KWG0407909	
Endosulfan II	ND	U	0.0096	0.0011	1	06/02/04	06/12/04	KWG0407909	
4,4'-DDD	ND	U	0.0096	0.0019	1	06/02/04	06/12/04	KWG0407909	
Endrin Aldehyde	ND	U	0.0096	0.0023	1	06/02/04	06/12/04	KWG0407909	
Endosulfan Sulfate	ND	U	0.0096	0.0029	1	06/02/04	06/12/04	KWG0407909	
4,4'-DDT	ND	U	0.0096	0.00064	1	06/02/04	06/12/04	KWG0407909	
Methoxychlor	ND	U	0.0096	0.00090	1	06/02/04	06/12/04	KWG0407909	
Toxaphene	ND	U	0.48	0.037	1	06/02/04	06/12/04	KWG0407909	
Chlordane	ND	U	0.20	0.039	1	06/02/04	06/12/04	KWG0407909	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	84	17-128	06/12/04	Acceptable
Decachlorobiphenyl	122	10-136	06/12/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected:
Date Received: 05/29/2004

Organochlorine Pesticides

Sample Name: RS-PE04
Lab Code: K2403972-001

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
alpha-BHC	ND	Ui	0.87	0.18	1	06/04/04	06/12/04	KWG0408110	
beta-BHC	ND	U	0.87	0.34	1	06/04/04	06/12/04	KWG0408110	
gamma-BHC (Lindane)	ND	U	0.87	0.15	1	06/04/04	06/12/04	KWG0408110	
delta-BHC	ND	U	0.87	0.22	1	06/04/04	06/12/04	KWG0408110	
Heptachlor	ND	U	0.87	0.15	1	06/04/04	06/12/04	KWG0408110	
Aldrin	ND	U	0.87	0.38	1	06/04/04	06/12/04	KWG0408110	
Heptachlor Epoxide	ND	U	0.87	0.22	1	06/04/04	06/12/04	KWG0408110	
Endosulfan I	ND	U	0.87	0.17	1	06/04/04	06/12/04	KWG0408110	
Dieldrin	ND	U	0.87	0.13	1	06/04/04	06/12/04	KWG0408110	
4,4'-DDE	ND	U	0.87	0.12	1	06/04/04	06/12/04	KWG0408110	
Endrin	ND	U	0.87	0.37	1	06/04/04	06/12/04	KWG0408110	
Endosulfan II	ND	U	0.87	0.093	1	06/04/04	06/12/04	KWG0408110	
4,4'-DDD	ND	U	0.87	0.15	1	06/04/04	06/12/04	KWG0408110	
Endrin Aldehyde	ND	Ui	0.87	0.27	1	06/04/04	06/12/04	KWG0408110	
Endosulfan Sulfate	ND	U	0.87	0.32	1	06/04/04	06/12/04	KWG0408110	
4,4'-DDT	ND	U	0.87	0.26	1	06/04/04	06/12/04	KWG0408110	
Methoxychlor	**21**		0.87	0.29	1	06/04/04	06/12/04	KWG0408110	
Toxaphene	ND	U	44	12	1	06/04/04	06/12/04	KWG0408110	
Chlordane	ND	Ui	8.7	2.4	1	06/04/04	06/12/04	KWG0408110	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	81	39-129	06/12/04	Acceptable
Decachlorobiphenyl	116	29-141	06/12/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0408110-7

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
alpha-BHC	ND	U	0.58	0.083	1	06/04/04	06/12/04	KWG0408110	
beta-BHC	ND	U	0.58	0.22	1	06/04/04	06/12/04	KWG0408110	
gamma-BHC (Lindane)	ND	U	0.58	0.099	1	06/04/04	06/12/04	KWG0408110	
delta-BHC	ND	U	0.58	0.14	1	06/04/04	06/12/04	KWG0408110	
Heptachlor	ND	U	0.58	0.097	1	06/04/04	06/12/04	KWG0408110	
Aldrin	ND	U	0.58	0.25	1	06/04/04	06/12/04	KWG0408110	
Heptachlor Epoxide	ND	U	0.58	0.14	1	06/04/04	06/12/04	KWG0408110	
Endosulfan I	ND	U	0.58	0.11	1	06/04/04	06/12/04	KWG0408110	
Dieldrin	ND	U	0.58	0.082	1	06/04/04	06/12/04	KWG0408110	
4,4'-DDE	ND	U	0.58	0.076	1	06/04/04	06/12/04	KWG0408110	
Endrin	ND	U	0.58	0.24	1	06/04/04	06/12/04	KWG0408110	
Endosulfan II	ND	U	0.58	0.061	1	06/04/04	06/12/04	KWG0408110	
4,4'-DDD	ND	U	0.58	0.093	1	06/04/04	06/12/04	KWG0408110	
Endrin Aldehyde	ND	U	0.58	0.16	1	06/04/04	06/12/04	KWG0408110	
Endosulfan Sulfate	ND	U	0.58	0.21	1	06/04/04	06/12/04	KWG0408110	
4,4'-DDT	ND	U	0.58	0.17	1	06/04/04	06/12/04	KWG0408110	
Methoxychlor	**0.22**	J	0.58	0.19	1	06/04/04	06/12/04	KWG0408110	
Toxaphene	ND	U	29	7.3	1	06/04/04	06/12/04	KWG0408110	
Chlordane	ND	U	5.8	1.2	1	06/04/04	06/12/04	KWG0408110	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	77	39-129	06/12/04	Acceptable
Decachlorobiphenyl	91	29-141	06/12/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
RS-PE04 Elutriate	K2403972-002	57	58
Method Blank	KWG0407909-3	84	122
Lab Control Sample	KWG0407909-1	82	107
Duplicate Lab Control Sample	KWG0407909-2	81	105

Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	17-128
Sur2 =	Decachlorobiphenyl	10-136

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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
RS-PE04	K2403972-001	81	116
Method Blank	KWG0408110-7	77	91
RS-PE04MS	KWG0408110-1	87	101
RS-PE04DMS	KWG0408110-2	82	98
Lab Control Sample	KWG0408110-3	75	108

Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	39-129
Sur2 =	Decachlorobiphenyl	29-141

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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Extracted: 06/04/2004
Date Analyzed: 06/15/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: RS-PE04
Lab Code: K2403972-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low
Extraction Lot: KWG0408110

Analyte Name	Sample Result	RS-PE04MS KWG0408110-1 Matrix Spike			RS-PE04DMS KWG0408110-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	ND	21.2	17.3	123	20.2	17.3	117	46-146	5	50
beta-BHC	ND	18.9	17.3	109	18.8	17.3	109	28-155	1	50
gamma-BHC (Lindane)	ND	20.6	17.3	119	19.9	17.3	115	50-145	4	50
delta-BHC	ND	21.4	17.3	124	21.4	17.3	124	42-155	0	50
Heptachlor	ND	18.7	17.3	108	18.0	17.3	104	30-152	4	50
Aldrin	ND	18.8	17.3	109	18.4	17.3	107	35-146	2	50
Heptachlor Epoxide	ND	18.4	17.3	106	18.2	17.3	105	35-148	1	50
Endosulfan I	ND	15.1	17.3	87	14.9	17.3	86	21-143	1	50
Dieldrin	ND	18.9	17.3	110	18.6	17.3	108	50-146	2	50
4,4'-DDE	ND	20.1	17.3	116	21.1	17.3	122	48-146	5	50
Endrin	ND	19.4	17.3	112	19.3	17.3	112	42-150	1	50
Endosulfan II	ND	16.3	17.3	94	16.2	17.3	94	28-145	1	50
4,4'-DDD	ND	20.9	17.3	121	21.3	17.3	123	32-166	2	50
Endrin Aldehyde	ND	17.5	17.3	101	17.0	17.3	98	10-147	3	50
Endosulfan Sulfate	ND	17.9	17.3	104	17.9	17.3	104	27-156	0	50
4,4'-DDT	ND	20.0	17.3	116	19.7	17.3	114	47-157	2	50
Methoxychlor	21	19.3	17.3	-8 *	18.9	17.3	-10 *	35-171	2	50
Chlordane	ND	181	173	105	171	173	99	70-130	6	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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Extracted: 06/02/2004
Date Analyzed: 06/12/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0407909

	Lab Control Sample KWG0407909-1 Lab Control Spike			Duplicate Lab Control Sample KWG0407909-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	0.189	0.200	94	0.182	0.200	91	56-132	3	30
beta-BHC	0.176	0.200	88	0.167	0.200	84	42-145	5	30
gamma-BHC (Lindane)	0.186	0.200	93	0.177	0.200	88	59-130	5	30
delta-BHC	0.203	0.200	101	0.193	0.200	96	57-142	5	30
Heptachlor	0.172	0.200	86	0.167	0.200	83	39-120	3	30
Aldrin	0.159	0.200	80	0.155	0.200	78	38-121	2	30
Heptachlor Epoxide	0.169	0.200	85	0.161	0.200	81	62-119	5	30
Endosulfan I	0.153	0.200	77	0.145	0.200	72	59-111	6	30
Dieldrin	0.192	0.200	96	0.181	0.200	91	64-126	6	30
4,4'-DDE	0.198	0.200	99	0.186	0.200	93	66-122	6	30
Endrin	0.200	0.200	100	0.189	0.200	94	63-128	6	30
Endosulfan II	0.181	0.200	90	0.169	0.200	84	62-115	7	30
4,4'-DDD	0.194	0.200	97	0.180	0.200	90	47-151	7	30
Endrin Aldehyde	0.155	0.200	78	0.148	0.200	74	52-121	5	30
Endosulfan Sulfate	0.171	0.200	85	0.161	0.200	80	60-125	6	30
4,4'-DDT	0.199	0.200	99	0.187	0.200	93	47-157	6	30
Methoxychlor	0.202	0.200	101	0.190	0.200	95	49-148	6	30
Toxaphene	2.48	2.50	99	2.43	2.50	97	70-130	2	30
Chlordane	1.84	2.00	92	1.77	2.00	88	70-130	4	30

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Extracted: 06/04/2004
Date Analyzed: 06/12/2004

Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG0408110

	Lab Control Sample KWG0408110-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
alpha-BHC	22.6	20.0	113	64-135
beta-BHC	20.7	20.0	103	49-145
gamma-BHC (Lindane)	21.6	20.0	108	63-137
delta-BHC	23.5	20.0	117	68-144
Heptachlor	20.1	20.0	100	61-123
Aldrin	20.2	20.0	101	59-127
Heptachlor Epoxide	20.2	20.0	101	64-124
Endosulfan I	17.2	20.0	86	55-124
Dieldrin	22.9	20.0	114	68-131
4,4'-DDE	24.3	20.0	122	67-133
Endrin	23.6	20.0	118	72-133
Endosulfan II	20.5	20.0	102	62-126
4,4'-DDD	22.8	20.0	114	67-139
Endrin Aldehyde	16.2	20.0	81	48-120
Endosulfan Sulfate	20.4	20.0	102	62-131
4,4'-DDT	23.1	20.0	115	68-144
Methoxychlor	22.5	20.0	112	65-140
Toxaphene	220	200	110	70-130
Chlordane	206	200	103	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.

Polychlorinated Biphenyls
PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected:
Date Received: 05/29/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: RS-PE04 Elutriate
Lab Code: K2403972-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.21	0.023	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1221	ND	U	0.42	0.041	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1232	ND	U	0.21	0.058	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1242	ND	U	0.21	0.088	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1248	ND	U	0.21	0.023	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1254	ND	U	0.21	0.036	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1260	ND	U	0.21	0.015	1	06/02/04	06/09/04	KWG0407907	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	50	10-147	06/09/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0407907-3

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.022	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1221	ND	U	0.39	0.039	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1232	ND	U	0.20	0.055	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1242	ND	U	0.20	0.084	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1248	ND	U	0.20	0.022	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1254	ND	U	0.20	0.034	1	06/02/04	06/09/04	KWG0407907	
Aroclor 1260	ND	U	0.20	0.014	1	06/02/04	06/09/04	KWG0407907	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	10-147	06/09/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RS-PE04 Elutriate	K2403972-002	50
Method Blank	KWG0407907-3	83
Lab Control Sample	KWG0407907-1	79
Duplicate Lab Control Sample	KWG0407907-2	82

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-147

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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Extracted: 06/02/2004
Date Analyzed: 06/09/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535
Analysis Method: 8082

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0407907

	Lab Control Sample KWG0407907-1 Lab Control Spike			Duplicate Lab Control Sample KWG0407907-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	1.65	2.00	82	1.63	2.00	82	46-143	1	30
Aroclor 1260	1.40	2.00	70	1.36	2.00	68	50-139	4	30

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

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

Polychlorinated Biphenyls
PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected:
Date Received: 05/29/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: RS-PE04
Lab Code: K2403972-001

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	8.7	2.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1221	ND	U	18	2.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1232	ND	U	8.7	2.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1242	ND	U	8.7	2.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1248	ND	U	8.7	2.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1254	ND	U	8.7	2.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1260	ND	U	8.7	2.8	1	06/04/04	06/12/04	KWG0408111	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	40-145	06/12/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0408111-4

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	5.8	1.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1221	ND	U	12	1.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1232	ND	U	5.8	1.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1242	ND	U	5.8	1.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1248	ND	U	5.8	1.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1254	ND	U	5.8	1.8	1	06/04/04	06/12/04	KWG0408111	
Aroclor 1260	ND	U	5.8	1.8	1	06/04/04	06/12/04	KWG0408111	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	79	40-145	06/12/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RS-PE04	K2403972-001	81
Method Blank	KWG0408111-4	79
RS-PE04MS	KWG0408111-1	78
RS-PE04DMS	KWG0408111-2	82
Lab Control Sample	KWG0408111-3	80

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl	40-145

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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Extracted: 06/04/2004
Date Analyzed: 06/12/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: RS-PE04
Lab Code: K2403972-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low
Extraction Lot: KWG0408111

Analyte Name	Sample Result	RS-PE04MS KWG0408111-1 Matrix Spike			RS-PE04DMS KWG0408111-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Aroclor 1016	ND	171	173	99	172	173	100	44-149	1	50
Aroclor 1260	ND	167	173	97	163	173	94	29-169	2	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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Extracted: 06/04/2004
Date Analyzed: 06/12/2004

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG0408111

	Lab Control Sample KWG0408111-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Aroclor 1016	186	200	93	47-139
Aroclor 1260	181	200	91	48-149

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.

Congener Specific PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected:
Date Received: 05/29/2004

Congener Specific PCBs

Sample Name: RS-PE04 Elutriate
Lab Code: K2403972-002

Units: ng/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	Ui	5.3	1.8	1	06/02/04	06/09/04	KWG0407908	
PCB 18	ND	U	5.3	2.1	1	06/02/04	06/09/04	KWG0407908	*
PCB 28	ND	U	5.3	1.3	1	06/02/04	06/09/04	KWG0407908	
PCB 44	ND	U	5.3	2.3	1	06/02/04	06/09/04	KWG0407908	
PCB 52	ND	U	5.3	1.6	1	06/02/04	06/09/04	KWG0407908	*
PCB 66	ND	U	5.3	1.3	1	06/02/04	06/09/04	KWG0407908	
PCB 87	ND	U	5.3	1.5	1	06/02/04	06/09/04	KWG0407908	
PCB 101	ND	U	5.3	2.0	1	06/02/04	06/09/04	KWG0407908	
PCB 138	ND	U	5.3	1.4	1	06/02/04	06/09/04	KWG0407908	
PCB 156	ND	U	5.3	1.3	1	06/02/04	06/09/04	KWG0407908	
PCB 180	ND	U	5.3	1.5	1	06/02/04	06/09/04	KWG0407908	
PCB 183	ND	U	5.3	1.4	1	06/02/04	06/09/04	KWG0407908	
PCB 184	ND	U	5.3	2.6	1	06/02/04	06/09/04	KWG0407908	
PCB 187	ND	U	5.3	2.0	1	06/02/04	06/09/04	KWG0407908	
PCB 195	ND	U	5.3	1.3	1	06/02/04	06/09/04	KWG0407908	
PCB 206	ND	U	5.3	1.6	1	06/02/04	06/09/04	KWG0407908	
PCB 209	ND	U	5.3	2.2	1	06/02/04	06/09/04	KWG0407908	
PCB 49	ND	U	5.3	0.54	1	06/02/04	06/09/04	KWG0407908	
PCB 77	ND	U	5.3	0.42	1	06/02/04	06/09/04	KWG0407908	
PCB 105	ND	U	5.3	0.28	1	06/02/04	06/09/04	KWG0407908	
PCB 118	ND	U	5.3	1.5	1	06/02/04	06/09/04	KWG0407908	
PCB 126	ND	U	5.3	0.36	1	06/02/04	06/09/04	KWG0407908	
PCB 128	ND	U	5.3	0.41	1	06/02/04	06/09/04	KWG0407908	
PCB 153	ND	U	5.3	0.93	1	06/02/04	06/09/04	KWG0407908	
PCB 169	ND	U	5.3	0.35	1	06/02/04	06/09/04	KWG0407908	
PCB 170	ND	U	5.3	0.42	1	06/02/04	06/09/04	KWG0407908	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	69	10-125	06/09/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0407908-4

Units: ng/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.0	1.4	1	06/02/04	06/08/04	KWG0407908	
PCB 18	ND	U	5.0	2.0	1	06/02/04	06/08/04	KWG0407908	*
PCB 28	ND	U	5.0	1.2	1	06/02/04	06/08/04	KWG0407908	
PCB 44	ND	U	5.0	2.2	1	06/02/04	06/08/04	KWG0407908	
PCB 52	ND	U	5.0	1.5	1	06/02/04	06/08/04	KWG0407908	*
PCB 66	ND	U	5.0	1.2	1	06/02/04	06/08/04	KWG0407908	
PCB 87	ND	U	5.0	1.4	1	06/02/04	06/08/04	KWG0407908	
PCB 101	ND	U	5.0	1.9	1	06/02/04	06/08/04	KWG0407908	
PCB 138	ND	U	5.0	1.3	1	06/02/04	06/08/04	KWG0407908	
PCB 156	ND	U	5.0	1.2	1	06/02/04	06/08/04	KWG0407908	
PCB 180	ND	U	5.0	1.4	1	06/02/04	06/08/04	KWG0407908	
PCB 183	ND	U	5.0	1.3	1	06/02/04	06/08/04	KWG0407908	
PCB 184	ND	U	5.0	2.4	1	06/02/04	06/08/04	KWG0407908	
PCB 187	ND	U	5.0	1.9	1	06/02/04	06/08/04	KWG0407908	
PCB 195	ND	U	5.0	1.2	1	06/02/04	06/08/04	KWG0407908	
PCB 206	ND	U	5.0	1.5	1	06/02/04	06/08/04	KWG0407908	
PCB 209	ND	U	5.0	2.1	1	06/02/04	06/08/04	KWG0407908	
PCB 49	ND	U	5.0	0.51	1	06/02/04	06/08/04	KWG0407908	
PCB 77	ND	U	5.0	0.40	1	06/02/04	06/08/04	KWG0407908	
PCB 105	ND	U	5.0	0.26	1	06/02/04	06/08/04	KWG0407908	
PCB 118	ND	U	5.0	1.4	1	06/02/04	06/08/04	KWG0407908	
PCB 126	ND	U	5.0	0.34	1	06/02/04	06/08/04	KWG0407908	
PCB 128	ND	U	5.0	0.39	1	06/02/04	06/08/04	KWG0407908	
PCB 153	ND	U	5.0	0.89	1	06/02/04	06/08/04	KWG0407908	
PCB 169	ND	U	5.0	0.33	1	06/02/04	06/08/04	KWG0407908	
PCB 170	ND	U	5.0	0.40	1	06/02/04	06/08/04	KWG0407908	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	10-125	06/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected:
Date Received: 05/29/2004

Congener Specific PCBs

Sample Name: RS-PE04
Lab Code: K2403972-001

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
PCB 8	ND	U	0.44	0.14	1	06/04/04	06/15/04	KWG0408109	
PCB 18	ND	U	0.44	0.044	1	06/04/04	06/15/04	KWG0408109	
PCB 28	ND	U	0.44	0.38	1	06/04/04	06/15/04	KWG0408109	
PCB 44	ND	U	0.44	0.28	1	06/04/04	06/15/04	KWG0408109	
PCB 52	ND	U	0.44	0.072	1	06/04/04	06/15/04	KWG0408109	
PCB 66	ND	U	0.44	0.057	1	06/04/04	06/15/04	KWG0408109	
PCB 87	ND	U	0.44	0.043	1	06/04/04	06/15/04	KWG0408109	
PCB 101	**0.086**	J	0.44	0.046	1	06/04/04	06/15/04	KWG0408109	
PCB 138	**0.090**	J	0.44	0.046	1	06/04/04	06/15/04	KWG0408109	
PCB 156	ND	U	0.44	0.066	1	06/04/04	06/15/04	KWG0408109	
PCB 180	ND	U	0.44	0.047	1	06/04/04	06/15/04	KWG0408109	
PCB 183	ND	U	0.44	0.052	1	06/04/04	06/15/04	KWG0408109	
PCB 184	ND	U	0.44	0.070	1	06/04/04	06/15/04	KWG0408109	
PCB 187	ND	U	0.44	0.055	1	06/04/04	06/15/04	KWG0408109	
PCB 195	ND	U	0.44	0.063	1	06/04/04	06/15/04	KWG0408109	
PCB 206	ND	U	0.44	0.084	1	06/04/04	06/15/04	KWG0408109	
PCB 209	ND	U	0.44	0.076	1	06/04/04	06/15/04	KWG0408109	
PCB 49	ND	U	0.44	0.069	1	06/04/04	06/15/04	KWG0408109	
PCB 77	ND	U	0.44	0.099	1	06/04/04	06/15/04	KWG0408109	
PCB 105	ND	U	0.44	0.061	1	06/04/04	06/15/04	KWG0408109	
PCB 118	**0.076**	J	0.44	0.060	1	06/04/04	06/15/04	KWG0408109	
PCB 126	ND	U	0.44	0.060	1	06/04/04	06/15/04	KWG0408109	
PCB 128	ND	U	0.44	0.38	1	06/04/04	06/15/04	KWG0408109	
PCB 153	**0.064**	J	0.44	0.060	1	06/04/04	06/15/04	KWG0408109	
PCB 169	ND	U	0.44	0.049	1	06/04/04	06/15/04	KWG0408109	
PCB 170	ND	U	0.44	0.050	1	06/04/04	06/15/04	KWG0408109	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	78	10-128	06/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0408109-4

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
PCB 8	ND	U	0.29	0.087	1	06/04/04	06/14/04	KWG0408109	
PCB 18	ND	U	0.29	0.029	1	06/04/04	06/14/04	KWG0408109	
PCB 28	ND	U	0.29	0.25	1	06/04/04	06/14/04	KWG0408109	
PCB 44	ND	U	0.29	0.18	1	06/04/04	06/14/04	KWG0408109	
PCB 52	ND	U	0.29	0.047	1	06/04/04	06/14/04	KWG0408109	
PCB 66	ND	U	0.29	0.037	1	06/04/04	06/14/04	KWG0408109	
PCB 87	ND	U	0.29	0.028	1	06/04/04	06/14/04	KWG0408109	
PCB 101	ND	U	0.29	0.030	1	06/04/04	06/14/04	KWG0408109	
PCB 138	ND	U	0.29	0.030	1	06/04/04	06/14/04	KWG0408109	
PCB 156	ND	U	0.29	0.043	1	06/04/04	06/14/04	KWG0408109	
PCB 180	ND	U	0.29	0.031	1	06/04/04	06/14/04	KWG0408109	
PCB 183	ND	U	0.29	0.034	1	06/04/04	06/14/04	KWG0408109	
PCB 184	ND	U	0.29	0.046	1	06/04/04	06/14/04	KWG0408109	
PCB 187	ND	U	0.29	0.036	1	06/04/04	06/14/04	KWG0408109	
PCB 195	ND	U	0.29	0.041	1	06/04/04	06/14/04	KWG0408109	
PCB 206	ND	U	0.29	0.055	1	06/04/04	06/14/04	KWG0408109	
PCB 209	ND	U	0.29	0.050	1	06/04/04	06/14/04	KWG0408109	
PCB 49	ND	U	0.29	0.045	1	06/04/04	06/14/04	KWG0408109	
PCB 77	ND	U	0.29	0.065	1	06/04/04	06/14/04	KWG0408109	
PCB 105	ND	U	0.29	0.040	1	06/04/04	06/14/04	KWG0408109	
PCB 118	ND	U	0.29	0.039	1	06/04/04	06/14/04	KWG0408109	
PCB 126	ND	U	0.29	0.039	1	06/04/04	06/14/04	KWG0408109	
PCB 128	ND	U	0.29	0.25	1	06/04/04	06/14/04	KWG0408109	
PCB 153	ND	U	0.29	0.039	1	06/04/04	06/14/04	KWG0408109	
PCB 169	ND	U	0.29	0.032	1	06/04/04	06/14/04	KWG0408109	
PCB 170	ND	U	0.29	0.033	1	06/04/04	06/14/04	KWG0408109	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	79	10-128	06/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3520C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RS-PE04 Elutriate	K2403972-002	69
Method Blank	KWG0407908-4	74
RS-PE04 ElutriateMS	KWG0407908-1	66
RS-PE04 ElutriateDMS	KWG0407908-2	64
Lab Control Sample	KWG0407908-3	63

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-125

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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RS-PE04	K2403972-001	78
Method Blank	KWG0408109-4	79
RS-PE04MS	KWG0408109-1	73
RS-PE04DMS	KWG0408109-2	72
Lab Control Sample	KWG0408109-3	83

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-128

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

Polynuclear Aromatic Hydrocarbons
EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected:
Date Received: 05/29/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: RS-PE04 Elutriate
Lab Code: K2403972-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.047**		0.020	0.0039	1	06/03/04	06/10/04	KWG0407988	
2-Methylnaphthalene	**0.0081**	J	0.020	0.0038	1	06/03/04	06/10/04	KWG0407988	
Acenaphthylene	ND	U	0.020	0.0011	1	06/03/04	06/10/04	KWG0407988	
Acenaphthene	**0.0055**	J	0.020	0.0024	1	06/03/04	06/10/04	KWG0407988	
Dibenzofuran	**0.0043**	J	0.020	0.0023	1	06/03/04	06/10/04	KWG0407988	
Fluorene	**0.0030**	J	0.020	0.0024	1	06/03/04	06/10/04	KWG0407988	
Phenanthrene	**0.0036**	J	0.020	0.0028	1	06/03/04	06/10/04	KWG0407988	
Anthracene	ND	U	0.020	0.0022	1	06/03/04	06/10/04	KWG0407988	
Fluoranthene	**0.0052**	J	0.020	0.0030	1	06/03/04	06/10/04	KWG0407988	
Pyrene	**0.011**	J	0.020	0.0024	1	06/03/04	06/10/04	KWG0407988	
Benz(a)anthracene	ND	U	0.020	0.0022	1	06/03/04	06/10/04	KWG0407988	
Chrysene	ND	U	0.020	0.0028	1	06/03/04	06/10/04	KWG0407988	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	06/03/04	06/10/04	KWG0407988	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	06/03/04	06/10/04	KWG0407988	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	06/03/04	06/10/04	KWG0407988	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	06/03/04	06/10/04	KWG0407988	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	06/03/04	06/10/04	KWG0407988	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	06/03/04	06/10/04	KWG0407988	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	64	37-107	06/10/04	Acceptable
Fluoranthene-d10	72	18-137	06/10/04	Acceptable
Terphenyl-d14	74	18-153	06/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0407988-3

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0039	1	06/03/04	06/10/04	KWG0407988	
2-Methylnaphthalene	ND	U	0.020	0.0038	1	06/03/04	06/10/04	KWG0407988	
Acenaphthylene	**0.0038**	J	0.020	0.0011	1	06/03/04	06/10/04	KWG0407988	
Acenaphthene	ND	U	0.020	0.0024	1	06/03/04	06/10/04	KWG0407988	
Dibenzofuran	ND	U	0.020	0.0023	1	06/03/04	06/10/04	KWG0407988	
Fluorene	ND	U	0.020	0.0024	1	06/03/04	06/10/04	KWG0407988	
Phenanthrene	**0.0031**	J	0.020	0.0028	1	06/03/04	06/10/04	KWG0407988	
Anthracene	ND	U	0.020	0.0022	1	06/03/04	06/10/04	KWG0407988	
Fluoranthene	**0.0052**	J	0.020	0.0030	1	06/03/04	06/10/04	KWG0407988	
Pyrene	**0.010**	J	0.020	0.0024	1	06/03/04	06/10/04	KWG0407988	
Benz(a)anthracene	ND	U	0.020	0.0022	1	06/03/04	06/10/04	KWG0407988	
Chrysene	ND	U	0.020	0.0028	1	06/03/04	06/10/04	KWG0407988	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	06/03/04	06/10/04	KWG0407988	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	06/03/04	06/10/04	KWG0407988	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	06/03/04	06/10/04	KWG0407988	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	06/03/04	06/10/04	KWG0407988	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	06/03/04	06/10/04	KWG0407988	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	06/03/04	06/10/04	KWG0407988	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	50	37-107	06/10/04	Acceptable
Fluoranthene-d10	76	18-137	06/10/04	Acceptable
Terphenyl-d14	70	18-153	06/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected:
Date Received: 05/29/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: RS-PE04
Lab Code: K2403972-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	4.2	0.32	1	06/04/04	06/15/04	KWG0408084	
2-Methylnaphthalene	ND	U	4.2	0.32	1	06/04/04	06/15/04	KWG0408084	
Acenaphthylene	ND	U	4.2	0.25	1	06/04/04	06/15/04	KWG0408084	
Acenaphthene	ND	U	4.2	0.32	1	06/04/04	06/15/04	KWG0408084	
Fluorene	ND	U	4.2	0.26	1	06/04/04	06/15/04	KWG0408084	
Dibenzofuran	ND	U	4.2	0.31	1	06/04/04	06/15/04	KWG0408084	
Phenanthrene	**0.33**	J	4.2	0.23	1	06/04/04	06/15/04	KWG0408084	
Anthracene	ND	U	4.2	0.29	1	06/04/04	06/15/04	KWG0408084	
Fluoranthene	**0.34**	J	4.2	0.26	1	06/04/04	06/15/04	KWG0408084	
Pyrene	**0.26**	J	4.2	0.17	1	06/04/04	06/15/04	KWG0408084	
Benzo(b)fluoranthene	ND	U	4.2	0.22	1	06/04/04	06/15/04	KWG0408084	
Benzo(k)fluoranthene	ND	U	4.2	0.23	1	06/04/04	06/15/04	KWG0408084	
Benz(a)anthracene	ND	U	4.2	0.20	1	06/04/04	06/15/04	KWG0408084	
Chrysene	ND	U	4.2	0.23	1	06/04/04	06/15/04	KWG0408084	
Benzo(a)pyrene	ND	U	4.2	0.22	1	06/04/04	06/15/04	KWG0408084	
Indeno(1,2,3-cd)pyrene	ND	U	4.2	0.23	1	06/04/04	06/15/04	KWG0408084	
Dibenz(a,h)anthracene	ND	U	4.2	0.28	1	06/04/04	06/15/04	KWG0408084	
Benzo(g,h,i)perylene	ND	U	4.2	0.16	1	06/04/04	06/15/04	KWG0408084	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	31	27-110	06/15/04	Acceptable
Fluoranthene-d10	42	34-122	06/15/04	Acceptable
Terphenyl-d14	74	50-132	06/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0408084-5

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	2.8	0.21	1	06/04/04	06/15/04	KWG0408084	
2-Methylnaphthalene	ND	U	2.8	0.21	1	06/04/04	06/15/04	KWG0408084	
Acenaphthylene	ND	U	2.8	0.16	1	06/04/04	06/15/04	KWG0408084	
Acenaphthene	ND	U	2.8	0.21	1	06/04/04	06/15/04	KWG0408084	
Fluorene	ND	U	2.8	0.17	1	06/04/04	06/15/04	KWG0408084	
Dibenzofuran	ND	U	2.8	0.20	1	06/04/04	06/15/04	KWG0408084	
Phenanthrene	ND	U	2.8	0.15	1	06/04/04	06/15/04	KWG0408084	
Anthracene	ND	U	2.8	0.19	1	06/04/04	06/15/04	KWG0408084	
Fluoranthene	ND	U	2.8	0.17	1	06/04/04	06/15/04	KWG0408084	
Pyrene	ND	U	2.8	0.11	1	06/04/04	06/15/04	KWG0408084	
Benzo(b)fluoranthene	ND	U	2.8	0.14	1	06/04/04	06/15/04	KWG0408084	
Benzo(k)fluoranthene	ND	U	2.8	0.15	1	06/04/04	06/15/04	KWG0408084	
Benz(a)anthracene	ND	U	2.8	0.13	1	06/04/04	06/15/04	KWG0408084	
Chrysene	ND	U	2.8	0.15	1	06/04/04	06/15/04	KWG0408084	
Benzo(a)pyrene	ND	U	2.8	0.14	1	06/04/04	06/15/04	KWG0408084	
Indeno(1,2,3-cd)pyrene	ND	U	2.8	0.15	1	06/04/04	06/15/04	KWG0408084	
Dibenz(a,h)anthracene	ND	U	2.8	0.18	1	06/04/04	06/15/04	KWG0408084	
Benzo(g,h,i)perylene	ND	U	2.8	0.10	1	06/04/04	06/15/04	KWG0408084	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	62	27-110	06/15/04	Acceptable
Fluoranthene-d10	83	34-122	06/15/04	Acceptable
Terphenyl-d14	89	50-132	06/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Water

Service Request: K2403972

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
RS-PE04 Elutriate	K2403972-002	64	72	74
Method Blank	KWG0407988-3	50	76	70
Lab Control Sample	KWG0407988-1	55	70	66
Duplicate Lab Control Sample	KWG0407988-2	61	71	60

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	37-107
Sur2 =	Fluoranthene-d10	18-137
Sur3 =	Terphenyl-d14	18-153

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: PPB Environmental
Project: COE Ref Sample
Sample Matrix: Sediment

Service Request: K2403972

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
RS-PE04	K2403972-001	31	42	74
Method Blank	KWG0408084-5	62	83	89
RS-PE04MS	KWG0408084-1	51	66	72
RS-PE04DMS	KWG0408084-2	39	59	62
Lab Control Sample	KWG0408084-3	79	84	87
Duplicate Lab Control Sample	KWG0408084-4	74	79	80

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	27-110
Sur2 =	Fluoranthene-d10	34-122
Sur3 =	Terphenyl-d14	50-132

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

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

Columbia Analytical Services INC.
An Employee - Owned Company

May 25, 2004 Service Request No: K2403211

Bryan Cottor
PPB Environmental Laboratories, Inc.
6821 SW Archer Road
Gainesville, FL 32608

RE: PPB-USACE Port Everglades 2004

Dear Bryan:

Enclosed are the results of the sample(s) submitted to our laboratory on May 3, 2004. For your reference, these analyses have been assigned our service request number K2403211.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Harvey Jacky
Project Chemist

HJ/jeb

NELAP Accredited ACIL Seal of Excellence Award

Acronyms

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

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

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

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	PPB Environmental Laboratories	**Service Request No.:**	K2403211
Project:	USACE-Port of Everglades 2004	**Date Received:**	5/3/04
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 5/3/04. No discrepancies were noted upon initial sample inspection. 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 Aluminum for sample E-PE04-1 was outside control criteria. Since the unspiked sample contained high analyte concentration relative to the amount spiked, the variability between replicates was sufficient to bias the percent recovery outside the control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. No further corrective action was appropriate.

The control criteria for matrix spike recovery of Iron for sample E-PE04-1 is not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

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

Oil and Grease by EPA Method 1664

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

Organotin Compounds

Elevated Method Reporting Limits:
Sample E-PE04-4 required dilution due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilution.

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recoveries of Tri-n-butyltin and n-Butyltin for sample E-PE04-3 are not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

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

Approved by Ami Spreh **Date** 5/18/04

Organochlorine Pesticides by EPA Method 8081A

Elevated Method Detection Limits:
The detection limit is elevated for a few analytes in all samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection limit. The results are flagged to indicate the matrix interference.

The reporting limit is elevated for Endosulfan II and Methoxychlor in sample E-PE04-2. 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:
For analytes flagged 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 criteria of 40% difference for 4,4'-DDT was exceeded in sample E-PE04-3. The lower of the two values was reported because of an apparent interference on the alternate column that produced the higher value.

The confirmation comparison criterion of 40% difference for gamma-BHC (Lindane) was exceeded in samples E-PE04-4MS and E-PE04-4DMS. The lower of the two values was reported because of an apparent interference on the alternate column that produced the higher value.

Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for Decachlorobiphenyl in Continuing Calibration Verification (CCV) 0514F027 and 0514F04. 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.

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

PCB Aroclors by EPA Method 8082

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

PCB Congeners by EPA Method 8082

Elevated Method Detection Limits:
The detection limit is elevated for PCB 187 in sample E-PE04-2, and PCB 66 and PCB 187 in samples E-PE04-3 and E-PE04-4. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection limit. The results are flagged to indicate the matrix interference.

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

Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for PCB 66 in Continuing Calibration Verification (CCV): 0517F003 and 0517F016. 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.

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

Approved by [signature] **Date** 5/28/01

Polynuclear Aromatic Hydrocarbons by EPA Method 8270C

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID CAL3514: 2,3,5-Trimethylnaphthalene, 2,4,6-Tribromophenol, Pyrene, Dibenz (a, h) anthracene. 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 9.8%. 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.

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

Approved by _____ **Date** 5/18/04

Chain of Custody Documentation

Sediments

K2403211

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor: CAS-Kelso
		Shipping Method: Fed Ex

CLIENT NAME: PPB - USACE Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: (Signature) CSA

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per attached Scope of work

PRESERVATION
CF Chilled-Filtered
SF Sulfuric-Filtered
NF Nitric-Filtered
C Chilled
S Sulfuric
N Nitric
B Basic/NaOH
Z Zinc
T Thiosulfate
H HCL
Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS	Lab I.D. Number
254314	4/22/04	1520	✓		E-PE04-1	S	3	✓	
315		1700	✓		-1 dup		3	✓	
316		1320	✓		-2		3	✓	
317		0912	✓		-3		3	✓	
318		1104	✓		-4		3	✓	

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
		4/30/04	
Relinquished by: (Signature)	4/30/04 1600	Received by: (Signature) CAS Kelso	
Relinquished by: (Signature)		Received by: (Signature) Amanda Jull CAS	5/3/04 1530
Relinquished by: (Signature)		Received by: (Signature)	

Remarks and Observations

Note to login:
Please use station Location as client Id.
CAS PM: Harvey Jacky

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

Columbia Analytical Services Inc.
Cooler Receipt and Preservation Form

Project/Client ppb enr. Work Order K240 3211

Cooler received on 5/3/01 and opened on 5/3/01 by TBlack

1.	Were custody seals on outside of coolers?						Y	N
	If yes, how many and where?							
2.	Were seals intact and signature & date correct?						Y	N
3.	Is the shipper's airbill available and filed? If no, record airbill number:						Y	N
4.	COC#							
	Temperature of cooler(s) upon receipt:	3.8	0.4	4.2	2.3	4.1	5.0	4.3
	Temperature Blank:	n/a	n/a	n/a	n/a	n/a	n/a	n/a
5.	Were custody papers properly filled out (ink, signed, etc.)?						Y	N
6.	Type of packing material present: cardboard - mesh - loose ice							
7.	Did all bottles arrive in good condition (unbroken)?						Y	N
8.	Were all bottle labels complete (i.e analysis, preservation, etc.)?						Y	N
9.	Did all bottle labels and tags agree with custody papers?						Y	N
10.	Were the correct types of bottles used for the tests indicated?						Y	N
11.	Were all of the preserved bottles received at the lab with the appropriate pH?						Y	N
12.	Were VOA vials checked for absence of air bubbles, and if present, noted below?						~~Y~~	~~N~~
13.	Did the bottles originate from CAS/K or a branch laboratory?						Y	N
14.	Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?						~~Y~~	~~N~~
15.	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 Results

Client: PPB Environmental
Project: PPB-USACE Port Everg
Sample Matrix: Sediment

Service Request: K2403211

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
E-PE04-1	K2403211-001	04/22/2004	05/03/2004	05/06/2004	65.0	
E-PE04-1 Dup	K2403211-002	04/22/2004	05/03/2004	05/06/2004	64.4	
E-PE04-2	K2403211-003	04/22/2004	05/03/2004	05/06/2004	59.8	
E-PE04-3	K2403211-004	04/22/2004	05/03/2004	05/06/2004	63.4	
E-PE04-4	K2403211-005	04/22/2004	05/03/2004	05/06/2004	55.9	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403211
Project:	PPB-USACE Port Everg	**Date Collected:**	04/22/2004
Sample Matrix:	Sediment	**Date Received:**	05/03/2004
		Date Analyzed:	05/06/2004

Duplicate Sample Summary

Total Solids

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

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
E-PE04-1	K2403211-001	65.0	65.0	65.0	<1	

General Chemistry Parameters

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/04
Date Received: 05/03/04

Carbon, Total Organic

Prep Method: NONE
Analysis Method: PSEP
Test Notes:

Units: PERCENT
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
E-PE04-1	K2403211-001	0.05	0.02	1	NA	05/12/04	1.05	
E-PE04-1 Dup	K2403211-002	0.05	0.02	1	NA	05/12/04	0.97	
E-PE04-2	K2403211-003	0.05	0.02	1	NA	05/12/04	1.24	
E-PE04-3	K2403211-004	0.05	0.02	1	NA	05/12/04	0.93	
E-PE04-4	K2403211-005	0.05	0.02	1	NA	05/12/04	1.88	
Method Blank	K2403211-MB	0.05	0.02	1	NA	05/12/04	ND	

Approved By: _____ Date: 5/18/04

1A/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/04
Date Received: 05/03/04
Date Extracted: NA
Date Analyzed: 05/12/04

Duplicate Summary
Inorganic Parameters

Sample Name: E-PE04-1
Lab Code: K2403211-001DUP
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	NONE	PSEP	0.05	1.05	1.06	1.06	< 1	

Approved By: MTB Date: 5/18/04

DUP/020597p

03211WET.mf1 - DUP 05/18/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/04
Date Received: 05/03/04
Date Extracted: NA
Date Analyzed: 05/14/04

Triplicate Summary
Inorganic Parameters

Sample Name: E-PE04-1
Lab Code: K2403211-001TRP
Test Notes:

Units: PERCENT
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Triplicate Sample Result	Average	Relative Standard Deviation	Result Notes
Carbon, Total Organic	NONE	PSEP	0.05	1.05	1.06	0.97	1.03	5	

Approved By: MJ Pitt Date: 5/18/04

DUP/020597p

03211WET.mf1 - TRP 05/18/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403211
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	04/22/04
Sample Matrix:	Sediment	**Date Received:**	05/03/04
		Date Extracted:	NA
		Date Analyzed:	05/12/04

Matrix Spike Summary
Inorganic Parameters

Sample Name:	E-PE04-1	Units:	PERCENT
Lab Code:	K2403211-001MS	Basis:	Dry
Test Notes:			

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	NONE	PSEP	0.05	4.84	1.05	5.02	82	75-125	

Approved By: MY Fill Date: 5/18/04

MS/020597p

03211WET.mfl - MS 05/18/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
LCS Matrix: Sediment

Service Request: K2403211
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 05/12/04

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name: Lab Control Sample
Lab Code: K2403211-LCS
Test Notes:

Units: PERCENT
Basis: Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	NONE	PSEP	0.57	0.57	100	85-115	

Approved By: _____ Date: 5/18/04

LCS/020597p

03211WET.mf1 - LCS 05/18/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
LCS Matrix: Sediment

Service Request: K2403211
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 05/14/04

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name: Lab Control Sample
Lab Code: K2403211-LCS
Test Notes:

Units: PERCENT
Basis: Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	NONE	PSEP	0.57	0.59	104	85-115	

Approved By: [signature] Date: 5/18/04

LCS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403211
Date Collected: NA
Date Received: NA
Date Analyzed: 05/12/04

Carbon, Total Organic
PSEP
Units: PERCENT

CONTINUING CALIBRATION VERIFICATION (CCV)

	True Value	Measured Value	Percent Recovery
CCV 1 Result	20.0	19.1	96
CCV 2 Result	20.0	19.2	96
CCV 3 Result	20.0	18.7	94

CONTINUING CALIBRATION BLANK (CCB)

	MRL	Blank Value
CCB 1 Result	0.05	ND
CCB 2 Result	0.05	ND
CCB 3 Result	0.05	ND

Approved By: [signature] Date: 5/18/04

COMBOQCD/042695

Q-CCV.XLT

10/6/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403211
Date Collected: NA
Date Received: NA
Date Analyzed: 05/14/04

Carbon, Total Organic
PSEP
Units: PERCENT

CONTINUING CALIBRATION VERIFICATION (CCV)

	True Value	Measured Value	Percent Recovery
CCV 1 Result	20.0	20.0	100
CCV 2 Result	20.0	19.8	99
CCV 3 Result	20.0	19.6	98

CONTINUING CALIBRATION BLANK (CCB)

	MRL	Blank Value
CCB 1 Result	0.05	ND
CCB 2 Result	0.05	ND
CCB 3 Result	0.05	ND

Approved By: _____ Date: 5/18/04

COMBOQCD/042695

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : PPB Environmental
Project Name : PPB-USACE Port Everglades 2004
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K2403211
Date Collected : 04/22/04
Date Received : 05/03/04

Sulfide, Total

Analysis Method : 9030M
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
E-PE04-1	K2403211-001	1.5	0.3	1	05/06/04	34.3	
E-PE04-1 Dup	K2403211-002	6.0	1.2	4	05/06/04	72.2	
E-PE04-2	K2403211-003	15	3.0	10	05/06/04	231	
E-PE04-3	K2403211-004	15	3.0	10	05/06/04	159	
E-PE04-4	K2403211-005	30	6.0	20	05/06/04	322	
Method Blank	K2403211-MB	1.5	0.3	1	05/06/04	ND	

M Modified for analysis of soil.

Report By:MFirth

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : PPB Environmental
Project Name : PPB-USACE Port Everglades 2004
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K2403211
Date Collected : 04/22/04
Date Received : 05/03/04
Date Extracted : NA
Date Analyzed : 05/06/04

Duplicate Summary
Inorganic Parameters

Sample Name : E-PE04-3
Lab Code : K2403211-004DUP
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Sulfide, Total	9030M	15	159	172	166	8	

Report By:MFirth

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : PPB Environmental
Project Name : PPB-USACE Port Everglades 2004
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K2403211
Date Collected : 04/22/04
Date Received : 05/03/04
Date Extracted : NA
Date Analyzed : 05/06/04

Matrix Spike Summary
Inorganic Parameters

Sample Name : E-PE04-3
Lab Code : K2403211-004MS
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Sulfide, Total	9030M	150	1870	159	1810	88	60-130	

Report By:MFirth

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	PPB Environmental	**Service Request :**	K2403211
Project Name :	PPB-USACE Port Everglades 2004	**Date Collected :**	NA
Project Number :	NA	**Date Received :**	NA
Sample Matrix :	SEDIMENT	**Date Extracted :**	NA
		Date Analyzed :	05/06/04

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/Kg (ppm)
Lab Code :	K2403211-LCS	Basis :	Dry
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Sulfide, Total	None	9030M	5.6	5.6	100	60-130	

Report By:MFirth

Metals

METALS

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: PPB Environmental

Service Request: K2403211

Project No.:

Project Name: PPB-USACE Port Everglades 2004

Sample No.	Lab Sample ID.
E-PE04-1	K2403211-001
E-PE04-1D	K2403211-001D
E-PE04-1S	K2403211-001S
E-PE04-1 Dup	K2403211-002
E-PE04-2	K2403211-003
E-PE04-3	K2403211-004
E-PE04-4	K2403211-005
Method Blank	K2403211-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:

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 above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Date: 5/19/04

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: PPB-USACE Port Everglades 2004
Matrix: SEDIMENT

Service Request: K2403211
Date Collected: 04/22/04
Date Received: 05/03/04
Units: MG/KG
Basis: Dry

Sample Name: E-PE04-1
Lab Code: K2403211-001

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	11.0	11.0	2	5/11/04	5/12/04	449		N
Antimony	6020	0.05	0.04	5	5/11/04	5/12/04	0.08		
Arsenic	6020	0.5	0.2	5	5/11/04	5/17/04	4.7		
Cadmium	6020	0.055	0.007	5	5/11/04	5/17/04	0.032	B	
Chromium	6020	0.22	0.04	5	5/11/04	5/17/04	3.48		
Copper	6010B	2.2	1.0	2	5/11/04	5/12/04	7.6		
Iron	6010B	4.4	3.3	2	5/11/04	5/12/04	2780		
Lead	6020	0.05	0.02	5	5/11/04	5/17/04	2.59		
Mercury	7471A	0.02	0.01	1	5/7/04	5/10/04	0.01	B	
Nickel	6020	0.22	0.08	5	5/11/04	5/19/04	1.67		
Silver	6020	0.022	0.022	5	5/11/04	5/12/04	0.022	U	
Zinc	6020	0.5	0.1	5	5/11/04	5/17/04	10.1		

% Solids: 65.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: PPB-USACE Port Everglades 2004
Matrix: SEDIMENT

Service Request: K2403211
Date Collected: 04/22/04
Date Received: 05/03/04
Units: MG/KG
Basis: Dry

Sample Name: E-PE04-1 Dup
Lab Code: K2403211-002

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	11.1	11.1	2	5/11/04	5/12/04	585		N
Antimony	6020	0.06	0.04	5	5/11/04	5/12/04	0.10		
Arsenic	6020	0.6	0.2	5	5/11/04	5/17/04	5.1		
Cadmium	6020	0.056	0.007	5	5/11/04	5/17/04	0.036	B	
Chromium	6020	0.22	0.04	5	5/11/04	5/17/04	3.97		
Copper	6010B	2.2	1.0	2	5/11/04	5/12/04	7.0		
Iron	6010B	4.4	3.3	2	5/11/04	5/12/04	3040		
Lead	6020	0.06	0.02	5	5/11/04	5/17/04	2.58		
Mercury	7471A	0.02	0.01	1	5/7/04	5/10/04	0.02		
Nickel	6020	0.22	0.08	5	5/11/04	5/19/04	1.77		
Silver	6020	0.022	0.022	5	5/11/04	5/12/04	0.022	U	
Zinc	6020	0.6	0.1	5	5/11/04	5/17/04	9.4		

% Solids: 64.4

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: PPB-USACE Port Everglades 2004
Matrix: SEDIMENT

Service Request: K2403211
Date Collected: 04/22/04
Date Received: 05/03/04
Units: MG/KG
Basis: Dry

Sample Name: E-PE04-2
Lab Code: K2403211-003

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	9.3	9.3	2	5/11/04	5/12/04	1650		N
Antimony	6020	0.05	0.04	5	5/11/04	5/12/04	0.13		
Arsenic	6020	0.5	0.2	5	5/11/04	5/17/04	3.3		
Cadmium	6020	0.047	0.006	5	5/11/04	5/17/04	0.060		
Chromium	6020	0.19	0.04	5	5/11/04	5/17/04	11.2		
Copper	6010B	1.9	0.8	2	5/11/04	5/12/04	35.5		
Iron	6010B	3.7	2.8	2	5/11/04	5/12/04	2630		
Lead	6020	0.05	0.02	5	5/11/04	5/17/04	11.8		
Mercury	7471A	0.02	0.01	1	5/7/04	5/10/04	0.10		
Nickel	6020	0.19	0.07	5	5/11/04	5/19/04	3.44		
Silver	6020	0.019	0.019	5	5/11/04	5/12/04	0.080		
Zinc	6020	0.5	0.1	5	5/11/04	5/17/04	33.9		

% Solids: 59.8

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: PPB-USACE Port Everglades 2004
Matrix: SEDIMENT

Service Request: K2403211
Date Collected: 04/22/04
Date Received: 05/03/04
Units: MG/KG
Basis: Dry

Sample Name: E-PE04-3
Lab Code: K2403211-004

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	11.3	11.3	2	5/11/04	5/12/04	1080		N
Antimony	6020	0.06	0.05	5	5/11/04	5/12/04	0.07		
Arsenic	6020	0.6	0.2	5	5/11/04	5/17/04	2.7		
Cadmium	6020	0.056	0.007	5	5/11/04	5/17/04	0.047	B	
Chromium	6020	0.23	0.05	5	5/11/04	5/17/04	8.58		
Copper	6010B	2.3	1.0	2	5/11/04	5/12/04	23.7		
Iron	6010B	4.5	3.4	2	5/11/04	5/12/04	1740		
Lead	6020	0.06	0.02	5	5/11/04	5/17/04	7.14		
Mercury	7471A	0.02	0.01	1	5/7/04	5/10/04	0.05		
Nickel	6020	0.23	0.08	5	5/11/04	5/19/04	3.36		
Silver	6020	0.023	0.023	5	5/11/04	5/12/04	0.042		
Zinc	6020	0.6	0.1	5	5/11/04	5/17/04	22.5		

% Solids: 63.4

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: PPB-USACE Port Everglades 2004
Matrix: SEDIMENT

Service Request: K2403211
Date Collected: 04/22/04
Date Received: 05/03/04
Units: MG/KG
Basis: Dry

Sample Name: E-PE04-4
Lab Code: K2403211-005

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	9.9	9.9	2	5/11/04	5/12/04	1010		N
Antimony	6020	0.05	0.04	5	5/11/04	5/12/04	0.11		
Arsenic	6020	0.5	0.2	5	5/11/04	5/17/04	3.4		
Cadmium	6020	0.050	0.006	5	5/11/04	5/17/04	0.048	B	
Chromium	6020	0.20	0.04	5	5/11/04	5/17/04	10.7		
Copper	6010B	2.0	0.9	2	5/11/04	5/12/04	34.6		
Iron	6010B	4.0	3.0	2	5/11/04	5/12/04	2510		
Lead	6020	0.05	0.02	5	5/11/04	5/17/04	9.21		
Mercury	7471A	0.02	0.01	1	5/7/04	5/10/04	0.07		
Nickel	6020	0.20	0.07	5	5/11/04	5/19/04	3.50		
Silver	6020	0.020	0.020	5	5/11/04	5/12/04	0.062		
Zinc	6020	0.5	0.1	5	5/11/04	5/17/04	28.5		

% Solids: 55.9

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: PPB-USACE Port Everglades 2004
Matrix: SEDIMENT

Service Request: K2403211
Date Collected:
Date Received:
Units: MG/KG
Basis: Dry

Sample Name: Method Blank
Lab Code: K2403211-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	10.0	10.0	2	5/11/04	5/12/04	10.0	U	N
Antimony	6020	0.05	0.04	5	5/11/04	5/12/04	0.04	U	
Arsenic	6020	0.5	0.2	5	5/11/04	5/17/04	0.2	U	
Cadmium	6020	0.050	0.006	5	5/11/04	5/17/04	0.006	U	
Chromium	6020	0.20	0.04	5	5/11/04	5/17/04	0.06	B	
Copper	6010B	2.0	0.9	2	5/11/04	5/12/04	0.9	U	
Iron	6010B	4.0	3.0	2	5/11/04	5/12/04	3.0	U	
Lead	6020	0.05	0.02	5	5/11/04	5/17/04	0.02	U	
Mercury	7471A	0.02	0.01	1	5/7/04	5/10/04	0.01	U	
Nickel	6020	0.20	0.07	5	5/11/04	5/19/04	0.08	B	
Silver	6020	0.020	0.020	5	5/11/04	5/12/04	0.020	U	
Zinc	6020	0.5	0.1	5	5/11/04	5/17/04	0.4	B	

% Solids: 100.0

Comments:

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2403211

Project No.:

Project Name: PPB-USACE Port Everglades 20

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed Solutions

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Aluminum	5000	5100	102	5000	5040	101	5130	103	6010B
Antimony	25.0	23.9	96	25.0	24.7	99	24.3	97	6020
Arsenic	25.0	25.4	102	25.0	25.6	102	25.0	100	6020
Cadmium	12.5	12.5	100	25.0	24.9	100	24.7	99	6020
Chromium	10.0	9.81	98	25.0	24.9	100	25.3	101	6020
Copper	625	651	104	500	498	100	501	100	6010B
Iron	2500	2540	102	5000	4970	99	5020	100	6010B
Lead	25.0	24.6	98	25.0	25.1	100	25.6	102	6020
Mercury	5.0	5.22	104	5.0	5.18	104	5.24	105	7471A
Nickel	50.0	49.9	100	25.0	25.0	100	25.4	102	6020
Silver	12.5	12.4	99	25.0	25.3	101	24.6	98	6020
Zinc	25.0	25.1	100	25.0	25.2	101	25.1	100	6020

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2403211

Project No.:

Project Name: PPB-USACE Port Everglades 20

ICV Source:

CCV Source: CAS Mixed Solutions

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Aluminum				5000	4990	100	5000	100	6010B
Antimony				25.0	25.2	101	24.6	98	6020
Arsenic				25.0	24.7	99			6020
Cadmium				25.0	24.6	98			6020
Chromium				25.0	25.6	102			6020
Copper				500	502	100	499	100	6010B
Iron				5000	5040	101	5060	101	6010B
Lead				25.0	25.7	103			6020
Mercury				5.0	5.41	108	5.31	106	7471A
Nickel				25.0	25.6	102			6020
Silver				25.0	24.7	99	24.1	96	6020
Zinc				25.0	25.2	101			6020

METALS
- 2b -
CRDL STANDARD FOR AA AND ICP

Client: PPB Environmental

Service Request: K2403211

Project No.:

Project Name: PPB-USACE Port Everglades 20

Concentration Units: ug/l

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum				50	35.5	71		
Antimony				0.10	0.10	102		
Arsenic				1.0	1.04	104		
Cadmium				0.10	0.11	106		
Chromium				0.40	0.41	101		
Copper				10	9.86	99		
Iron				20	15.4	77		
Lead				0.04	0.04	101		
Mercury	0.20	0.19	93					
Nickel				0.40	0.53	132		
Silver				0.04	0.043	109		
Zinc				1.0	0.99	99		

METALS
- 5a -
SPIKE SAMPLE RECOVERY

Client: PPB Environmental
Project No.:
Project Name: PPB-USACE Port Everglades 2004
Matrix: SEDIMENT

Service Request: K2403211
Units: mg/kg
Basis: Dry
% Solids: 65.0

Sample Name: E-PE04-1S
Lab Code: K2403211-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Aluminum	75 - 125	754		449		440	69	N	6010B
Antimony	70 - 130	85.0		0.08		110	77		6020
Arsenic	70 - 130	113		4.7		110	98		6020
Cadmium	70 - 130	11.0		0.032	B	11.0	100		6020
Chromium	70 - 130	47.9		3.48		44.0	101		6020
Copper	62 - 145	59.8		7.6		54.9	95		6010B
Iron		2980		2780		220	91		6010B
Lead	70 - 130	109		2.59		110	97		6020
Mercury	55 - 137	0.49		0.01	B	0.47	102		7471A
Nickel	70 - 130	112		1.67		110	100		6020
Silver	70 - 130	8.720		0.022	U	11.0	79		6020
Zinc	70 - 130	115		10.1		110	95		6020

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

METALS
- 5b -
POST DIGEST SPIKE SAMPLE RECOVERY

Client: PPB Environmental

Service Request: K2403211

Project No.:

Units: ug/L

Project Name: PPB-USACE Port Everglades 20

Matrix: SEDIMENT

Sample Name: E-PE04-1A

Lab Code: K2403211-001A

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Antimony		9.69		0.14		10.0	96		MS
Arsenic		28.0		8.60		20.0	97		MS
Cadmium		18.5		0.058	B	20.0	92		MS
Chromium		26.9		6.34		20.0	103		MS
Lead		23.8		4.72		20.0	95		MS
Nickel		23.5		3.04		20.0	102		MS
Silver		9.14		0.040	U	10.0	91		MS
Zinc		35.1		18.3		20.0	84		MS

Comments:

Oil & Grease
EPA Method 9071

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403211
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	4/22/04
Sample Matrix:	Sediment	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-1	Units:	mg/Kg (ppm)
Lab Code:	K2403211-001	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	5/7/04	5/10/04	ND	

Approved By: M Curlu Date: 5/11/04

1S22/020597p

03211PHC.CQ1 - 1 5/11/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403211
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	4/22/04
Sample Matrix:	Sediment	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-1 Dup	Units:	mg/Kg (ppm)
Lab Code:	K2403211-002	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	5/7/04	5/10/04	78	J

Approved By: M Cuba Date: 5/11/04

1S22/020597p

03211PHC.CQ1 - 2 5/11/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403211
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	4/22/04
Sample Matrix:	Sediment	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-2	Units:	mg/Kg (ppm)
Lab Code:	K2403211-003	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	5/7/04	5/10/04	210	

Approved By: M Curlu Date: 5/11/04

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403211
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	4/22/04
Sample Matrix:	Sediment	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-3	Units:	mg/Kg (ppm)
Lab Code:	K2403211-004	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	5/7/04	5/10/04	200	

Approved By: M Gulu Date: 5/11/04

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403211
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	4/22/04
Sample Matrix:	Sediment	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-4	Units:	mg/Kg (ppm)
Lab Code:	K2403211-005	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	5/7/04	5/10/04	350	

Approved By: M Gula Date: 5/11/04

1S22/020597p

03211PHC.CQ1 - 5 5/11/04

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403211
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Oil and Grease

Sample Name:	Method Blank	Units:	mg/Kg (ppm)
Lab Code:	K040507-SB	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	5/7/04	5/10/04	ND	

Approved By: NM Culer Date: 5/11/04

1S22/020597p

03211PHC.CQ1 - MB 5/11/04

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403211
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	4/22/04
Sample Matrix:	Sediment	**Date Received:**	5/3/04
		Date Extracted:	5/7/04
		Date Analyzed:	5/10/04

Matrix Spike/Duplicate Matrix Spike Summary
Oil and Grease

Sample Name:	E-PE04-2	Units:	mg/Kg (ppm)
Lab Code:	K2403211-003MS, K2403211-003DMS	Basis:	Dry
Test Notes:			

									Percent Recovery			
				Spike Level			Spike Result				CAS	Relative
	Prep	Analysis				Sample					Acceptance	Percent
Analyte	**Method**	**Method**	**MRL**	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	3300	3300	210	2920	3080	82	87	78-114	5

Approved By: [signature] Date: 5/11/04

DMS/072898p03211PHC.CQ1 - DMS 5/11/04

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
LCS Matrix: Sediment

Service Request: K2403211
Date Collected: NA
Date Received: NA
Date Extracted: 5/7/04
Date Analyzed: 5/10/04

Laboratory Control Sample Summary
Oil and Grease

Sample Name: Lab Control Sample
Lab Code: K040507-SL
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	2000	1830	92	78-114	

Approved By: M Culer Date: 5/11/04

LCS/071499p
03211PHC.CQ1 - LCS 5/11/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403211
Date Analyzed: 5/10/04

Continuing Calibration Verification (CCV) Summary
EPA Methods 1664
Units: mg

Analyte	True Value	CCV1 Result	Percent Recovery	CCV2 Result	Percent Recovery	CCV3 Result	Percent Recovery
Oil and Grease, Total (HEM)	1000	1000	100	1000	100	1000	100
Oil and Grease, Total (HEM)	2.0	2.0	100	1.9	95	1.9	95

Approved By: _____ Date: 5/11/04

CCV 1-4/102194

03211PHC.CQ1 - ccv (HEM) 5/11/04

Page No.:

Butyltins

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403211

Cover Page - Organic Analysis Data Package
Butyltins

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-1	K2403211-001	04/22/2004	05/03/2004
E-PE04-1 Dup	K2403211-002	04/22/2004	05/03/2004
E-PE04-2	K2403211-003	04/22/2004	05/03/2004
E-PE04-3	K2403211-004	04/22/2004	05/03/2004
E-PE04-4	K2403211-005	04/22/2004	05/03/2004
E-PE04-3MS	KWG0406414-1	04/22/2004	05/03/2004
E-PE04-3DMS	KWG0406414-2	04/22/2004	05/03/2004

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

Signature: _____ Name: Tracy Poynton

Date: 5/20/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Butyltins

Sample Name: E-PE04-1
Lab Code: K2403211-001

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.6	0.19	1	05/06/04	05/14/04	KWG0406414	
Tri-n-butyltin	**16**		1.6	0.25	1	05/06/04	05/14/04	KWG0406414	
Di-n-butyltin	**5.2**		1.6	0.064	1	05/06/04	05/14/04	KWG0406414	
n-Butyltin	**1.8**		1.6	0.11	1	05/06/04	05/14/04	KWG0406414	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	72	10-132	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Butyltins

Sample Name: E-PE04-1 Dup
Lab Code: K2403211-002

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.6	0.19	1	05/06/04	05/14/04	KWG0406414	
Tri-n-butyltin	**23**		1.6	0.25	1	05/06/04	05/14/04	KWG0406414	
Di-n-butyltin	**7.6**		1.6	0.064	1	05/06/04	05/14/04	KWG0406414	
n-Butyltin	**3.0**		1.6	0.12	1	05/06/04	05/14/04	KWG0406414	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	78	10-132	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Butyltins

Sample Name: E-PE04-2
Lab Code: K2403211-003

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	**2.3**		1.7	0.21	1	05/06/04	05/14/04	KWG0406414	
Tri-n-butyltin	**130**		1.7	0.27	1	05/06/04	05/14/04	KWG0406414	
Di-n-butyltin	**36**		1.7	0.069	1	05/06/04	05/14/04	KWG0406414	
n-Butyltin	**5.9**		1.7	0.12	1	05/06/04	05/14/04	KWG0406414	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	80	10-132	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Butyltins

Sample Name: E-PE04-3
Lab Code: K2403211-004

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	**1.7**		1.6	0.19	1	05/06/04	05/14/04	KWG0406414	
Tri-n-butyltin	**110**		1.6	0.26	1	05/06/04	05/14/04	KWG0406414	
Di-n-butyltin	**19**		1.6	0.065	1	05/06/04	05/14/04	KWG0406414	
n-Butyltin	**8.2**		1.6	0.12	1	05/06/04	05/14/04	KWG0406414	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	79	10-132	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Butyltins

Sample Name: E-PE04-4
Lab Code: K2403211-005

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	**3.6**		1.8	0.22	1	05/06/04	05/14/04	KWG0406414	
Tri-n-butyltin	**240**	D	3.6	0.58	2	05/06/04	05/18/04	KWG0406414	
Di-n-butyltin	**38**		1.8	0.074	1	05/06/04	05/14/04	KWG0406414	
n-Butyltin	**7.8**		1.8	0.13	1	05/06/04	05/14/04	KWG0406414	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	75	10-132	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: NA
Date Received: NA

Butyltins

Sample Name: Method Blank
Lab Code: KWG0406414-4

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.12	1	05/06/04	05/14/04	KWG0406414	
Tri-n-butyltin	ND	U	1.0	0.16	1	05/06/04	05/14/04	KWG0406414	
Di-n-butyltin	ND	U	1.0	0.041	1	05/06/04	05/14/04	KWG0406414	
n-Butyltin	ND	U	1.0	0.071	1	05/06/04	05/14/04	KWG0406414	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	47	10-132	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211

Surrogate Recovery Summary
Butyltins

Extraction Method: METHOD
Analysis Method: Krone

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-1	K2403211-001	72
E-PE04-1 Dup	K2403211-002	78
E-PE04-2	K2403211-003	80
E-PE04-3	K2403211-004	79
E-PE04-4	K2403211-005	75
Method Blank	KWG0406414-4	47
E-PE04-3MS	KWG0406414-1	74
E-PE04-3DMS	KWG0406414-2	80
Lab Control Sample	KWG0406414-3	49

Surrogate Recovery Control Limits (%)

Sur1 = Tri-n-propyltin 10-132

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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Extracted: 05/06/2004
Date Analyzed: 05/14/2004

Matrix Spike/Duplicate Matrix Spike Summary
Butyltins

Sample Name: E-PE04-3
Lab Code: K2403211-004

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low
Extraction Lot: KWG0406414

Analyte Name	Sample Result	E-PE04-3MS KWG0406414-1 Matrix Spike			E-PE04-3DMS KWG0406414-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Tetra-n-butyltin	1.7	35.2	78.1	43	34.8	78.8	42	10-153	1	50
Tri-n-butyltin	110	108	69.7	-10 *	171E	70.3	80	10-152	46	50
Di-n-butyltin	19	44.3	60.0	42	46.3	60.5	45	10-153	4	50
n-Butyltin	8.2	12.2	48.7	8 *	13.1	49.2	10	10-99	7	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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Extracted: 05/06/2004
Date Analyzed: 05/14/2004

Lab Control Spike Summary
Butyltins

Extraction Method: METHOD
Analysis Method: Krone

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG0406414

Analyte Name	Lab Control Sample KWG0406414-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
Tetra-n-butyltin	15.6	50.0	31	10-128
Tri-n-butyltin	14.8	44.6	33	10-144
Di-n-butyltin	14.3	38.4	37	10-150
n-Butyltin	7.62	31.2	24	10-137

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.

Organochlorine Pesticides
EPA Method 8081

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403211

Cover Page - Organic Analysis Data Package
Organochlorine Pesticides

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-1	K2403211-001	04/22/2004	05/03/2004
E-PE04-1 Dup	K2403211-002	04/22/2004	05/03/2004
E-PE04-2	K2403211-003	04/22/2004	05/03/2004
E-PE04-3	K2403211-004	04/22/2004	05/03/2004
E-PE04-4	K2403211-005	04/22/2004	05/03/2004
E-PE04-4MS	KWG0406319-1	04/22/2004	05/03/2004
E-PE04-4DMS	KWG0406319-2	04/22/2004	05/03/2004

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

Signature: _____ Name: Todd Fryman

Date: 5/19/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-1
Lab Code: K2403211-001

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
alpha-BHC	ND	U	0.74	0.13	1	05/04/04	05/15/04	KWG0406319	
beta-BHC	ND	U	0.74	0.34	1	05/04/04	05/15/04	KWG0406319	
gamma-BHC (Lindane)	ND	U	0.74	0.16	1	05/04/04	05/15/04	KWG0406319	
delta-BHC	ND	U	0.74	0.22	1	05/04/04	05/15/04	KWG0406319	
Heptachlor	ND	U	0.74	0.15	1	05/04/04	05/15/04	KWG0406319	
Aldrin	ND	U	0.74	0.39	1	05/04/04	05/15/04	KWG0406319	
Heptachlor Epoxide	ND	Ui	0.74	0.74	1	05/04/04	05/15/04	KWG0406319	
Endosulfan I	ND	U	0.74	0.17	1	05/04/04	05/15/04	KWG0406319	
Dieldrin	ND	U	0.74	0.13	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDE	ND	U	0.74	0.12	1	05/04/04	05/15/04	KWG0406319	
Endrin	ND	U	0.74	0.37	1	05/04/04	05/15/04	KWG0406319	
Endosulfan II	ND	U	0.74	0.094	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDD	ND	Ui	0.74	0.19	1	05/04/04	05/15/04	KWG0406319	
Endrin Aldehyde	ND	U	0.74	0.25	1	05/04/04	05/15/04	KWG0406319	
Endosulfan Sulfate	ND	U	0.74	0.33	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDT	ND	U	0.74	0.27	1	05/04/04	05/15/04	KWG0406319	
Methoxychlor	ND	U	0.74	0.30	1	05/04/04	05/15/04	KWG0406319	
Toxaphene	ND	U	37	12	1	05/04/04	05/15/04	KWG0406319	
Chlordane	ND	U	7.4	1.9	1	05/04/04	05/15/04	KWG0406319	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	69	39-129	05/15/04	Acceptable
Decachlorobiphenyl	92	29-141	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-1 Dup
Lab Code: K2403211-002

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
alpha-BHC	ND	U	0.77	0.13	1	05/04/04	05/15/04	KWG0406319	
beta-BHC	ND	U	0.77	0.35	1	05/04/04	05/15/04	KWG0406319	
gamma-BHC (Lindane)	ND	U	0.77	0.16	1	05/04/04	05/15/04	KWG0406319	
delta-BHC	ND	U	0.77	0.22	1	05/04/04	05/15/04	KWG0406319	
Heptachlor	ND	U	0.77	0.16	1	05/04/04	05/15/04	KWG0406319	
Aldrin	ND	U	0.77	0.39	1	05/04/04	05/15/04	KWG0406319	
Heptachlor Epoxide	ND	Ui	0.77	0.77	1	05/04/04	05/15/04	KWG0406319	
Endosulfan I	ND	U	0.77	0.18	1	05/04/04	05/15/04	KWG0406319	
Dieldrin	ND	U	0.77	0.13	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDE	**0.20**	J	0.77	0.12	1	05/04/04	05/15/04	KWG0406319	
Endrin	ND	U	0.77	0.38	1	05/04/04	05/15/04	KWG0406319	
Endosulfan II	ND	U	0.77	0.095	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDD	ND	Ui	0.77	0.32	1	05/04/04	05/15/04	KWG0406319	
Endrin Aldehyde	ND	U	0.77	0.25	1	05/04/04	05/15/04	KWG0406319	
Endosulfan Sulfate	ND	U	0.77	0.33	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDT	ND	Ui	0.77	0.77	1	05/04/04	05/15/04	KWG0406319	
Methoxychlor	**0.76**	J	0.77	0.30	1	05/04/04	05/15/04	KWG0406319	
Toxaphene	ND	U	39	12	1	05/04/04	05/15/04	KWG0406319	
Chlordane	ND	Ui	7.7	3.2	1	05/04/04	05/15/04	KWG0406319	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	39-129	05/15/04	Acceptable
Decachlorobiphenyl	89	29-141	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-2
Lab Code: K2403211-003

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
alpha-BHC	ND	U	0.83	0.14	1	05/04/04	05/15/04	KWG0406319	
beta-BHC	ND	U	0.83	0.37	1	05/04/04	05/15/04	KWG0406319	
gamma-BHC (Lindane)	ND	U	0.83	0.17	1	05/04/04	05/15/04	KWG0406319	
delta-BHC	ND	U	0.83	0.24	1	05/04/04	05/15/04	KWG0406319	
Heptachlor	ND	Ui	0.83	0.42	1	05/04/04	05/15/04	KWG0406319	
Aldrin	ND	U	0.83	0.42	1	05/04/04	05/15/04	KWG0406319	
Heptachlor Epoxide	**0.73**	J	0.83	0.24	1	05/04/04	05/15/04	KWG0406319	
Endosulfan I	ND	Ui	0.83	0.41	1	05/04/04	05/15/04	KWG0406319	
Dieldrin	ND	Ui	0.83	0.83	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDE	**0.66**	JP	0.83	0.13	1	05/04/04	05/15/04	KWG0406319	
Endrin	ND	U	0.83	0.41	1	05/04/04	05/15/04	KWG0406319	
Endosulfan II	ND	Ui	1.6	1.6	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDD	**0.61**	JP	0.83	0.16	1	05/04/04	05/15/04	KWG0406319	
Endrin Aldehyde	**0.89**		0.83	0.27	1	05/04/04	05/15/04	KWG0406319	
Endosulfan Sulfate	ND	U	0.83	0.36	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDT	**6.6**		0.83	0.29	1	05/04/04	05/15/04	KWG0406319	
Methoxychlor	ND	Ui	2.6	2.6	1	05/04/04	05/15/04	KWG0406319	
Toxaphene	ND	Ui	52	52	1	05/04/04	05/15/04	KWG0406319	
Chlordane	ND	Ui	11	11	1	05/04/04	05/15/04	KWG0406319	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	94	39-129	05/15/04	Acceptable
Decachlorobiphenyl	83	29-141	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-3
Lab Code: K2403211-004

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
alpha-BHC	ND	Ui	0.79	0.17	1	05/04/04	05/15/04	KWG0406319	
beta-BHC	ND	U	0.79	0.35	1	05/04/04	05/15/04	KWG0406319	
gamma-BHC (Lindane)	ND	U	0.79	0.16	1	05/04/04	05/15/04	KWG0406319	
delta-BHC	ND	U	0.79	0.23	1	05/04/04	05/15/04	KWG0406319	
Heptachlor	ND	Ui	0.79	0.17	1	05/04/04	05/15/04	KWG0406319	
Aldrin	ND	U	0.79	0.40	1	05/04/04	05/15/04	KWG0406319	
Heptachlor Epoxide	**0.26**	J	0.79	0.23	1	05/04/04	05/15/04	KWG0406319	
Endosulfan I	ND	U	0.79	0.18	1	05/04/04	05/15/04	KWG0406319	
Dieldrin	ND	Ui	0.79	0.79	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDE	**0.30**	JP	0.79	0.12	1	05/04/04	05/15/04	KWG0406319	
Endrin	ND	Ui	0.79	0.53	1	05/04/04	05/15/04	KWG0406319	
Endosulfan II	ND	Ui	0.79	0.21	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDD	ND	U	0.79	0.15	1	05/04/04	05/15/04	KWG0406319	
Endrin Aldehyde	ND	U	0.79	0.26	1	05/04/04	05/15/04	KWG0406319	
Endosulfan Sulfate	ND	U	0.79	0.34	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDT	**0.95**	P	0.79	0.27	1	05/04/04	05/15/04	KWG0406319	
Methoxychlor	ND	U	0.79	0.30	1	05/04/04	05/15/04	KWG0406319	
Toxaphene	ND	U	40	12	1	05/04/04	05/15/04	KWG0406319	
Chlordane	ND	Ui	7.9	3.9	1	05/04/04	05/15/04	KWG0406319	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	39-129	05/15/04	Acceptable
Decachlorobiphenyl	82	29-141	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-4
Lab Code: K2403211-005

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
alpha-BHC	**0.66**	JP	0.90	0.15	1	05/04/04	05/15/04	KWG0406319	
beta-BHC	ND	U	0.90	0.40	1	05/04/04	05/15/04	KWG0406319	
gamma-BHC (Lindane)	ND	Ui	0.90	0.90	1	05/04/04	05/15/04	KWG0406319	
delta-BHC	ND	U	0.90	0.26	1	05/04/04	05/15/04	KWG0406319	
Heptachlor	ND	Ui	0.90	0.22	1	05/04/04	05/15/04	KWG0406319	
Aldrin	ND	U	0.90	0.45	1	05/04/04	05/15/04	KWG0406319	
Heptachlor Epoxide	**1.4**	P	0.90	0.26	1	05/04/04	05/15/04	KWG0406319	
Endosulfan I	ND	U	0.90	0.20	1	05/04/04	05/15/04	KWG0406319	
Dieldrin	**0.29**	JP	0.90	0.15	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDE	**0.68**	J	0.90	0.14	1	05/04/04	05/15/04	KWG0406319	
Endrin	ND	U	0.90	0.43	1	05/04/04	05/15/04	KWG0406319	
Endosulfan II	ND	U	0.90	0.11	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDD	ND	U	0.90	0.17	1	05/04/04	05/15/04	KWG0406319	
Endrin Aldehyde	**0.74**	JP	0.90	0.29	1	05/04/04	05/15/04	KWG0406319	
Endosulfan Sulfate	ND	U	0.90	0.38	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDT	**0.55**	JP	0.90	0.31	1	05/04/04	05/15/04	KWG0406319	
Methoxychlor	ND	U	0.90	0.34	1	05/04/04	05/15/04	KWG0406319	
Toxaphene	ND	Ui	45	19	1	05/04/04	05/15/04	KWG0406319	
Chlordane	ND	Ui	9.0	6.3	1	05/04/04	05/15/04	KWG0406319	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	86	39-129	05/15/04	Acceptable
Decachlorobiphenyl	85	29-141	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0406319-7

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
alpha-BHC	ND	U	0.50	0.083	1	05/04/04	05/15/04	KWG0406319	
beta-BHC	ND	U	0.50	0.22	1	05/04/04	05/15/04	KWG0406319	
gamma-BHC (Lindane)	ND	U	0.50	0.099	1	05/04/04	05/15/04	KWG0406319	
delta-BHC	ND	U	0.50	0.14	1	05/04/04	05/15/04	KWG0406319	
Heptachlor	ND	U	0.50	0.097	1	05/04/04	05/15/04	KWG0406319	
Aldrin	ND	U	0.50	0.25	1	05/04/04	05/15/04	KWG0406319	
Heptachlor Epoxide	ND	U	0.50	0.14	1	05/04/04	05/15/04	KWG0406319	
Endosulfan I	ND	U	0.50	0.11	1	05/04/04	05/15/04	KWG0406319	
Dieldrin	ND	U	0.50	0.082	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDE	ND	U	0.50	0.076	1	05/04/04	05/15/04	KWG0406319	
Endrin	ND	U	0.50	0.24	1	05/04/04	05/15/04	KWG0406319	
Endosulfan II	ND	U	0.50	0.061	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDD	ND	U	0.50	0.093	1	05/04/04	05/15/04	KWG0406319	
Endrin Aldehyde	ND	U	0.50	0.16	1	05/04/04	05/15/04	KWG0406319	
Endosulfan Sulfate	ND	U	0.50	0.21	1	05/04/04	05/15/04	KWG0406319	
4,4'-DDT	ND	U	0.50	0.17	1	05/04/04	05/15/04	KWG0406319	
Methoxychlor	**0.28**	J	0.50	0.19	1	05/04/04	05/15/04	KWG0406319	
Toxaphene	ND	U	25	7.3	1	05/04/04	05/15/04	KWG0406319	
Chlordane	ND	U	5.0	1.2	1	05/04/04	05/15/04	KWG0406319	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	39-129	05/15/04	Acceptable
Decachlorobiphenyl	95	29-141	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
E-PE04-1	K2403211-001	69	92
E-PE04-1 Dup	K2403211-002	66	89
E-PE04-2	K2403211-003	94	83
E-PE04-3	K2403211-004	66	82
E-PE04-4	K2403211-005	86	85
Method Blank	KWG0406319-7	72	95
E-PE04-4MS	KWG0406319-1	85	92
E-PE04-4DMS	KWG0406319-2	86	88
Lab Control Sample	KWG0406319-3	74	93

Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	39-129
Sur2 =	Decachlorobiphenyl	29-141

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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Extracted: 05/04/2004
Date Analyzed: 05/15/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: E-PE04-4
Lab Code: K2403211-005

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low
Extraction Lot: KWG0406319

Analyte Name	Sample Result	E-PE04-4MS KWG0406319-1 Matrix Spike			E-PE04-4DMS KWG0406319-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	0.66	16.5	17.8	89	15.5	17.8	84	46-146	6	50
beta-BHC	ND	16.2	17.8	91	15.4	17.8	87	28-155	5	50
gamma-BHC (Lindane)	ND	15.3	17.8	86	14.6	17.8	82	50-145	5	50
delta-BHC	ND	19.3	17.8	108	18.3	17.8	103	42-155	5	50
Heptachlor	ND	16.4	17.8	92	15.6	17.8	88	30-152	5	50
Aldrin	ND	16.6	17.8	93	15.7	17.8	88	35-146	5	50
Heptachlor Epoxide	1.4	18.2	17.8	94	16.7	17.8	86	35-148	8	50
Endosulfan I	ND	13.6	17.8	76	13.2	17.8	74	21-143	3	50
Dieldrin	0.29	17.9	17.8	99	16.4	17.8	91	50-146	8	50
4,4'-DDE	0.68	17.1	17.8	92	16.0	17.8	86	48-146	6	50
Endrin	ND	16.6	17.8	93	15.8	17.8	88	42-150	5	50
Endosulfan II	ND	14.6	17.8	82	14.0	17.8	78	28-145	4	50
4,4'-DDD	ND	17.1	17.8	96	16.2	17.8	91	32-166	5	50
Endrin Aldehyde	0.74	15.4	17.8	82	14.1	17.8	75	10-147	9	50
Endosulfan Sulfate	ND	16.8	17.8	94	16.2	17.8	91	27-156	4	50
4,4'-DDT	0.55	18.4	17.8	100	17.3	17.8	94	47-157	6	50
Methoxychlor	ND	20.9	17.8	117	19.1	17.8	107	35-171	9	50
Chlordane	ND	167	178	94	158	178	89	70-130	6	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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Extracted: 05/04/2004
Date Analyzed: 05/15/2004

Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG0406319

Analyte Name	Lab Control Sample KWG0406319-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
alpha-BHC	10.1	10.0	101	64-135
beta-BHC	9.80	10.0	98	49-145
gamma-BHC (Lindane)	9.91	10.0	99	63-137
delta-BHC	10.8	10.0	108	68-144
Heptachlor	9.74	10.0	97	61-123
Aldrin	9.81	10.0	98	59-127
Heptachlor Epoxide	9.64	10.0	96	64-124
Endosulfan I	8.66	10.0	87	55-124
Dieldrin	10.1	10.0	101	68-131
4,4'-DDE	10.4	10.0	104	67-133
Endrin	10.2	10.0	102	72-133
Endosulfan II	9.26	10.0	93	62-126
4,4'-DDD	10.6	10.0	106	67-139
Endrin Aldehyde	9.23	10.0	92	48-120
Endosulfan Sulfate	9.99	10.0	100	62-131
4,4'-DDT	10.7	10.0	107	68-144
Methoxychlor	10.8	10.0	108	65-140
Chlordane	101	100	101	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.

Congener Specific PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-1
Lab Code: K2403211-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.37	0.14	1	05/06/04	05/17/04	KWG0406495	
PCB 18	ND	U	0.37	0.045	1	05/06/04	05/17/04	KWG0406495	
PCB 28	ND	U	0.39	0.39	1	05/06/04	05/17/04	KWG0406495	
PCB 44	ND	U	0.37	0.28	1	05/06/04	05/17/04	KWG0406495	
PCB 52	ND	U	0.37	0.073	1	05/06/04	05/17/04	KWG0406495	
PCB 66	ND	U	0.37	0.057	1	05/06/04	05/17/04	KWG0406495	
PCB 87	ND	U	0.37	0.044	1	05/06/04	05/17/04	KWG0406495	
PCB 101	**0.068**	J	0.37	0.047	1	05/06/04	05/17/04	KWG0406495	
PCB 138	**0.089**	JP	0.37	0.047	1	05/06/04	05/17/04	KWG0406495	
PCB 156	ND	U	0.37	0.067	1	05/06/04	05/17/04	KWG0406495	
PCB 180	**0.055**	J	0.37	0.048	1	05/06/04	05/17/04	KWG0406495	
PCB 183	ND	U	0.37	0.053	1	05/06/04	05/17/04	KWG0406495	
PCB 184	ND	U	0.37	0.071	1	05/06/04	05/17/04	KWG0406495	
PCB 187	ND	U	0.37	0.056	1	05/06/04	05/17/04	KWG0406495	
PCB 195	ND	U	0.37	0.064	1	05/06/04	05/17/04	KWG0406495	
PCB 206	ND	U	0.37	0.085	1	05/06/04	05/17/04	KWG0406495	
PCB 209	ND	U	0.37	0.077	1	05/06/04	05/17/04	KWG0406495	
PCB 49	ND	U	0.37	0.070	1	05/06/04	05/17/04	KWG0406495	
PCB 77	ND	U	0.37	0.10	1	05/06/04	05/17/04	KWG0406495	
PCB 105	ND	U	0.37	0.062	1	05/06/04	05/17/04	KWG0406495	
PCB 118	**0.070**	JP	0.37	0.060	1	05/06/04	05/17/04	KWG0406495	
PCB 126	ND	U	0.37	0.060	1	05/06/04	05/17/04	KWG0406495	
PCB 128	ND	U	0.39	0.39	1	05/06/04	05/17/04	KWG0406495	
PCB 153	**0.094**	J	0.37	0.060	1	05/06/04	05/17/04	KWG0406495	
PCB 169	ND	U	0.37	0.050	1	05/06/04	05/17/04	KWG0406495	
PCB 170	ND	U	0.37	0.051	1	05/06/04	05/17/04	KWG0406495	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	68	10-128	05/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-1 Dup
Lab Code: K2403211-002

Extraction Method: EPA 3540
Analysis Method: 8082

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.38	0.14	1	05/06/04	05/18/04	KWG0406495	
PCB 18	ND	U	0.38	0.046	1	05/06/04	05/18/04	KWG0406495	
PCB 28	ND	U	0.39	0.39	1	05/06/04	05/18/04	KWG0406495	
PCB 44	ND	U	0.38	0.28	1	05/06/04	05/18/04	KWG0406495	
PCB 52	ND	U	0.38	0.073	1	05/06/04	05/18/04	KWG0406495	
PCB 66	ND	U	0.38	0.058	1	05/06/04	05/18/04	KWG0406495	
PCB 87	ND	U	0.38	0.044	1	05/06/04	05/18/04	KWG0406495	
PCB 101	**0.12**	J	0.38	0.047	1	05/06/04	05/18/04	KWG0406495	
PCB 138	**0.11**	J	0.38	0.047	1	05/06/04	05/18/04	KWG0406495	
PCB 156	ND	U	0.38	0.067	1	05/06/04	05/18/04	KWG0406495	
PCB 180	**0.070**	J	0.38	0.049	1	05/06/04	05/18/04	KWG0406495	
PCB 183	ND	U	0.38	0.053	1	05/06/04	05/18/04	KWG0406495	
PCB 184	ND	U	0.38	0.072	1	05/06/04	05/18/04	KWG0406495	
PCB 187	ND	U	0.38	0.056	1	05/06/04	05/18/04	KWG0406495	
PCB 195	ND	U	0.38	0.064	1	05/06/04	05/18/04	KWG0406495	
PCB 206	ND	U	0.38	0.086	1	05/06/04	05/18/04	KWG0406495	
PCB 209	ND	U	0.38	0.078	1	05/06/04	05/18/04	KWG0406495	
PCB 49	ND	U	0.38	0.070	1	05/06/04	05/18/04	KWG0406495	
PCB 77	ND	U	0.38	0.11	1	05/06/04	05/18/04	KWG0406495	
PCB 105	ND	U	0.38	0.063	1	05/06/04	05/18/04	KWG0406495	
PCB 118	**0.098**	J	0.38	0.061	1	05/06/04	05/18/04	KWG0406495	
PCB 126	ND	U	0.38	0.061	1	05/06/04	05/18/04	KWG0406495	
PCB 128	ND	U	0.39	0.39	1	05/06/04	05/18/04	KWG0406495	
PCB 153	**0.13**	J	0.38	0.061	1	05/06/04	05/18/04	KWG0406495	
PCB 169	ND	U	0.38	0.050	1	05/06/04	05/18/04	KWG0406495	
PCB 170	ND	U	0.38	0.052	1	05/06/04	05/18/04	KWG0406495	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	70	10-128	05/18/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-2
Lab Code: K2403211-003

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	**0.35**	JP	0.40	0.15	1	05/06/04	05/18/04	KWG0406495	
PCB 18	**0.33**	JP	0.40	0.049	1	05/06/04	05/18/04	KWG0406495	
PCB 28	ND	U	0.42	0.42	1	05/06/04	05/18/04	KWG0406495	
PCB 44	ND	U	0.40	0.31	1	05/06/04	05/18/04	KWG0406495	
PCB 52	**0.89**		0.40	0.079	1	05/06/04	05/18/04	KWG0406495	
PCB 66	ND	U	0.40	0.062	1	05/06/04	05/18/04	KWG0406495	
PCB 87	**0.55**		0.40	0.047	1	05/06/04	05/18/04	KWG0406495	
PCB 101	**1.6**		0.40	0.051	1	05/06/04	05/18/04	KWG0406495	
PCB 138	**1.6**		0.40	0.051	1	05/06/04	05/18/04	KWG0406495	
PCB 156	**0.32**	J	0.40	0.072	1	05/06/04	05/18/04	KWG0406495	
PCB 180	**0.64**		0.40	0.052	1	05/06/04	05/18/04	KWG0406495	
PCB 183	**0.17**	JP	0.40	0.057	1	05/06/04	05/18/04	KWG0406495	
PCB 184	ND	U	0.40	0.077	1	05/06/04	05/18/04	KWG0406495	
PCB 187	ND	Ui	0.40	0.30	1	05/06/04	05/18/04	KWG0406495	
PCB 195	ND	U	0.40	0.069	1	05/06/04	05/18/04	KWG0406495	
PCB 206	**0.41**		0.40	0.092	1	05/06/04	05/18/04	KWG0406495	
PCB 209	**0.091**	J	0.40	0.084	1	05/06/04	05/18/04	KWG0406495	
PCB 49	**0.58**		0.40	0.076	1	05/06/04	05/18/04	KWG0406495	
PCB 77	ND	U	0.40	0.11	1	05/06/04	05/18/04	KWG0406495	
PCB 105	**0.50**		0.40	0.067	1	05/06/04	05/18/04	KWG0406495	
PCB 118	**1.3**		0.40	0.066	1	05/06/04	05/18/04	KWG0406495	
PCB 126	ND	U	0.40	0.066	1	05/06/04	05/18/04	KWG0406495	
PCB 128	ND	U	0.42	0.42	1	05/06/04	05/18/04	KWG0406495	
PCB 153	**1.4**		0.40	0.066	1	05/06/04	05/18/04	KWG0406495	
PCB 169	ND	U	0.40	0.054	1	05/06/04	05/18/04	KWG0406495	
PCB 170	**0.28**	J	0.40	0.056	1	05/06/04	05/18/04	KWG0406495	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	70	10-128	05/18/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-3
Lab Code: K2403211-004

Extraction Method: EPA 3540
Analysis Method: 8082

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.38	0.14	1	05/06/04	05/18/04	KWG0406495	
PCB 18	ND	U	0.38	0.046	1	05/06/04	05/18/04	KWG0406495	
PCB 28	ND	U	0.40	0.40	1	05/06/04	05/18/04	KWG0406495	
PCB 44	ND	U	0.38	0.29	1	05/06/04	05/18/04	KWG0406495	
PCB 52	**0.17**	J	0.38	0.075	1	05/06/04	05/18/04	KWG0406495	
PCB 66	ND	Ui	0.38	0.082	1	05/06/04	05/18/04	KWG0406495	
PCB 87	**0.21**	JP	0.38	0.045	1	05/06/04	05/18/04	KWG0406495	
PCB 101	**0.37**	J	0.38	0.048	1	05/06/04	05/18/04	KWG0406495	
PCB 138	**0.45**		0.38	0.048	1	05/06/04	05/18/04	KWG0406495	
PCB 156	**0.10**	J	0.38	0.068	1	05/06/04	05/18/04	KWG0406495	
PCB 180	**0.19**	J	0.38	0.049	1	05/06/04	05/18/04	KWG0406495	
PCB 183	**0.088**	J	0.38	0.054	1	05/06/04	05/18/04	KWG0406495	
PCB 184	ND	U	0.38	0.073	1	05/06/04	05/18/04	KWG0406495	
PCB 187	ND	Ui	0.38	0.14	1	05/06/04	05/18/04	KWG0406495	
PCB 195	**0.095**	J	0.38	0.065	1	05/06/04	05/18/04	KWG0406495	
PCB 206	ND	U	0.38	0.087	1	05/06/04	05/18/04	KWG0406495	
PCB 209	ND	U	0.38	0.079	1	05/06/04	05/18/04	KWG0406495	
PCB 49	**0.14**	J	0.38	0.071	1	05/06/04	05/18/04	KWG0406495	
PCB 77	ND	U	0.38	0.11	1	05/06/04	05/18/04	KWG0406495	
PCB 105	**0.12**	J	0.38	0.064	1	05/06/04	05/18/04	KWG0406495	
PCB 118	**0.37**	J	0.38	0.062	1	05/06/04	05/18/04	KWG0406495	
PCB 126	ND	U	0.38	0.062	1	05/06/04	05/18/04	KWG0406495	
PCB 128	ND	U	0.40	0.40	1	05/06/04	05/18/04	KWG0406495	
PCB 153	**0.45**		0.38	0.062	1	05/06/04	05/18/04	KWG0406495	
PCB 169	ND	U	0.38	0.051	1	05/06/04	05/18/04	KWG0406495	
PCB 170	**0.11**	J	0.38	0.053	1	05/06/04	05/18/04	KWG0406495	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	10-128	05/18/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-4
Lab Code: K2403211-005

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.42	0.16	1	05/06/04	05/18/04	KWG0406495	
PCB 18	**0.15**	JP	0.42	0.052	1	05/06/04	05/18/04	KWG0406495	
PCB 28	ND	U	0.45	0.45	1	05/06/04	05/18/04	KWG0406495	
PCB 44	ND	U	0.42	0.33	1	05/06/04	05/18/04	KWG0406495	
PCB 52	**0.30**	J	0.42	0.085	1	05/06/04	05/18/04	KWG0406495	
PCB 66	ND	Ui	0.42	0.42	1	05/06/04	05/18/04	KWG0406495	
PCB 87	**0.23**	J	0.42	0.051	1	05/06/04	05/18/04	KWG0406495	
PCB 101	**0.62**		0.42	0.054	1	05/06/04	05/18/04	KWG0406495	
PCB 138	**0.69**		0.42	0.054	1	05/06/04	05/18/04	KWG0406495	
PCB 156	**0.15**	J	0.42	0.077	1	05/06/04	05/18/04	KWG0406495	
PCB 180	**0.27**	J	0.42	0.056	1	05/06/04	05/18/04	KWG0406495	
PCB 183	**0.13**	J	0.42	0.061	1	05/06/04	05/18/04	KWG0406495	
PCB 184	ND	U	0.42	0.083	1	05/06/04	05/18/04	KWG0406495	
PCB 187	ND	Ui	0.42	0.18	1	05/06/04	05/18/04	KWG0406495	
PCB 195	ND	U	0.42	0.074	1	05/06/04	05/18/04	KWG0406495	
PCB 206	ND	U	0.42	0.099	1	05/06/04	05/18/04	KWG0406495	
PCB 209	ND	U	0.42	0.090	1	05/06/04	05/18/04	KWG0406495	
PCB 49	**0.22**	J	0.42	0.081	1	05/06/04	05/18/04	KWG0406495	
PCB 77	ND	U	0.42	0.12	1	05/06/04	05/18/04	KWG0406495	
PCB 105	**0.23**	J	0.42	0.072	1	05/06/04	05/18/04	KWG0406495	
PCB 118	**0.56**		0.42	0.070	1	05/06/04	05/18/04	KWG0406495	
PCB 126	ND	U	0.42	0.070	1	05/06/04	05/18/04	KWG0406495	
PCB 128	ND	U	0.45	0.45	1	05/06/04	05/18/04	KWG0406495	
PCB 153	**0.60**		0.42	0.070	1	05/06/04	05/18/04	KWG0406495	
PCB 169	ND	U	0.42	0.058	1	05/06/04	05/18/04	KWG0406495	
PCB 170	**0.14**	J	0.42	0.060	1	05/06/04	05/18/04	KWG0406495	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	70	10-128	05/18/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0406495-4

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.24	0.087	1	05/06/04	05/17/04	KWG0406495	
PCB 18	ND	U	0.24	0.029	1	05/06/04	05/17/04	KWG0406495	
PCB 28	ND	U	0.25	0.25	1	05/06/04	05/17/04	KWG0406495	
PCB 44	ND	U	0.24	0.18	1	05/06/04	05/17/04	KWG0406495	
PCB 52	ND	U	0.24	0.047	1	05/06/04	05/17/04	KWG0406495	
PCB 66	ND	U	0.24	0.037	1	05/06/04	05/17/04	KWG0406495	
PCB 87	ND	U	0.24	0.028	1	05/06/04	05/17/04	KWG0406495	
PCB 101	ND	U	0.24	0.030	1	05/06/04	05/17/04	KWG0406495	
PCB 138	ND	U	0.24	0.030	1	05/06/04	05/17/04	KWG0406495	
PCB 156	ND	U	0.24	0.043	1	05/06/04	05/17/04	KWG0406495	
PCB 180	ND	U	0.24	0.031	1	05/06/04	05/17/04	KWG0406495	
PCB 183	ND	U	0.24	0.034	1	05/06/04	05/17/04	KWG0406495	
PCB 184	ND	U	0.24	0.046	1	05/06/04	05/17/04	KWG0406495	
PCB 187	ND	U	0.24	0.036	1	05/06/04	05/17/04	KWG0406495	
PCB 195	ND	U	0.24	0.041	1	05/06/04	05/17/04	KWG0406495	
PCB 206	ND	U	0.24	0.055	1	05/06/04	05/17/04	KWG0406495	
PCB 209	ND	U	0.24	0.050	1	05/06/04	05/17/04	KWG0406495	
PCB 49	ND	U	0.24	0.045	1	05/06/04	05/17/04	KWG0406495	
PCB 77	ND	U	0.24	0.065	1	05/06/04	05/17/04	KWG0406495	
PCB 105	ND	U	0.24	0.040	1	05/06/04	05/17/04	KWG0406495	
PCB 118	ND	U	0.24	0.039	1	05/06/04	05/17/04	KWG0406495	
PCB 126	ND	U	0.24	0.039	1	05/06/04	05/17/04	KWG0406495	
PCB 128	ND	U	0.25	0.25	1	05/06/04	05/17/04	KWG0406495	
PCB 153	ND	U	0.24	0.039	1	05/06/04	05/17/04	KWG0406495	
PCB 169	ND	U	0.24	0.032	1	05/06/04	05/17/04	KWG0406495	
PCB 170	ND	U	0.24	0.033	1	05/06/04	05/17/04	KWG0406495	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	71	10-128	05/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3540
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-1	K2403211-001	68
E-PE04-1 Dup	K2403211-002	70
E-PE04-2	K2403211-003	70
E-PE04-3	K2403211-004	66
E-PE04-4	K2403211-005	70
Method Blank	KWG0406495-4	71
E-PE04-1MS	KWG0406495-1	63
E-PE04-1DMS	KWG0406495-2	68
Lab Control Sample	KWG0406495-3	67

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-128

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

Polychlorinated Biphenyls
PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-1
Lab Code: K2403211-001

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	7.4	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1221	ND	U	15	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1232	ND	U	7.4	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1242	ND	U	7.4	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1248	ND	U	7.4	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1254	ND	U	7.4	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1260	ND	U	7.4	2.8	1	05/04/04	05/15/04	KWG0406320	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	40-145	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-1 Dup
Lab Code: K2403211-002

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	7.7	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1221	ND	U	16	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1232	ND	U	7.7	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1242	ND	U	7.7	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1248	ND	U	7.7	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1254	ND	U	7.7	2.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1260	ND	U	7.7	2.8	1	05/04/04	05/15/04	KWG0406320	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	40-145	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-2
Lab Code: K2403211-003

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	8.3	3.1	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1221	ND	U	17	3.1	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1232	ND	U	8.3	3.1	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1242	ND	U	8.3	3.1	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1248	ND	U	8.3	3.1	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1254	**60**		8.3	3.1	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1260	ND	U	8.3	3.1	1	05/04/04	05/15/04	KWG0406320	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	82	40-145	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-3
Lab Code: K2403211-004

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	7.9	2.9	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1221	ND	U	16	2.9	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1232	ND	U	7.9	2.9	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1242	ND	U	7.9	2.9	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1248	ND	U	7.9	2.9	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1254	**8.0**		7.9	2.9	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1260	ND	U	7.9	2.9	1	05/04/04	05/15/04	KWG0406320	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	76	40-145	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-4
Lab Code: K2403211-005

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	9.0	3.3	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1221	ND	U	18	3.3	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1232	ND	U	9.0	3.3	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1242	ND	U	9.0	3.3	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1248	ND	U	9.0	3.3	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1254	**7.6**	**J**	9.0	3.3	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1260	ND	U	9.0	3.3	1	05/04/04	05/15/04	KWG0406320	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	78	40-145	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0406320-4

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	5.0	1.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1221	ND	U	10	1.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1232	ND	U	5.0	1.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1242	ND	U	5.0	1.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1248	ND	U	5.0	1.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1254	ND	U	5.0	1.8	1	05/04/04	05/15/04	KWG0406320	
Aroclor 1260	ND	U	5.0	1.8	1	05/04/04	05/15/04	KWG0406320	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	84	40-145	05/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-1	K2403211-001	83
E-PE04-1 Dup	K2403211-002	83
E-PE04-2	K2403211-003	82
E-PE04-3	K2403211-004	76
E-PE04-4	K2403211-005	78
Method Blank	KWG0406320-4	84
E-PE04-1 DupMS	KWG0406320-1	83
E-PE04-1 DupDMS	KWG0406320-2	85
Lab Control Sample	KWG0406320-3	85

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 40-145

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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Extracted: 05/04/2004
Date Analyzed: 05/15/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-1 Dup
Lab Code: K2403211-002

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low
Extraction Lot: KWG0406320

Analyte Name	Sample Result	E-PE04-1 DupMS KWG0406320-1 Matrix Spike			E-PE04-1 DupDMS KWG0406320-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Aroclor 1016	ND	164	155	105	168	155	108	44-149	3	50
Aroclor 1260	ND	166	155	107	166	155	107	29-169	0	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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Extracted: 05/04/2004
Date Analyzed: 05/15/2004

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG0406320

	Lab Control Sample KWG0406320-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Aroclor 1016	115	100	115	47-139
Aroclor 1260	108	100	108	48-149

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.

Polynuclear Aromatic Hydrocarbons
EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-1 Dup
Lab Code: K2403211-002

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.33**	J	5.2	0.33	1	05/06/04	05/19/04	KWG0406453	
2-Methylnaphthalene	ND	U	5.2	0.33	1	05/06/04	05/19/04	KWG0406453	
1-Methylnaphthalene	ND	U	5.2	0.32	1	05/06/04	05/19/04	KWG0406453	
Acenaphthylene	**1.6**	J	5.2	0.25	1	05/06/04	05/19/04	KWG0406453	
Acenaphthene	ND	U	5.2	0.33	1	05/06/04	05/19/04	KWG0406453	
Fluorene	**0.32**	J	5.2	0.27	1	05/06/04	05/19/04	KWG0406453	
Phenanthrene	**4.0**	J	5.2	0.24	1	05/06/04	05/19/04	KWG0406453	
Anthracene	**3.1**	J	5.2	0.30	1	05/06/04	05/19/04	KWG0406453	
Fluoranthene	**21**		5.2	0.27	1	05/06/04	05/19/04	KWG0406453	
Pyrene	**22**		5.2	0.18	1	05/06/04	05/19/04	KWG0406453	
Benz(a)anthracene	**10**		5.2	0.21	1	05/06/04	05/19/04	KWG0406453	
Chrysene	**17**		5.2	0.24	1	05/06/04	05/19/04	KWG0406453	
Benzo(b)fluoranthene	**20**		5.2	0.22	1	05/06/04	05/19/04	KWG0406453	
Benzo(k)fluoranthene	**18**		5.2	0.24	1	05/06/04	05/19/04	KWG0406453	
Benzo(a)pyrene	**15**		5.2	0.22	1	05/06/04	05/19/04	KWG0406453	
Indeno(1,2,3-cd)pyrene	**14**		5.2	0.24	1	05/06/04	05/19/04	KWG0406453	
Dibenz(a,h)anthracene	**2.1**	J	5.2	0.28	1	05/06/04	05/19/04	KWG0406453	
Benzo(g,h,i)perylene	**15**		5.2	0.16	1	05/06/04	05/19/04	KWG0406453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	59	27-110	05/19/04	Acceptable
Fluoranthene-d10	66	34-122	05/19/04	Acceptable
Terphenyl-d14	71	50-132	05/19/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-1
Lab Code: K2403211-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	5.1	0.33	1	05/06/04	05/19/04	KWG0406453	
2-Methylnaphthalene	ND	U	5.1	0.33	1	05/06/04	05/19/04	KWG0406453	
1-Methylnaphthalene	ND	U	5.1	0.31	1	05/06/04	05/19/04	KWG0406453	
Acenaphthylene	**1.4**	J	5.1	0.25	1	05/06/04	05/19/04	KWG0406453	
Acenaphthene	ND	U	5.1	0.33	1	05/06/04	05/19/04	KWG0406453	
Fluorene	**0.28**	J	5.1	0.27	1	05/06/04	05/19/04	KWG0406453	
Phenanthrene	**3.0**	J	5.1	0.24	1	05/06/04	05/19/04	KWG0406453	
Anthracene	**3.8**	J	5.1	0.30	1	05/06/04	05/19/04	KWG0406453	
Fluoranthene	**16**		5.1	0.27	1	05/06/04	05/19/04	KWG0406453	
Pyrene	**16**		5.1	0.17	1	05/06/04	05/19/04	KWG0406453	
Benz(a)anthracene	**6.7**		5.1	0.20	1	05/06/04	05/19/04	KWG0406453	
Chrysene	**13**		5.1	0.24	1	05/06/04	05/19/04	KWG0406453	
Benzo(b)fluoranthene	**15**		5.1	0.22	1	05/06/04	05/19/04	KWG0406453	
Benzo(k)fluoranthene	**11**		5.1	0.24	1	05/06/04	05/19/04	KWG0406453	
Benzo(a)pyrene	**11**		5.1	0.22	1	05/06/04	05/19/04	KWG0406453	
Indeno(1,2,3-cd)pyrene	**11**		5.1	0.24	1	05/06/04	05/19/04	KWG0406453	
Dibenz(a,h)anthracene	**1.5**	J	5.1	0.28	1	05/06/04	05/19/04	KWG0406453	
Benzo(g,h,i)perylene	**11**		5.1	0.16	1	05/06/04	05/19/04	KWG0406453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	52	27-110	05/19/04	Acceptable
Fluoranthene-d10	57	34-122	05/19/04	Acceptable
Terphenyl-d14	70	50-132	05/19/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-2
Lab Code: K2403211-003

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	2.0	J	5.1	0.36	1	05/06/04	05/19/04	KWG0406453	
2-Methylnaphthalene	1.4	J	5.1	0.36	1	05/06/04	05/19/04	KWG0406453	
1-Methylnaphthalene	1.1	J	5.1	0.34	1	05/06/04	05/19/04	KWG0406453	
Acenaphthylene	5.1	J	5.1	0.27	1	05/06/04	05/19/04	KWG0406453	
Acenaphthene	1.9	J	5.1	0.36	1	05/06/04	05/19/04	KWG0406453	
Fluorene	2.2	J	5.1	0.29	1	05/06/04	05/19/04	KWG0406453	
Phenanthrene	28		5.1	0.26	1	05/06/04	05/19/04	KWG0406453	
Anthracene	11		5.1	0.32	1	05/06/04	05/19/04	KWG0406453	
Fluoranthene	110		5.1	0.29	1	05/06/04	05/19/04	KWG0406453	
Pyrene	120		5.1	0.19	1	05/06/04	05/19/04	KWG0406453	
Benz(a)anthracene	48		5.1	0.22	1	05/06/04	05/19/04	KWG0406453	
Chrysene	85		5.1	0.26	1	05/06/04	05/19/04	KWG0406453	
Benzo(b)fluoranthene	120		5.1	0.24	1	05/06/04	05/19/04	KWG0406453	
Benzo(k)fluoranthene	100		5.1	0.26	1	05/06/04	05/19/04	KWG0406453	
Benzo(a)pyrene	92		5.1	0.24	1	05/06/04	05/19/04	KWG0406453	
Indeno(1,2,3-cd)pyrene	94		5.1	0.26	1	05/06/04	05/19/04	KWG0406453	
Dibenz(a,h)anthracene	14		5.1	0.31	1	05/06/04	05/19/04	KWG0406453	
Benzo(g,h,i)perylene	95		5.1	0.17	1	05/06/04	05/19/04	KWG0406453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	63	27-110	05/19/04	Acceptable
Fluoranthene-d10	73	34-122	05/19/04	Acceptable
Terphenyl-d14	74	50-132	05/19/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-3
Lab Code: K2403211-004

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.92	J	4.9	0.34	1	05/06/04	05/19/04	KWG0406453	
2-Methylnaphthalene	0.70	J	4.9	0.34	1	05/06/04	05/19/04	KWG0406453	
1-Methylnaphthalene	0.51	J	4.9	0.32	1	05/06/04	05/19/04	KWG0406453	
Acenaphthylene	3.4	J	4.9	0.26	1	05/06/04	05/19/04	KWG0406453	
Acenaphthene	0.88	J	4.9	0.34	1	05/06/04	05/19/04	KWG0406453	
Fluorene	2.5	J	4.9	0.27	1	05/06/04	05/19/04	KWG0406453	
Phenanthrene	27		4.9	0.24	1	05/06/04	05/19/04	KWG0406453	
Anthracene	8.2		4.9	0.30	1	05/06/04	05/19/04	KWG0406453	
Fluoranthene	82		4.9	0.27	1	05/06/04	05/19/04	KWG0406453	
Pyrene	65		4.9	0.18	1	05/06/04	05/19/04	KWG0406453	
Benz(a)anthracene	31		4.9	0.21	1	05/06/04	05/19/04	KWG0406453	
Chrysene	54		4.9	0.24	1	05/06/04	05/19/04	KWG0406453	
Benzo(b)fluoranthene	60		4.9	0.23	1	05/06/04	05/19/04	KWG0406453	
Benzo(k)fluoranthene	56		4.9	0.24	1	05/06/04	05/19/04	KWG0406453	
Benzo(a)pyrene	48		4.9	0.23	1	05/06/04	05/19/04	KWG0406453	
Indeno(1,2,3-cd)pyrene	53		4.9	0.24	1	05/06/04	05/19/04	KWG0406453	
Dibenz(a,h)anthracene	7.5		4.9	0.29	1	05/06/04	05/19/04	KWG0406453	
Benzo(g,h,i)perylene	55		4.9	0.16	1	05/06/04	05/19/04	KWG0406453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	50	27-110	05/19/04	Acceptable
Fluoranthene-d10	60	34-122	05/19/04	Acceptable
Terphenyl-d14	65	50-132	05/19/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: 04/22/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-4
Lab Code: K2403211-005

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	1.4	J	5.9	0.38	1	05/06/04	05/19/04	KWG0406453	
2-Methylnaphthalene	1.4	J	5.9	0.38	1	05/06/04	05/19/04	KWG0406453	
1-Methylnaphthalene	0.84	J	5.9	0.36	1	05/06/04	05/19/04	KWG0406453	
Acenaphthylene	2.2	J	5.9	0.29	1	05/06/04	05/19/04	KWG0406453	
Acenaphthene	0.91	J	5.9	0.38	1	05/06/04	05/19/04	KWG0406453	
Fluorene	1.0	J	5.9	0.31	1	05/06/04	05/19/04	KWG0406453	
Phenanthrene	15		5.9	0.27	1	05/06/04	05/19/04	KWG0406453	
Anthracene	4.6	J	5.9	0.34	1	05/06/04	05/19/04	KWG0406453	
Fluoranthene	67		5.9	0.31	1	05/06/04	05/19/04	KWG0406453	
Pyrene	61		5.9	0.20	1	05/06/04	05/19/04	KWG0406453	
Benz(a)anthracene	29		5.9	0.24	1	05/06/04	05/19/04	KWG0406453	
Chrysene	52		5.9	0.27	1	05/06/04	05/19/04	KWG0406453	
Benzo(b)fluoranthene	64		5.9	0.26	1	05/06/04	05/19/04	KWG0406453	
Benzo(k)fluoranthene	57		5.9	0.27	1	05/06/04	05/19/04	KWG0406453	
Benzo(a)pyrene	50		5.9	0.26	1	05/06/04	05/19/04	KWG0406453	
Indeno(1,2,3-cd)pyrene	56		5.9	0.27	1	05/06/04	05/19/04	KWG0406453	
Dibenz(a,h)anthracene	7.9		5.9	0.33	1	05/06/04	05/19/04	KWG0406453	
Benzo(g,h,i)perylene	61		5.9	0.18	1	05/06/04	05/19/04	KWG0406453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	52	27-110	05/19/04	Acceptable
Fluoranthene-d10	64	34-122	05/19/04	Acceptable
Terphenyl-d14	67	50-132	05/19/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0406453-5

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	3.1	0.21	1	05/06/04	05/19/04	KWG0406453	
2-Methylnaphthalene	ND	U	3.1	0.21	1	05/06/04	05/19/04	KWG0406453	
1-Methylnaphthalene	ND	U	3.1	0.20	1	05/06/04	05/19/04	KWG0406453	
Acenaphthylene	ND	U	3.1	0.16	1	05/06/04	05/19/04	KWG0406453	
Acenaphthene	ND	U	3.1	0.21	1	05/06/04	05/19/04	KWG0406453	
Fluorene	ND	U	3.1	0.17	1	05/06/04	05/19/04	KWG0406453	
Phenanthrene	ND	U	3.1	0.15	1	05/06/04	05/19/04	KWG0406453	
Anthracene	ND	U	3.1	0.19	1	05/06/04	05/19/04	KWG0406453	
Fluoranthene	ND	U	3.1	0.17	1	05/06/04	05/19/04	KWG0406453	
Pyrene	ND	U	3.1	0.11	1	05/06/04	05/19/04	KWG0406453	
Benz(a)anthracene	ND	U	3.1	0.13	1	05/06/04	05/19/04	KWG0406453	
Chrysene	ND	U	3.1	0.15	1	05/06/04	05/19/04	KWG0406453	
Benzo(b)fluoranthene	ND	U	3.1	0.14	1	05/06/04	05/19/04	KWG0406453	
Benzo(k)fluoranthene	ND	U	3.1	0.15	1	05/06/04	05/19/04	KWG0406453	
Benzo(a)pyrene	ND	U	3.1	0.14	1	05/06/04	05/19/04	KWG0406453	
Indeno(1,2,3-cd)pyrene	ND	U	3.1	0.15	1	05/06/04	05/19/04	KWG0406453	
Dibenz(a,h)anthracene	ND	U	3.1	0.18	1	05/06/04	05/19/04	KWG0406453	
Benzo(g,h,i)perylene	ND	U	3.1	0.10	1	05/06/04	05/19/04	KWG0406453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	58	27-110	05/19/04	Acceptable
Fluoranthene-d10	66	34-122	05/19/04	Acceptable
Terphenyl-d14	78	50-132	05/19/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403211

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
E-PE04-1	K2403211-001	52	57	70
E-PE04-1 Dup	K2403211-002	59	66	71
E-PE04-2	K2403211-003	63	73	74
E-PE04-3	K2403211-004	50	60	65
E-PE04-4	K2403211-005	52	64	67
Method Blank	KWG0406453-5	58	66	78
E-PE04-1MS	KWG0406453-1	47	51	59
E-PE04-1DMS	KWG0406453-2	48	52	56
Lab Control Sample	KWG0406453-3	70	75	77
Duplicate Lab Control Sample	KWG0406453-4	66	74	78

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	27-110
Sur2 =	Fluoranthene-d10	34-122
Sur3 =	Terphenyl-d14	50-132

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

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

Columbia Analytical Services INC.
An Employee - Owned Company

June 3, 2004

Service Request No: K2403407

Bryan Cottor
PPB Environmental Laboratories, Inc.
6821 SW Archer Road
Gainesville, FL 32608

RE: PPB-USACE Port Everglades 2004

Dear Bryan:

Enclosed are the results of the sample(s) submitted to our laboratory on May 8, 2004. For your reference, these analyses have been assigned our service request number K2403407.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Harvey Jacky
Project Chemist

HJ/jeb

Acronyms

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

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

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

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	PPB Environmental Laboratories, Inc.	**Service Request No.:**	K2403407
Project:	PPB - Port Everglades 2004	**Date Received:**	5/8/04
Sample Matrix:	Sediment / Water		

CASE NARRATIVE

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

Sample Receipt

Two samples, one soil and one water, were received for analysis at Columbia Analytical Services on 5/8/04. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Total Sulfide by EPA Method 9030M:
The Relative Percent Difference (RPD) for the replicate analysis of Sulfide in sample E-PE04-Control was outside the normal CAS control limits. The variability in the results is attributed to the heterogeneous character of the sample. The sample contained relatively large amounts of shell pieces, which created difficulties during the homogenization process. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

Total Metals

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Antimony for sample E-PE04 Control 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 it's 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 which specifically target Antimony. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicate the analysis was in control.

The control criteria for matrix spike recoveries of Aluminum and Iron for sample E-PE04 Control were not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate analysis of Nickel in sample E-PE-04 Control was outside the normal CAS control limits. The variability in the results is attributed to the heterogeneous character of the sample. The sample contained relatively large amounts of rocks and shells, etc., which created difficulties during the homogenization process. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

Approved by _____ **Date** 6/8/04

Oil and Grease by EPA Method 1664 / 9071

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

Organochlorine Pesticides by EPA Method 8081A

Soil: Elevated Method Reporting Limits:
The detection limit is elevated for a few analytes in samples E-PE04-Control. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection limit. The results are flagged to indicate the matrix interference.

Water: Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) 0521F026: 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.

Water: Elevated Method Detection Limits:
The detection limit is elevated for several analytes in sample E-PE04-Control. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection limit. The result is flagged to indicate the matrix interference.

PCB Aroclors by EPA Method 8082

Sample Confirmation Notes:
Flag JP: The confirmation comparison criteria for Aroclor 1254 in sample E-PE04-Control are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

Sample Notes and Discussion
Two Aroclors were identified in sample E-PE04-Control: Aroclor 1254 and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective.

A review of the sample chromatograms indicated the presence of PCB patterns or matrix components that spanned the entire elution range from Aroclor 1254 through the end of Aroclor 1260. Based on individual PCB peaks in the earlier portion of the chromatogram, Aroclor 1254 was identified and quantitated. Aroclor 1260 was identified based on the presence of PCB peaks eluting later in the chromatogram.

PCB Congeners by EPA Method 8082

Continuing Calibration Verification (CCV) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in CCV 0520F003 and CCV 0520F016: PCB 28 and PCB 66; CCV 0521F006: PCB 18. 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.

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

Organotin Compounds

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

Approved by HG **Date** 6/8/04

Polynuclear Aromatic Hydrocarbons by EPA Method 8270C SIM

Initial Calibration (ICAL) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in ICAL ID CAL3514: 2,3,5-Trimethylnaphthalene, 2,4,6-Tribromophenol, Pyrene, Dibenz(a,h)anthracene. 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 9.8%. 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.

Surrogate Exceptions:
The control criteria were exceeded for the Fluorene-d10 surrogate in sample E-PE04-Control Elutriate due to suspected matrix interferences. Seawater samples have historically caused some surrogate recovery issues. Since the recovery of the surrogate was only 1% below the lower control criteria (37%), the PC determined that re-extracting past hold time and reanalyzing would not be performed. No further corrective action was appropriate.

Approved by HC **Date** 6/8/04

Chain of Custody Documentation

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

1C2403407

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor CAS Kelso
		Shipping Method FedEx

CLIENT NAME: PPB-USACE Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per attached Scope of work

PRESERVATION
CF Chilled-Filtered
SF Sulfuric-Filtered
NF Nitric-Filtered
C Chilled
S Sulfuric
N Nitric
B Basic/NaOH
Z Zinc
T Thiosulfate
H HCL
Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS									Lab I.D. Number
254320	4/19/04	---	✓		E-PE04-Control	S	3	✓								

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
			PE 5/7/04
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
[signature]	5/7/04 1700		
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
		[signature]	5/8/04 0800

Remarks and Observations

Login:
Please use ~~client~~ station location as client ID. PE 5/7/04

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

6

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

K2403407

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor CAS-Kelso
		Shipping Method FedEx

CLIENT NAME: PBB-USACE Port Everglades
CLIENT PROJECT:
SITE NAME & ADDRESS: 2004
SAMPLERS: *(Signature)*
LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per attached scope of work

PRESERVATION

CF	Chilled-Filtered
SF	Sulfuric-Filtered
NF	Nitric-Filtered
C	Chilled
S	Sulfuric
N	Nitric
B	Basic/NaOH
Z	Zinc
T	Thiosulfate
H	HCL
Ot	Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS									Lab I.D. Number
254387	5/7/04	1200	✓		E-PE04-control Elutriate	W	11	✓								

	Date / Time		Date / Time
Precleaned Containers Relinquished by: *(Signature)*		Received by: *(Signature)*	PC 5/7/04
Relinquished by: *(Signature)*	5/7/04 1700	Received by: *(Signature)*	
Relinquished by: *(Signature)*		Received by: *(Signature)*	
Relinquished by: *(Signature)*		Received by: *(Signature)*	

Remarks and Observations

Login:
Please use station location as client ID.

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

10

Columbia Analytical Services Inc.
Cooler Receipt and Preservation Form

Project/Client PPB Work Order K240 3407

Cooler received on 5/8/04 and opened on 5/8/04 by FA

1. Were custody seals on outside of coolers? Y (N)
   If yes, how many and where?
2. Were seals intact and signature & date correct? ~~Y N~~
3. Is the shipper's airbill available and filed? If no, record airbill number: (Y) N
4. COC#
   Temperature of cooler(s) upon receipt: 1.3
   Temperature Blank:
5. Were custody papers properly filled out (ink, signed, etc.)? (Y) N
6. Type of packing material present sleeves, bubble wrap
7. Did all bottles arrive in good condition (unbroken)? (Y) N
8. Were all bottle labels complete (i.e analysis, preservation, etc.)? (Y) N
9. Did all bottle labels and tags agree with custody papers? (Y) N
10. Were the correct types of bottles used for the tests indicated? (Y) N
11. Were all of the preserved bottles received at the lab with the appropriate pH? ~~Y N~~
12. Were VOA vials checked for absence of air bubbles, and if present, noted below? ~~Y N~~
13. Did the bottles originate from CAS/K or a branch laboratory? Y (N)
14. Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection? ~~Y N~~
15. 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 Results

Client: PPB Environmental
Project: PPB-USACE Port Everg
Sample Matrix: Sediment

Service Request: K2403407

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
E-PE04-Control	K2403407-001	05/07/2004	05/08/2004	05/10/2004	73.7	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403407
Project:	PPB-USACE Port Everg	**Date Collected:**	05/07/2004
Sample Matrix:	Sediment	**Date Received:**	05/08/2004
		Date Analyzed:	05/10/2004

Duplicate Sample Summary
Total Solids

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

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
E-PE04-Control	K2403407-001	73.7	73.1	73.4	<1	

General Chemistry Parameters

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : PPB Environmental
Project Name : PPB-USACE Port Everglades 2004
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K2403407
Date Collected : 05/07/04
Date Received : 05/08/04

Sulfide, Total

Analysis Method : 9030M
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
E-PE04-Control	K2403407-001	2.8	1.2	4	05/19/04	66	
Method Blank	K2403407-MB	0.7	0.3	1	05/19/04	ND	

M Modified for analysis of soil.

Report By:BReller

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : PPB Environmental
Project Name : PPB-USACE Port Everglades 2004
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K2403407
Date Collected : 05/07/04
Date Received : 05/08/04
Date Extracted : NA
Date Analyzed : 05/19/04

Duplicate Summary
Inorganic Parameters

Sample Name : E-PE04-Control
Lab Code : K2403407-001DUP
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Sulfide, Total	9030M	2.8	66	51	59	25	*

M Modified for analysis of soil.

Report By:BReller

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : PPB Environmental
Project Name : PPB-USACE Port Everglades 2004
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K2403407
Date Collected : 05/07/04
Date Received : 05/08/04
Date Extracted : NA
Date Analyzed : 05/19/04

Matrix Spike Summary
Inorganic Parameters

Sample Name : E-PE04-Control
Lab Code : K2403407-001MS
Test Notes :

Units : mg/Kg (ppm)
Basis : Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Sulfide, Total	9030M	70	1280	66	1330	99	60-130	

M Modified for analysis of soil.

Report By:BReller

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client :	PPB Environmental	**Service Request :**	K2403407
Project Name :	PPB-USACE Port Everglades 2004	**Date Collected :**	NA
Project Number :	NA	**Date Received :**	NA
Sample Matrix :	SEDIMENT	**Date Extracted :**	NA
		Date Analyzed :	05/19/04

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name :	Laboratory Control Sample	Units :	mg/Kg (ppm)
Lab Code :	K2403407-LCS	Basis :	Dry
Test Notes :			

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Sulfide, Total	None	9030M	5.4	4.8	89	60-130	

M Modified for analysis of soil.

Report By:BReller

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: 05/07/04
Date Received: 05/08/04

Carbon, Total Organic

Prep Method: NONE
Analysis Method: PSEP
Test Notes:

Units: PERCENT
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
E-PE04-Control	K2403407-001	0.05	0.02	1	NA	05/25/04	0.50	
Method Blank	K2403407-MB	0.05	0.02	1	NA	05/25/04	ND	

Approved By: _____ Date: 5/27/04

1A/020597p

03407WET.ay1 - Sample 05/27/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: 05/07/04
Date Received: 05/08/04
Date Extracted: NA
Date Analyzed: 05/25/04

Duplicate Summary
Inorganic Parameters

Sample Name: E-PE04-Control
Lab Code: K2403407-001DUP
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	NONE	PSEP	0.05	0.50	0.50	0.50	< 1	

Approved By: _____ Date: 5/27/04

DUP/020597p

03407WET.ay1 - DUP 05/27/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: 05/07/04
Date Received: 05/08/04
Date Extracted: NA
Date Analyzed: 05/25/04

Triplicate Summary
Inorganic Parameters

Sample Name: E-PE04-Control
Lab Code: K2403407-001TRP
Test Notes:

Units: PERCENT
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Triplicate Sample Result	Average	Relative Standard Deviation	Result Notes
Carbon, Total Organic	NONE	PSEP	0.05	0.50	0.50	0.50	0.50	< 1	

Approved By: _____ Date: 5/27/04

DUP/020597p

03407WET.ay1 - TRP 05/27/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403407
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	05/07/04
Sample Matrix:	Sediment	**Date Received:**	05/08/04
		Date Extracted:	NA
		Date Analyzed:	05/25/04

Matrix Spike Summary
Inorganic Parameters

Sample Name:	E-PE04-Control	Units:	PERCENT
Lab Code:	K2403407-001MS	Basis:	Dry
Test Notes:			

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	NONE	PSEP	0.05	2.12	0.50	2.36	88	75-125	

Approved By: _____ Date: 5/27/04

MS/020597p

03407WET.ay1 - MS 05/27/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
LCS Matrix: Sediment

Service Request: K2403407
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 05/25/04

Laboratory Control Sample Summary
Inorganic Parameters

Sample Name: Lab Control Sample
Lab Code: K2403407-LCS
Test Notes:

Units: PERCENT
Basis: Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	NONE	PSEP	0.57	0.61	107	85-115	

Approved By: _____ Date: 5/27/04

LCS/020597p

03407WET.ayl - LCS 05/27/04

Page No.:

Metals

METALS

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: PPB Environmental

Service Request: K2403407

Project No.:

Project Name: PPB-USACE Port Everglades 2004

Sample No.	Lab Sample ID.
E-PE04-Control	K2403407-001
E-PE04-ControlD	K2403407-001D
E-PE04-ControlS	K2403407-001S
Method Blank	K2403407-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: Sediment Package

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 above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Date: 5/28/04

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: PPB-USACE Port Everglades 2004
Matrix: SEDIMENT

Service Request: K2403407
Date Collected: 05/07/04
Date Received: 05/08/04
Units: MG/KG
Basis: Dry

Sample Name: E-PE04-Control
Lab Code: K2403407-001

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	11.3	11.3	2	5/17/04	5/18/04	1730		*
Antimony	6020	0.06	0.02	5	5/17/04	5/27/04	0.03	B	N
Arsenic	6020	0.6	0.1	5	5/17/04	5/20/04	1.8		
Cadmium	6020	0.06	0.01	5	5/17/04	5/20/04	0.10		
Chromium	6020	0.23	0.05	5	5/17/04	5/20/04	3.83		*
Copper	6020	0.11	0.02	5	5/17/04	5/20/04	3.86		
Iron	6010B	4.5	3.4	2	5/17/04	5/18/04	2390		
Lead	6020	0.06	0.02	5	5/17/04	5/20/04	2.29		
Mercury	7471A	0.013	0.006	1	5/13/04	5/14/04	0.006	U	
Nickel	6020	0.23	0.05	5	5/17/04	5/20/04	13.7		*
Silver	6020	0.023	0.003	5	5/17/04	5/27/04	0.028		
Zinc	6020	0.6	0.2	5	5/17/04	5/20/04	5.8		

% Solids: 73.7

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: PPB-USACE Port Everglades 2004
Matrix: SEDIMENT

Service Request: K2403407
Date Collected:
Date Received:
Units: MG/KG
Basis: Dry

Sample Name: Method Blank
Lab Code: K2403407-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	10.0	10.0	2	5/17/04	5/18/04	10.0	U	*
Antimony	6020	0.05	0.02	5	5/17/04	5/27/04	0.02	U	N
Arsenic	6020	0.5	0.1	5	5/17/04	5/20/04	0.1	U	
Cadmium	6020	0.05	0.01	5	5/17/04	5/20/04	0.01	B	
Chromium	6020	0.20	0.04	5	5/17/04	5/20/04	0.07	B	*
Copper	6020	0.10	0.02	5	5/17/04	5/20/04	0.11		
Iron	6010B	4.0	3.0	2	5/17/04	5/18/04	3.0	U	
Lead	6020	0.05	0.02	5	5/17/04	5/20/04	0.03	B	
Mercury	7471A	0.020	0.010	1	5/13/04	5/14/04	0.010	U	
Nickel	6020	0.20	0.04	5	5/17/04	5/20/04	0.04	U	*
Silver	6020	0.020	0.003	5	5/17/04	5/27/04	0.005	B	
Zinc	6020	0.5	0.2	5	5/17/04	5/20/04	0.4	B	

% Solids: 100.0

Comments:

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2403407

Project No.:

Project Name: PPB-USACE Port Everglades 20

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed Solutions

Concentration Units: ug/I

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Aluminum	5000	5040	101	5000	5000	100	5110	102	6010B
Antimony	25.0	25.3	101	25.0	24.8	99	23.1	92	6020
Arsenic	50.0	48.7	97	25.0	24.2	97	23.7	95	6020
Cadmium	25.0	24.7	99	25.0	24.7	99	24.1	96	6020
Chromium	20.0	19.7	99	25.0	25.2	101	25.3	101	6020
Copper	25.0	25.0	100	25.0	25.0	100	24.8	99	6020
Iron	2500	2520	101	5000	5000	100	5110	102	6010B
Lead	50.0	49.4	99	25.0	25.2	101	24.7	99	6020
Mercury	5.0	4.88	98	5.0	4.91	98	5.04	101	7471A
Nickel	50.0	49.2	98	25.0	24.9	100	24.7	99	6020
Silver	12.5	12.3	98	25.0	24.9	100	25.1	100	6020
Zinc	50.0	48.7	97	25.0	24.8	99	24.0	96	6020

Columbia Analytical Services

METALS

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: PPB Environmental

Service Request: K2403407

Project No.:

Project Name: PPB-USACE Port Everglades 2004

Sample No.	Lab Sample ID.
E-PE04-Control Elutriate	K2403407-002
E-PE04-Control ElutriateD	K2403407-002D
E-PE04-Control ElutriateS	K2403407-002S
Method Blank	K2403407-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: Water Package

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 above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Date: 5/28/04

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental

Project No.: NA

Project Name: PPB-USACE Port Everglades 2004

Matrix: WATER

Service Request: K2403407

Date Collected: 05/07/04

Date Received: 05/08/04

Units: µG/L

Basis: NA

Sample Name: E-PE04-Control Elutriate

Lab Code: K2403407-002

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	1.00	0.40	1	5/17/04	5/25/04	3.37		
Arsenic	6020	0.50	0.02	1	5/18/04	5/26/04	3.07		
Cadmium	6020	0.020	0.003	1	5/18/04	5/26/04	0.047		
Chromium	6020	0.20	0.04	1	5/18/04	5/26/04	0.04	U	
Copper	6020	0.100	0.008	1	5/18/04	5/26/04	0.495		
Lead	6020	0.020	0.009	1	5/18/04	5/26/04	0.384		
Mercury	7470A	0.2	0.1	1	5/11/04	5/12/04	0.1	U	
Nickel	6020	0.20	0.02	1	5/18/04	5/26/04	0.78		
Silver	6020	0.020	0.005	1	5/18/04	5/26/04	0.144		
Zinc	6020	0.50	0.02	1	5/18/04	5/26/04	5.04		

% Solids: 0.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: PPB-USACE Port Everglades 2004
Matrix: WATER

Service Request: K2403407
Date Collected:
Date Received:
Units: µG/L
Basis: NA

Sample Name: Method Blank
Lab Code: K2403407-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	1.00	0.40	1	5/17/04	5/25/04	0.40	U	
Arsenic	6020	0.50	0.02	1	5/18/04	5/26/04	0.02	U	
Cadmium	6020	0.020	0.003	1	5/18/04	5/26/04	0.003	U	
Chromium	6020	0.20	0.04	1	5/18/04	5/26/04	0.04	U	
Copper	6020	0.100	0.008	1	5/18/04	5/26/04	0.008	U	
Lead	6020	0.020	0.009	1	5/18/04	5/26/04	0.009	U	
Mercury	7470A	0.2	0.1	1	5/11/04	5/12/04	0.1	U	
Nickel	6020	0.20	0.02	1	5/18/04	5/26/04	0.02	U	
Silver	6020	0.020	0.005	1	5/18/04	5/26/04	0.005	U	
Zinc	6020	0.50	0.02	1	5/18/04	5/26/04	0.02	U	

% Solids: 0.0

Comments:

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2403407

Project No.:

Project Name: PPB-USACE Port Everglades 20

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed Solutions

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	50.0	50.4	101	25.0	25.3	101	25.2	101	6020
Arsenic	25.0	25.8	103	25.0	25.1	100	24.4	98	6020
Cadmium	12.5	12.7	102	25.0	25.0	100	24.5	98	6020
Chromium	10.0	10.1	101	25.0	25.2	101	24.8	99	6020
Copper	12.5	12.7	102	25.0	24.9	100	24.6	98	6020
Lead	25.0	24.5	98	25.0	24.3	97	24.5	98	6020
Mercury	5.0	5.10	102	5.0	5.05	101	5.05	101	7470A
Nickel	25.0	25.1	101	25.0	25.0	100	25.1	100	6020
Silver	12.5	12.7	102	25.0	24.9	100	24.7	99	6020
Zinc	25.0	25.7	103	25.0	25.0	100	24.7	99	6020

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2403407

Project No.:

Project Name: PPB-USACE Port Everglades 20

ICV Source:

CCV Source: CAS Mixed Solutions

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				25.0	24.6	98			6020
Cadmium				25.0	24.9	99			6020
Chromium				25.0	24.5	98			6020
Copper				25.0	24.5	98			6020
Lead				25.0	25.8	103			6020
Mercury				5.0	5.30	106	5.04	101	7470A
Nickel				25.0	24.9	100			6020
Silver				25.0	24.7	99			6020
Zinc				25.0	24.6	98			6020

Butyltins

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403407

Cover Page - Organic Analysis Data Package
Butyltins

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-Control	K2403407-001	05/07/2004	05/08/2004
E-PE04-Control Elutriate	K2403407-002	05/07/2004	05/08/2004
E-PE04-Control ElutriateMS	KWG0406923-1	05/07/2004	05/08/2004
E-PE04-Control ElutriateDMS	KWG0406923-2	05/07/2004	05/08/2004
E-PE04-ControlMS	KWG0407000-1	05/07/2004	05/08/2004
E-PE04-ControlDMS	KWG0407000-2	05/07/2004	05/08/2004

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

Signature: _____ Name: Todd Pyhatin

Date: 5/26/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Butyltins

Sample Name: E-PE04-Control Elutriate
Lab Code: K2403407-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	05/14/04	05/19/04	KWG0406923	
Tri-n-butyltin	ND	U	0.020	0.0071	1	05/14/04	05/19/04	KWG0406923	
Di-n-butyltin	ND	U	0.050	0.0050	1	05/14/04	05/19/04	KWG0406923	
n-Butyltin	**0.016**	J	0.050	0.0047	1	05/14/04	05/19/04	KWG0406923	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	91	19-146	05/19/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: NA
Date Received: NA

Butyltins

Sample Name: Method Blank
Lab Code: KWG0406923-5

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	05/14/04	05/19/04	KWG0406923	
Tri-n-butyltin	ND	U	0.020	0.0071	1	05/14/04	05/19/04	KWG0406923	
Di-n-butyltin	ND	U	0.050	0.0050	1	05/14/04	05/19/04	KWG0406923	
n-Butyltin	ND	U	0.050	0.0047	1	05/14/04	05/19/04	KWG0406923	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	84	19-146	05/19/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Butyltins

Sample Name: E-PE04-Control
Lab Code: K2403407-001

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.4	0.17	1	05/17/04	05/24/04	KWG0407000	
Tri-n-butyltin	ND	U	1.4	0.22	1	05/17/04	05/24/04	KWG0407000	
Di-n-butyltin	**0.070**	J	1.4	0.056	1	05/17/04	05/24/04	KWG0407000	
n-Butyltin	ND	U	1.4	0.097	1	05/17/04	05/24/04	KWG0407000	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	49	10-132	05/24/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: NA
Date Received: NA

Butyltins

Sample Name: Method Blank
Lab Code: KWG0407000-4

Units: ug/Kg
Basis: Dry

Extraction Method: METHOD
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.12	1	05/17/04	05/24/04	KWG0407000	
Tri-n-butyltin	ND	U	1.0	0.16	1	05/17/04	05/24/04	KWG0407000	
Di-n-butyltin	ND	U	1.0	0.041	1	05/17/04	05/24/04	KWG0407000	
n-Butyltin	ND	U	1.0	0.071	1	05/17/04	05/24/04	KWG0407000	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	60	10-132	05/24/04	Acceptable

Comments:

Oil & Grease
EPA Method 1664

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403407
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	5/7/04
Sample Matrix:	Water	**Date Received:**	5/8/04

Oil and Grease

Sample Name:	E-PE04-Control Elutriate	Units:	mg/L (ppm)
Lab Code:	K2403407-002	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	5/17/04	5/17/04	ND	

Approved By: M Culer Date: 5/18/04

1S22/020597p

03407PHC.CQ2 - 1 5/18/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403407
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Oil and Grease

Sample Name:	Method Blank	Units:	mg/L (ppm)
Lab Code:	K040517-WB	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	5/17/04	5/17/04	ND	

Approved By: MM Culer Date: 5/18/04

1S22/020597p

03407PHC.CQ2 - MB 5/18/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403407
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	5/17/04
		Date Analyzed:	5/17/04

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary
Oil and Grease

Sample Name:	Lab Control Sample	Units:	mg/L (ppm)
Lab Code:	K040517-WL1, K040517-WL2	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	True Value LCS	True Value DLCS	Result LCS	Result DLCS	Percent Recovery LCS	Percent Recovery DLCS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	40	40	36.1	31.9	90	80	78-114	12	

Approved By: MM Curler Date: 5/18/04

DLCS/072898p
03407PHC.CQ2 - DLCS 5/18/04

Page No.:

Oil & Grease
EPA Method 9071

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403407
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	5/7/04
Sample Matrix:	Sediment	**Date Received:**	5/8/04

Oil and Grease

Sample Name:	E-PE04-Control	Units:	mg/Kg (ppm)
Lab Code:	K2403407-001	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	5/14/04	5/14/04	73	J

Approved By: M Cuter Date: 5/18/04

1S22/020597p

03407PHC.CQ1 - 1 5/18/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403407
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Oil and Grease

Sample Name:	Method Blank	Units:	mg/Kg (ppm)
Lab Code:	K040514-SB	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	60	1	5/14/04	5/14/04	ND	

Approved By: M Cuba Date: 5/18/04

1S22/020597p

03407PHC.CQ1 - MB 5/18/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403407
Project:	PPB-USACE Port Everglades 2004	**Date Collected:**	5/7/04
Sample Matrix:	Sediment	**Date Received:**	5/8/04
		Date Extracted:	5/14/04
		Date Analyzed:	5/14/04

Matrix Spike/Duplicate Matrix Spike Summary
Oil and Grease

Sample Name:	E-PE04-Control		Units: mg/Kg (ppm)
Lab Code:	K2403407-001MS,	K2403407-001DMS	Basis: Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
Oil and Grease, Total (HEM)	EPA 9071A	1664	100	2670	2680	73	2590	2670	94	97	78-114	3

Approved By: [signature] Date: 5/18/04

03407PHC.CQ1 - DMS 5/18/04

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
LCS Matrix: Sediment

Service Request: K2403407
Date Collected: NA
Date Received: NA
Date Extracted: 5/14/04
Date Analyzed: 5/14/04

Laboratory Control Sample Summary
Oil and Grease

Sample Name: Lab Control Sample
Lab Code: K040514-SL
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Oil and Grease, Total (HEM)	EPA 9071A	1664	2000	1880	94	78-114	

Approved By: M Curler Date: 5/18/04

LCS(071499) 03407PHC.CQ1 - LCS 5/18/04

Page No.:

Organochlorine Pesticides
EPA Method 8081

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403407

Cover Page - Organic Analysis Data Package
Organochlorine Pesticides

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-Control	K2403407-001	05/07/2004	05/08/2004
E-PE04-ControlMS	KWG0406720-1	05/07/2004	05/08/2004
E-PE04-ControlDMS	KWG0406720-2	05/07/2004	05/08/2004

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

Signature: Janet L. Heston

Name: Janet L. Heston

Date: 5-24-04

Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Organochlorine Pesticides

Sample Name: E-PE04-Control
Lab Code: K2403407-001

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
alpha-BHC	ND	U	1.0	0.12	1	05/11/04	05/20/04	KWG0406720	
beta-BHC	ND	Ui	1.0	0.67	1	05/11/04	05/20/04	KWG0406720	
gamma-BHC (Lindane)	ND	U	1.0	0.14	1	05/11/04	05/20/04	KWG0406720	
delta-BHC	ND	U	1.0	0.19	1	05/11/04	05/20/04	KWG0406720	
Heptachlor	ND	Ui	1.0	0.17	1	05/11/04	05/20/04	KWG0406720	
Aldrin	ND	U	1.0	0.34	1	05/11/04	05/20/04	KWG0406720	
Heptachlor Epoxide	ND	U	1.0	0.19	1	05/11/04	05/20/04	KWG0406720	
Endosulfan I	ND	U	1.0	0.15	1	05/11/04	05/20/04	KWG0406720	
Dieldrin	ND	U	1.0	0.12	1	05/11/04	05/20/04	KWG0406720	
4,4'-DDE	ND	U	1.0	0.11	1	05/11/04	05/20/04	KWG0406720	
Endrin	ND	U	1.0	0.33	1	05/11/04	05/20/04	KWG0406720	
Endosulfan II	ND	U	1.0	0.083	1	05/11/04	05/20/04	KWG0406720	
4,4'-DDD	ND	Ui	1.0	0.52	1	05/11/04	05/20/04	KWG0406720	
Endrin Aldehyde	ND	U	1.0	0.22	1	05/11/04	05/20/04	KWG0406720	
Endosulfan Sulfate	ND	U	1.0	0.29	1	05/11/04	05/20/04	KWG0406720	
4,4'-DDT	**0.62**	**J**	1.0	0.24	1	05/11/04	05/20/04	KWG0406720	
Methoxychlor	ND	U	1.0	0.26	1	05/11/04	05/20/04	KWG0406720	
Toxaphene	ND	Ui	50	23	1	05/11/04	05/20/04	KWG0406720	
Chlordane	ND	Ui	10	2.3	1	05/11/04	05/20/04	KWG0406720	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	79	39-129	05/20/04	Acceptable
Decachlorobiphenyl	97	29-141	05/20/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0406720-7

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
alpha-BHC	ND	U	0.42	0.083	1	05/11/04	05/20/04	KWG0406720	
beta-BHC	ND	U	0.42	0.22	1	05/11/04	05/20/04	KWG0406720	
gamma-BHC (Lindane)	ND	U	0.42	0.099	1	05/11/04	05/20/04	KWG0406720	
delta-BHC	ND	U	0.42	0.14	1	05/11/04	05/20/04	KWG0406720	
Heptachlor	ND	U	0.42	0.097	1	05/11/04	05/20/04	KWG0406720	
Aldrin	ND	U	0.42	0.25	1	05/11/04	05/20/04	KWG0406720	
Heptachlor Epoxide	ND	U	0.42	0.14	1	05/11/04	05/20/04	KWG0406720	
Endosulfan I	ND	U	0.42	0.11	1	05/11/04	05/20/04	KWG0406720	
Dieldrin	ND	U	0.42	0.082	1	05/11/04	05/20/04	KWG0406720	
4,4'-DDE	ND	U	0.42	0.076	1	05/11/04	05/20/04	KWG0406720	
Endrin	ND	U	0.42	0.24	1	05/11/04	05/20/04	KWG0406720	
Endosulfan II	ND	U	0.42	0.061	1	05/11/04	05/20/04	KWG0406720	
4,4'-DDD	ND	U	0.42	0.093	1	05/11/04	05/20/04	KWG0406720	
Endrin Aldehyde	ND	U	0.42	0.16	1	05/11/04	05/20/04	KWG0406720	
Endosulfan Sulfate	ND	U	0.42	0.21	1	05/11/04	05/20/04	KWG0406720	
4,4'-DDT	ND	U	0.42	0.17	1	05/11/04	05/20/04	KWG0406720	
Methoxychlor	ND	U	0.42	0.19	1	05/11/04	05/20/04	KWG0406720	
Toxaphene	ND	U	21	7.3	1	05/11/04	05/20/04	KWG0406720	
Chlordane	ND	U	4.2	1.2	1	05/11/04	05/20/04	KWG0406720	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	78	39-129	05/20/04	Acceptable
Decachlorobiphenyl	101	29-141	05/20/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
E-PE04-Control	K2403407-001	79	97
Method Blank	KWG0406720-7	78	101
E-PE04-ControlMS	KWG0406720-1	81	98
E-PE04-ControlDMS	KWG0406720-2	82	98
Lab Control Sample	KWG0406720-3	86	102

Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	39-129
Sur2 =	Decachlorobiphenyl	29-141

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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Extracted: 05/11/2004
Date Analyzed: 05/20/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: E-PE04-Control
Lab Code: K2403407-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low
Extraction Lot: KWG0406720

Analyte Name	Sample Result	E-PE04-ControlMS KWG0406720-1 Matrix Spike			E-PE04-ControlDMS KWG0406720-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	ND	21.5	19.9	108	22.0	19.9	110	46-146	2	50
beta-BHC	ND	20.3	19.9	102	20.5	19.9	103	28-155	1	50
gamma-BHC (Lindane)	ND	22.5	19.9	113	22.3	19.9	112	50-145	1	50
delta-BHC	ND	22.9	19.9	115	23.2	19.9	116	42-155	1	50
Heptachlor	ND	20.6	19.9	103	20.9	19.9	105	30-152	1	50
Aldrin	ND	20.9	19.9	105	21.2	19.9	106	35-146	1	50
Heptachlor Epoxide	ND	23.0	19.9	115	21.8	19.9	109	35-148	5	50
Endosulfan I	ND	15.5	19.9	78	15.4	19.9	77	21-143	1	50
Dieldrin	ND	25.9	19.9	130	21.9	19.9	110	50-146	17	50
4,4'-DDE	ND	24.8	19.9	124	22.4	19.9	113	48-146	10	50
Endrin	ND	21.8	19.9	109	21.8	19.9	109	42-150	0	50
Endosulfan II	ND	21.6	19.9	108	17.7	19.9	89	28-145	20	50
4,4'-DDD	ND	23.5	19.9	118	24.6	19.9	123	32-166	5	50
Endrin Aldehyde	ND	19.6	19.9	98	19.5	19.9	98	10-147	1	50
Endosulfan Sulfate	ND	20.7	19.9	104	20.9	19.9	105	27-156	1	50
4,4'-DDT	0.62	29.7	19.9	146	22.2	19.9	108	47-157	29	50
Methoxychlor	ND	21.6	19.9	108	20.3	19.9	102	35-171	7	50
Chlordane	ND	197	199	99	186	199	93	70-130	6	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.

Organochlorine Pesticides
EPA Method 8081

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403407

Cover Page - Organic Analysis Data Package
Organochlorine Pesticides

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-Control Elutriate	K2403407-002	05/07/2004	05/08/2004

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

Signature: _____ Name: Todd Rynhart

Date: 5/26/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Organochlorine Pesticides

Sample Name: E-PE04-Control Elutriate
Lab Code: K2403407-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	0.010	0.0012	1	05/12/04	05/22/04	KWG0406755	
beta-BHC	ND	Ui	0.010	0.0054	1	05/12/04	05/22/04	KWG0406755	
gamma-BHC (Lindane)	ND	Ui	0.010	0.00088	1	05/12/04	05/22/04	KWG0406755	
delta-BHC	ND	U	0.010	0.0016	1	05/12/04	05/22/04	KWG0406755	
Heptachlor	ND	Ui	0.010	0.010	1	05/12/04	05/22/04	KWG0406755	
Aldrin	ND	U	0.010	0.00087	1	05/12/04	05/22/04	KWG0406755	
Heptachlor Epoxide	ND	Ui	0.010	0.00081	1	05/12/04	05/22/04	KWG0406755	
Endosulfan I	ND	Ui	0.010	0.0013	1	05/12/04	05/22/04	KWG0406755	
Dieldrin	ND	Ui	0.010	0.0068	1	05/12/04	05/22/04	KWG0406755	
4,4'-DDE	ND	U	0.010	0.0015	1	05/12/04	05/22/04	KWG0406755	
Endrin	ND	U	0.010	0.00065	1	05/12/04	05/22/04	KWG0406755	
Endosulfan II	ND	U	0.010	0.0011	1	05/12/04	05/22/04	KWG0406755	
4,4'-DDD	ND	U	0.010	0.0019	1	05/12/04	05/22/04	KWG0406755	
Endrin Aldehyde	ND	U	0.010	0.0023	1	05/12/04	05/22/04	KWG0406755	
Endosulfan Sulfate	ND	U	0.010	0.0029	1	05/12/04	05/22/04	KWG0406755	
4,4'-DDT	ND	Ui	0.010	0.0026	1	05/12/04	05/22/04	KWG0406755	
Methoxychlor	ND	Ui	0.010	0.0092	1	05/12/04	05/22/04	KWG0406755	
Toxaphene	ND	Ui	0.50	0.15	1	05/12/04	05/22/04	KWG0406755	
Chlordane	ND	U	0.20	0.039	1	05/12/04	05/22/04	KWG0406755	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	60	17-128	05/22/04	Acceptable
Decachlorobiphenyl	42	10-136	05/22/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0406755-9

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.0097	0.0011	1	05/12/04	05/22/04	KWG0406755	
beta-BHC	ND	U	0.0097	0.0029	1	05/12/04	05/22/04	KWG0406755	
gamma-BHC (Lindane)	ND	U	0.0097	0.00076	1	05/12/04	05/22/04	KWG0406755	
delta-BHC	ND	U	0.0097	0.0016	1	05/12/04	05/22/04	KWG0406755	
Heptachlor	ND	U	0.0097	0.0011	1	05/12/04	05/22/04	KWG0406755	
Aldrin	ND	U	0.0097	0.00087	1	05/12/04	05/22/04	KWG0406755	
Heptachlor Epoxide	ND	U	0.0097	0.00060	1	05/12/04	05/22/04	KWG0406755	
Endosulfan I	ND	U	0.0097	0.0012	1	05/12/04	05/22/04	KWG0406755	
Dieldrin	ND	Ui	0.0097	0.0014	1	05/12/04	05/22/04	KWG0406755	
4,4'-DDE	ND	U	0.0097	0.0015	1	05/12/04	05/22/04	KWG0406755	
Endrin	ND	U	0.0097	0.00065	1	05/12/04	05/22/04	KWG0406755	
Endosulfan II	ND	U	0.0097	0.0011	1	05/12/04	05/22/04	KWG0406755	
4,4'-DDD	ND	U	0.0097	0.0019	1	05/12/04	05/22/04	KWG0406755	
Endrin Aldehyde	ND	U	0.0097	0.0023	1	05/12/04	05/22/04	KWG0406755	
Endosulfan Sulfate	ND	U	0.0097	0.0029	1	05/12/04	05/22/04	KWG0406755	
4,4'-DDT	ND	Ui	0.0097	0.0036	1	05/12/04	05/22/04	KWG0406755	
Methoxychlor	ND	U	0.0097	0.00090	1	05/12/04	05/22/04	KWG0406755	
Toxaphene	ND	U	0.49	0.037	1	05/12/04	05/22/04	KWG0406755	
Chlordane	ND	U	0.20	0.039	1	05/12/04	05/22/04	KWG0406755	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	76	17-128	05/22/04	Acceptable
Decachlorobiphenyl	109	10-136	05/22/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
E-PE04-Control Elutriate	K2403407-002	60	42
Method Blank	KWG0406755-9	76	109
Lab Control Sample	KWG0406755-1	58	102
Duplicate Lab Control Sample	KWG0406755-2	63	104

Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	17-128
Sur2 =	Decachlorobiphenyl	10-136

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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Extracted: 05/12/2004
Date Analyzed: 05/22/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0406755

	Lab Control Sample KWG0406755-1 Lab Control Spike			Duplicate Lab Control Sample KWG0406755-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	0.173	0.200	87	0.184	0.200	92	56-132	6	30
beta-BHC	0.162	0.200	81	0.171	0.200	86	42-145	6	30
gamma-BHC (Lindane)	0.175	0.200	87	0.186	0.200	93	59-130	6	30
delta-BHC	0.177	0.200	89	0.188	0.200	94	57-142	6	30
Heptachlor	0.163	0.200	81	0.172	0.200	86	39-120	5	30
Aldrin	0.153	0.200	76	0.163	0.200	82	38-121	7	30
Heptachlor Epoxide	0.163	0.200	82	0.172	0.200	86	62-119	5	30
Endosulfan I	0.147	0.200	74	0.159	0.200	80	59-111	8	30
Dieldrin	0.173	0.200	86	0.182	0.200	91	64-126	5	30
4,4'-DDE	0.166	0.200	83	0.173	0.200	87	66-122	5	30
Endrin	0.173	0.200	87	0.182	0.200	91	63-128	5	30
Endosulfan II	0.166	0.200	83	0.174	0.200	87	62-115	5	30
4,4'-DDD	0.170	0.200	85	0.178	0.200	89	47-151	5	30
Endrin Aldehyde	0.142	0.200	71	0.150	0.200	75	52-121	6	30
Endosulfan Sulfate	0.162	0.200	81	0.170	0.200	85	60-125	5	30
4,4'-DDT	0.172	0.200	86	0.181	0.200	90	47-157	5	30
Methoxychlor	0.167	0.200	83	0.176	0.200	88	49-148	5	30
Toxaphene	2.33	2.50	93	2.38	2.50	95	70-130	2	30
Chlordane	1.97	2.00	98	1.90	2.00	95	70-130	4	30

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

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

Polychlorinated Biphenyls
PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403407

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-Control	K2403407-001	05/07/2004	05/08/2004
E-PE04-ControlMS	KWG0406721-1	05/07/2004	05/08/2004
E-PE04-ControlDMS	KWG0406721-2	05/07/2004	05/08/2004

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

Signature: _____ Name: Todd Poghin

Date: 5/19/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-Control
Lab Code: K2403407-001

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	05/11/04	05/18/04	KWG0406721	
Aroclor 1221	ND	U	20	2.5	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1232	ND	U	10	2.5	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1242	ND	U	10	2.5	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1248	ND	U	10	2.5	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1254	**6.6**	JP	10	2.5	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1260	**7.7**	J	10	2.5	1	05/11/04	05/18/04	KWG0406721	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	82	40-145	05/18/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0406721-4

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.2	1.8	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1221	ND	U	8.3	1.8	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1232	ND	U	4.2	1.8	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1242	ND	U	4.2	1.8	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1248	ND	U	4.2	1.8	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1254	ND	U	4.2	1.8	1	05/11/04	05/18/04	KWG0406721	
Aroclor 1260	ND	U	4.2	1.8	1	05/11/04	05/18/04	KWG0406721	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	40-145	05/18/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-Control	K2403407-001	82
Method Blank	KWG0406721-4	83
E-PE04-ControlMS	KWG0406721-1	83
E-PE04-ControlDMS	KWG0406721-2	85
Lab Control Sample	KWG0406721-3	85

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 40-145

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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Extracted: 05/11/2004
Date Analyzed: 05/18/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-Control
Lab Code: K2403407-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low
Extraction Lot: KWG0406721

Analyte Name	Sample Result	E-PE04-ControlMS KWG0406721-1 Matrix Spike			E-PE04-ControlDMS KWG0406721-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Aroclor 1016	ND	193	199	97	192	199	96	44-149	0	50
Aroclor 1260	7.7	195	199	94	187	199	90	29-169	4	50

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Polychlorinated Biphenyls
PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004

Service Request: K2403407

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Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-Control Elutriate	K2403407-002	05/07/2004	05/08/2004

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Signature: Christina Quinn

Name: CHRISTINA QUINN

Date: 5/28/04

Title: SCIENTIST

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-Control Elutriate
Lab Code: K2403407-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.022	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1221	ND	U	0.40	0.039	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1232	ND	U	0.20	0.055	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1242	ND	U	0.20	0.084	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1248	ND	U	0.20	0.022	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1254	ND	U	0.20	0.034	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1260	ND	U	0.20	0.014	1	05/12/04	05/23/04	KWG0406754	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	43	10-147	05/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0406754-3

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.022	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1221	ND	U	0.39	0.039	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1232	ND	U	0.20	0.055	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1242	ND	U	0.20	0.084	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1248	ND	U	0.20	0.022	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1254	ND	U	0.20	0.034	1	05/12/04	05/23/04	KWG0406754	
Aroclor 1260	ND	U	0.20	0.014	1	05/12/04	05/23/04	KWG0406754	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	105	10-147	05/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-Control Elutriate	K2403407-002	43
Method Blank	KWG0406754-3	105
Lab Control Sample	KWG0406754-1	103
Duplicate Lab Control Sample	KWG0406754-2	98

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-147

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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Extracted: 05/12/2004
Date Analyzed: 05/23/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535
Analysis Method: 8082

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0406754

	Lab Control Sample KWG0406754-1 Lab Control Spike			Duplicate Lab Control Sample KWG0406754-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	1.62	2.00	81	1.60	2.00	80	46-143	2	30
Aroclor 1260	1.72	2.00	86	1.66	2.00	83	50-139	4	30

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

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

Congener Specific PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Congener Specific PCBs

Sample Name: E-PE04-Control Elutriate
Lab Code: K2403407-002

Units: ng/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.1	1.5	1	05/13/04	05/20/04	KWG0406835	
PCB 18	ND	U	5.1	2.1	1	05/13/04	05/20/04	KWG0406835	
PCB 28	ND	U	5.1	1.3	1	05/13/04	05/20/04	KWG0406835	
PCB 44	ND	U	5.1	2.3	1	05/13/04	05/20/04	KWG0406835	
PCB 52	ND	U	5.1	1.6	1	05/13/04	05/20/04	KWG0406835	
PCB 66	ND	U	5.1	1.3	1	05/13/04	05/20/04	KWG0406835	
PCB 87	ND	U	5.1	1.5	1	05/13/04	05/20/04	KWG0406835	
PCB 101	ND	U	5.1	2.0	1	05/13/04	05/20/04	KWG0406835	
PCB 138	ND	U	5.1	1.4	1	05/13/04	05/20/04	KWG0406835	
PCB 156	ND	U	5.1	1.3	1	05/13/04	05/20/04	KWG0406835	
PCB 180	ND	U	5.1	1.5	1	05/13/04	05/20/04	KWG0406835	
PCB 183	ND	U	5.1	1.4	1	05/13/04	05/20/04	KWG0406835	
PCB 184	ND	U	5.1	2.5	1	05/13/04	05/20/04	KWG0406835	
PCB 187	ND	U	5.1	2.0	1	05/13/04	05/20/04	KWG0406835	
PCB 195	ND	U	5.1	1.3	1	05/13/04	05/20/04	KWG0406835	
PCB 206	ND	U	5.1	1.6	1	05/13/04	05/20/04	KWG0406835	
PCB 209	ND	U	5.1	2.2	1	05/13/04	05/20/04	KWG0406835	
PCB 49	ND	U	5.1	0.52	1	05/13/04	05/20/04	KWG0406835	
PCB 77	ND	U	5.1	0.41	1	05/13/04	05/20/04	KWG0406835	
PCB 105	ND	U	5.1	0.27	1	05/13/04	05/20/04	KWG0406835	
PCB 118	ND	U	5.1	1.5	1	05/13/04	05/20/04	KWG0406835	
PCB 126	ND	U	5.1	0.35	1	05/13/04	05/20/04	KWG0406835	
PCB 128	ND	U	5.1	0.40	1	05/13/04	05/20/04	KWG0406835	
PCB 153	ND	U	5.1	0.90	1	05/13/04	05/20/04	KWG0406835	
PCB 169	ND	U	5.1	0.34	1	05/13/04	05/20/04	KWG0406835	
PCB 170	ND	U	5.1	0.41	1	05/13/04	05/20/04	KWG0406835	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	62	10-125	05/20/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0406835-3

Extraction Method: EPA 3520C
Analysis Method: 8082

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.0	1.4	1	05/13/04	05/20/04	KWG0406835	
PCB 18	ND	U	5.0	2.0	1	05/13/04	05/20/04	KWG0406835	
PCB 28	ND	U	5.0	1.2	1	05/13/04	05/20/04	KWG0406835	
PCB 44	ND	U	5.0	2.2	1	05/13/04	05/20/04	KWG0406835	
PCB 52	ND	U	5.0	1.5	1	05/13/04	05/20/04	KWG0406835	
PCB 66	ND	U	5.0	1.2	1	05/13/04	05/20/04	KWG0406835	
PCB 87	ND	U	5.0	1.4	1	05/13/04	05/20/04	KWG0406835	
PCB 101	ND	U	5.0	1.9	1	05/13/04	05/20/04	KWG0406835	
PCB 138	ND	U	5.0	1.3	1	05/13/04	05/20/04	KWG0406835	
PCB 156	ND	U	5.0	1.2	1	05/13/04	05/20/04	KWG0406835	
PCB 180	ND	U	5.0	1.4	1	05/13/04	05/20/04	KWG0406835	
PCB 183	ND	U	5.0	1.3	1	05/13/04	05/20/04	KWG0406835	
PCB 184	ND	U	5.0	2.4	1	05/13/04	05/20/04	KWG0406835	
PCB 187	ND	U	5.0	1.9	1	05/13/04	05/20/04	KWG0406835	
PCB 195	ND	U	5.0	1.2	1	05/13/04	05/20/04	KWG0406835	
PCB 206	ND	U	5.0	1.5	1	05/13/04	05/20/04	KWG0406835	
PCB 209	ND	U	5.0	2.1	1	05/13/04	05/20/04	KWG0406835	
PCB 49	ND	U	5.0	0.51	1	05/13/04	05/20/04	KWG0406835	
PCB 77	ND	U	5.0	0.40	1	05/13/04	05/20/04	KWG0406835	
PCB 105	ND	U	5.0	0.26	1	05/13/04	05/20/04	KWG0406835	
PCB 118	ND	U	5.0	1.4	1	05/13/04	05/20/04	KWG0406835	
PCB 126	ND	U	5.0	0.34	1	05/13/04	05/20/04	KWG0406835	
PCB 128	ND	U	5.0	0.39	1	05/13/04	05/20/04	KWG0406835	
PCB 153	ND	U	5.0	0.89	1	05/13/04	05/20/04	KWG0406835	
PCB 169	ND	U	5.0	0.33	1	05/13/04	05/20/04	KWG0406835	
PCB 170	ND	U	5.0	0.40	1	05/13/04	05/20/04	KWG0406835	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	10-125	05/20/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Congener Specific PCBs

Sample Name: E-PE04-Control
Lab Code: K2403407-001

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.12	1	05/17/04	05/20/04	KWG0407002	
PCB 18	ND	U	0.50	0.040	1	05/17/04	05/20/04	KWG0407002	
PCB 28	ND	U	0.50	0.34	1	05/17/04	05/20/04	KWG0407002	
PCB 44	ND	U	0.50	0.25	1	05/17/04	05/20/04	KWG0407002	
PCB 52	**0.30**	J	0.50	0.064	1	05/17/04	05/20/04	KWG0407002	
PCB 66	ND	U	0.50	0.051	1	05/17/04	05/20/04	KWG0407002	
PCB 87	**0.41**	J	0.50	0.038	1	05/17/04	05/20/04	KWG0407002	
PCB 101	**0.68**		0.50	0.041	1	05/17/04	05/20/04	KWG0407002	
PCB 138	**0.94**		0.50	0.041	1	05/17/04	05/20/04	KWG0407002	
PCB 156	**0.16**	J	0.50	0.059	1	05/17/04	05/20/04	KWG0407002	
PCB 180	**0.51**		0.50	0.043	1	05/17/04	05/20/04	KWG0407002	
PCB 183	**0.33**	JP	0.50	0.047	1	05/17/04	05/20/04	KWG0407002	*
PCB 184	ND	U	0.50	0.063	1	05/17/04	05/20/04	KWG0407002	
PCB 187	**0.36**	J	0.50	0.049	1	05/17/04	05/20/04	KWG0407002	
PCB 195	**0.068**	J	0.50	0.056	1	05/17/04	05/20/04	KWG0407002	
PCB 206	**0.18**	J	0.50	0.075	1	05/17/04	05/20/04	KWG0407002	
PCB 209	ND	U	0.50	0.068	1	05/17/04	05/20/04	KWG0407002	
PCB 49	**0.098**	J	0.50	0.062	1	05/17/04	05/20/04	KWG0407002	
PCB 77	ND	U	0.50	0.089	1	05/17/04	05/20/04	KWG0407002	
PCB 105	**0.29**	J	0.50	0.055	1	05/17/04	05/20/04	KWG0407002	
PCB 118	**0.64**		0.50	0.053	1	05/17/04	05/20/04	KWG0407002	
PCB 126	ND	U	0.50	0.053	1	05/17/04	05/20/04	KWG0407002	
PCB 128	ND	U	0.50	0.34	1	05/17/04	05/20/04	KWG0407002	
PCB 153	**0.80**		0.50	0.053	1	05/17/04	05/20/04	KWG0407002	
PCB 169	ND	U	0.50	0.044	1	05/17/04	05/20/04	KWG0407002	
PCB 170	**0.28**	J	0.50	0.045	1	05/17/04	05/20/04	KWG0407002	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	75	10-128	05/20/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0407002-4

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
PCB 8	ND	U	0.37	0.087	1	05/17/04	05/20/04	KWG0407002	
PCB 18	ND	U	0.37	0.029	1	05/17/04	05/20/04	KWG0407002	
PCB 28	ND	U	0.37	0.25	1	05/17/04	05/20/04	KWG0407002	
PCB 44	ND	U	0.37	0.18	1	05/17/04	05/20/04	KWG0407002	
PCB 52	ND	U	0.37	0.047	1	05/17/04	05/20/04	KWG0407002	
PCB 66	ND	U	0.37	0.037	1	05/17/04	05/20/04	KWG0407002	
PCB 87	ND	U	0.37	0.028	1	05/17/04	05/20/04	KWG0407002	
PCB 101	ND	U	0.37	0.030	1	05/17/04	05/20/04	KWG0407002	
PCB 138	ND	U	0.37	0.030	1	05/17/04	05/20/04	KWG0407002	
PCB 156	ND	U	0.37	0.043	1	05/17/04	05/20/04	KWG0407002	
PCB 180	ND	U	0.37	0.031	1	05/17/04	05/20/04	KWG0407002	
PCB 183	ND	U	0.37	0.034	1	05/17/04	05/20/04	KWG0407002	
PCB 184	ND	U	0.37	0.046	1	05/17/04	05/20/04	KWG0407002	
PCB 187	ND	U	0.37	0.036	1	05/17/04	05/20/04	KWG0407002	
PCB 195	ND	U	0.37	0.041	1	05/17/04	05/20/04	KWG0407002	
PCB 206	ND	U	0.37	0.055	1	05/17/04	05/20/04	KWG0407002	
PCB 209	ND	U	0.37	0.050	1	05/17/04	05/20/04	KWG0407002	
PCB 49	ND	U	0.37	0.045	1	05/17/04	05/20/04	KWG0407002	
PCB 77	ND	U	0.37	0.065	1	05/17/04	05/20/04	KWG0407002	
PCB 105	ND	U	0.37	0.040	1	05/17/04	05/20/04	KWG0407002	
PCB 118	ND	U	0.37	0.039	1	05/17/04	05/20/04	KWG0407002	
PCB 126	ND	U	0.37	0.039	1	05/17/04	05/20/04	KWG0407002	
PCB 128	ND	U	0.37	0.25	1	05/17/04	05/20/04	KWG0407002	
PCB 153	ND	U	0.37	0.039	1	05/17/04	05/20/04	KWG0407002	
PCB 169	ND	U	0.37	0.032	1	05/17/04	05/20/04	KWG0407002	
PCB 170	ND	U	0.37	0.033	1	05/17/04	05/20/04	KWG0407002	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	70	10-128	05/20/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3520C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-Control Elutriate	K2403407-002	62
Method Blank	KWG0406835-3	72
Lab Control Sample	KWG0406835-1	75
Duplicate Lab Control Sample	KWG0406835-2	75

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-125

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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-Control	K2403407-001	75
Method Blank	KWG0407002-4	70
E-PE04-ControlMS	KWG0407002-1	70
E-PE04-ControlDMS	KWG0407002-2	75
Lab Control Sample	KWG0407002-3	70

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-128

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

Polynuclear Aromatic Hydrocarbons
EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-Control Elutriate
Lab Code: K2403407-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.027**		0.020	0.0039	1	05/14/04	05/18/04	KWG0406943	
2-Methylnaphthalene	**0.0046**	J	0.020	0.0038	1	05/14/04	05/18/04	KWG0406943	
Acenaphthylene	**0.0020**	J	0.020	0.0011	1	05/14/04	05/18/04	KWG0406943	
Acenaphthene	**0.0037**	J	0.020	0.0024	1	05/14/04	05/18/04	KWG0406943	
Dibenzofuran	**0.0028**	J	0.020	0.0023	1	05/14/04	05/18/04	KWG0406943	
Fluorene	ND	U	0.020	0.0024	1	05/14/04	05/18/04	KWG0406943	
Phenanthrene	**0.0031**	J	0.020	0.0028	1	05/14/04	05/18/04	KWG0406943	
Anthracene	ND	U	0.020	0.0022	1	05/14/04	05/18/04	KWG0406943	
Fluoranthene	ND	U	0.020	0.0030	1	05/14/04	05/18/04	KWG0406943	
Pyrene	ND	U	0.020	0.0024	1	05/14/04	05/18/04	KWG0406943	
Benz(a)anthracene	ND	U	0.020	0.0022	1	05/14/04	05/18/04	KWG0406943	
Chrysene	ND	U	0.020	0.0028	1	05/14/04	05/18/04	KWG0406943	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	05/14/04	05/18/04	KWG0406943	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	05/14/04	05/18/04	KWG0406943	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	05/14/04	05/18/04	KWG0406943	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	05/14/04	05/18/04	KWG0406943	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	05/14/04	05/18/04	KWG0406943	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	05/14/04	05/18/04	KWG0406943	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	36	37-107	05/18/04	Outside Control Limits
Fluoranthene-d10	46	18-137	05/18/04	Acceptable
Terphenyl-d14	57	18-153	05/18/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0406943-3

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.020	0.0039	1	05/14/04	05/18/04	KWG0406943	
2-Methylnaphthalene	ND	U	0.020	0.0038	1	05/14/04	05/18/04	KWG0406943	
Acenaphthylene	ND	U	0.020	0.0011	1	05/14/04	05/18/04	KWG0406943	
Acenaphthene	ND	U	0.020	0.0024	1	05/14/04	05/18/04	KWG0406943	
Dibenzofuran	ND	U	0.020	0.0023	1	05/14/04	05/18/04	KWG0406943	
Fluorene	ND	U	0.020	0.0024	1	05/14/04	05/18/04	KWG0406943	
Phenanthrene	ND	U	0.020	0.0028	1	05/14/04	05/18/04	KWG0406943	
Anthracene	ND	U	0.020	0.0022	1	05/14/04	05/18/04	KWG0406943	
Fluoranthene	ND	U	0.020	0.0030	1	05/14/04	05/18/04	KWG0406943	
Pyrene	ND	U	0.020	0.0024	1	05/14/04	05/18/04	KWG0406943	
Benz(a)anthracene	ND	U	0.020	0.0022	1	05/14/04	05/18/04	KWG0406943	
Chrysene	ND	U	0.020	0.0028	1	05/14/04	05/18/04	KWG0406943	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	05/14/04	05/18/04	KWG0406943	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	05/14/04	05/18/04	KWG0406943	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	05/14/04	05/18/04	KWG0406943	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	05/14/04	05/18/04	KWG0406943	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	05/14/04	05/18/04	KWG0406943	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	05/14/04	05/18/04	KWG0406943	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	50	37-107	05/18/04	Acceptable
Fluoranthene-d10	53	18-137	05/18/04	Acceptable
Terphenyl-d14	62	18-153	05/18/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: 05/07/2004
Date Received: 05/08/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-Control
Lab Code: K2403407-001

Units: ug/Kg
Basis: Dry

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.39**	J	4.6	0.29	1	05/12/04	05/17/04	KWG0406746	
2-Methylnaphthalene	ND	U	4.6	0.29	1	05/12/04	05/17/04	KWG0406746	
Acenaphthylene	ND	U	4.6	0.22	1	05/12/04	05/17/04	KWG0406746	
Acenaphthene	ND	U	4.6	0.29	1	05/12/04	05/17/04	KWG0406746	
Dibenzofuran	ND	U	4.6	0.28	1	05/12/04	05/17/04	KWG0406746	
Fluorene	ND	U	4.6	0.24	1	05/12/04	05/17/04	KWG0406746	
Phenanthrene	**0.67**	J	4.6	0.21	1	05/12/04	05/17/04	KWG0406746	
Anthracene	**0.34**	J	4.6	0.26	1	05/12/04	05/17/04	KWG0406746	
Fluoranthene	**2.3**	J	4.6	0.24	1	05/12/04	05/17/04	KWG0406746	
Pyrene	**2.4**	J	4.6	0.15	1	05/12/04	05/17/04	KWG0406746	
Benz(a)anthracene	**1.0**	J	4.6	0.18	1	05/12/04	05/17/04	KWG0406746	
Chrysene	**2.2**	J	4.6	0.21	1	05/12/04	05/17/04	KWG0406746	
Benzo(b)fluoranthene	**1.6**	J	4.6	0.19	1	05/12/04	05/17/04	KWG0406746	
Benzo(k)fluoranthene	**1.5**	J	4.6	0.21	1	05/12/04	05/17/04	KWG0406746	
Benzo(a)pyrene	**1.0**	J	4.6	0.19	1	05/12/04	05/17/04	KWG0406746	
Indeno(1,2,3-cd)pyrene	**1.0**	J	4.6	0.21	1	05/12/04	05/17/04	KWG0406746	
Dibenz(a,h)anthracene	**0.33**	J	4.6	0.25	1	05/12/04	05/17/04	KWG0406746	
Benzo(g,h,i)perylene	**1.3**	J	4.6	0.14	1	05/12/04	05/17/04	KWG0406746	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	40	27-110	05/17/04	Acceptable
Fluoranthene-d10	42	34-122	05/17/04	Acceptable
Terphenyl-d14	94	50-132	05/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0406746-5

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Dry

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	3.2	0.21	1	05/12/04	05/17/04	KWG0406746	
2-Methylnaphthalene	ND	U	3.2	0.21	1	05/12/04	05/17/04	KWG0406746	
Acenaphthylene	ND	U	3.2	0.16	1	05/12/04	05/17/04	KWG0406746	
Acenaphthene	ND	U	3.2	0.21	1	05/12/04	05/17/04	KWG0406746	
Dibenzofuran	ND	U	3.2	0.20	1	05/12/04	05/17/04	KWG0406746	
Fluorene	ND	U	3.2	0.17	1	05/12/04	05/17/04	KWG0406746	
Phenanthrene	ND	U	3.2	0.15	1	05/12/04	05/17/04	KWG0406746	
Anthracene	ND	U	3.2	0.19	1	05/12/04	05/17/04	KWG0406746	
Fluoranthene	ND	U	3.2	0.17	1	05/12/04	05/17/04	KWG0406746	
Pyrene	ND	U	3.2	0.11	1	05/12/04	05/17/04	KWG0406746	
Benz(a)anthracene	ND	U	3.2	0.13	1	05/12/04	05/17/04	KWG0406746	
Chrysene	ND	U	3.2	0.15	1	05/12/04	05/17/04	KWG0406746	
Benzo(b)fluoranthene	ND	U	3.2	0.14	1	05/12/04	05/17/04	KWG0406746	
Benzo(k)fluoranthene	ND	U	3.2	0.15	1	05/12/04	05/17/04	KWG0406746	
Benzo(a)pyrene	ND	U	3.2	0.14	1	05/12/04	05/17/04	KWG0406746	
Indeno(1,2,3-cd)pyrene	ND	U	3.2	0.15	1	05/12/04	05/17/04	KWG0406746	
Dibenz(a,h)anthracene	ND	U	3.2	0.18	1	05/12/04	05/17/04	KWG0406746	
Benzo(g,h,i)perylene	ND	U	3.2	0.10	1	05/12/04	05/17/04	KWG0406746	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	83	27-110	05/17/04	Acceptable
Fluoranthene-d10	88	34-122	05/17/04	Acceptable
Terphenyl-d14	129	50-132	05/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Water

Service Request: K2403407

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1		Sur2	Sur3
E-PE04-Control Elutriate	K2403407-002	36	*	46	57
Method Blank	KWG0406943-3	50		53	62
Lab Control Sample	KWG0406943-1	55		58	55
Duplicate Lab Control Sample	KWG0406943-2	62		66	55

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	37-107
Sur2 =	Fluoranthene-d10	18-137
Sur3 =	Terphenyl-d14	18-153

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: PPB Environmental
Project: PPB-USACE Port Everglades 2004
Sample Matrix: Sediment

Service Request: K2403407

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
E-PE04-Control	K2403407-001	40	42	94
Method Blank	KWG0406746-5	83	88	129
E-PE04-ControlMS	KWG0406746-1	62	66	79
E-PE04-ControlDMS	KWG0406746-2	63	71	89
Lab Control Sample	KWG0406746-3	82	88	100
Duplicate Lab Control Sample	KWG0406746-4	79	80	96

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	27-110
Sur2 =	Fluoranthene-d10	34-122
Sur3 =	Terphenyl-d14	50-132

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

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

Columbia Analytical Services INC.
An Employee - Owned Company

May 27, 2004

Service Request No: K2403205

Bryan Cotter
PPB Environmental Laboratories, Inc.
6821 SW Archer Road
Gainesville, FL 32608

RE: USACE-Port of Everglades 2004

Dear Bryan:

Enclosed are the results of the sample(s) submitted to our laboratory on May 3, 2004. For your reference, these analyses have been assigned our service request number K2403205.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Harvey Jacky
Project Chemist

HJ/jeb

NELAP Accredited ACIL Seal of Excellence Award

Acronyms

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

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

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

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	PPB Environmental Laboratories	**Service Request No.:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Received:**	5/3/04
Sample Matrix:	Water		

CASE NARRATIVE

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

Sample Receipt

Six water samples were received for analysis at Columbia Analytical Services on 5/3/04. No discrepancies were noted upon initial sample inspection. 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.

Total Metals

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

Oil and Grease by EPA Method 1664

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

Organotin Compounds

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

Organochlorine Pesticides by EPA Method 8081A

Elevated Method Detection Limits:
The detection limit is elevated for a few analytes in all samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection limit. The results are flagged to indicate the matrix interference.

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

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

PCB Aroclors by EPA Method 8082

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

PCB Congeners by EPA Method 8082

Method Reporting Limits:
The reporting limit is elevated for PCB 52 in samples E-PE04-1 dup elutriate and E-PE04-4 elutriate. The chromatogram indicated the presence of non-target background components. The matrix interference prevented

Approved by Ami Spiel **Date** 5/28/04

adequate resolution of the target compounds at the reporting limit. The results are flagged to indicate the matrix interference.

Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for PCB 66 in Continuing Calibration Verification (CCV) 0513F003, 0517F016, and 0517F021 and for PCB 87 and PCB 183 in CCV 0513R016. 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.

The upper control criterion was exceeded for PCB 66 in Continuing Calibration Verification (CCV) 0513F016. The field samples analyzed in this sequence did not contain the analyte(s) in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

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

Polynuclear Aromatic Hydrocarbons by EPA Method 8270C

Surrogate Exceptions:
The control criteria were exceeded for Fluorene-d10 surrogate in the Batch QC sample KWG0404289-1. The surrogate recoveries for the associated field samples were within acceptance criteria. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicate the analysis was in control. No further corrective action was appropriate.

Matrix Spike Recovery Exceptions:
The matrix spike recoveries of Acenaphthylene and Acenaphthene for sample Batch QC KWG0404289-1 were outside control criteria. As noted above, the surrogate recovery for this sample also showed a low bias. All recoveries in the associated DMS KWG0404289-2 and the Laboratory Control Sample (LCS) were acceptable, which indicates the analytical batch was in control. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for all the analytes in the replicate matrix spike analyses of Batch QC samples KWG0404289-1 and KWG0404289-2 were outside control criteria. The high RPD is due to the low bias in sample KWG0404289-1 as noted above. Except as noted, all spike recoveries in the MS, DMS, and associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. The data quality is not significantly affected. No further corrective action was appropriate.

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID CAL3514: 2,3,5-Trimethylnaphthalene, 2,4,6-Tribromophenol, Pyrene, Dibenz (a, h) anthracene. 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 9.8%. 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.

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

Approved by [signature] Date 5/28/04

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

CHAIN-OF-CUSTODY RECORD

Elutriates

K2403205

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor: CAS-Kelso
		Shipping Method: Fed Ex

CLIENT NAME: PPB-USACE Port Everglades 2004

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per attached scope of work

PRESERVATION: CF Chilled-Filtered; SF Sulfuric-Filtered; NF Nitric-Filtered; C Chilled; S Sulfuric; N Nitric; B Basic/NaOH; Z Zinc; T Thiosulfate; H HCL; Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
254381	4/30/04	0800	✓		E-PE04-1 elutriate	W	11	
382		0900	✓		-1dup elutriate			
383		1100	✓		-2 elutriate			
384		1300	✓		-3 elutriate			
385		1500	✓		-4 elutriate			
254388		1600	✓		E-PE04-sitewater			

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
			PC 4/30/04
Relinquished by: *(Signature)*	Date / Time 4/30/04 1600	Received by: *(Signature)* CAS Kelso	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)* Tracy Black CAS	Date / Time 5/3/04 1428
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Note to Login:
Please use Station Location as client Id.

CAS PM: Harvey Jacky

Matrix Types S Soil or Sediment; WW Wastewater; T Animal Tissue; SW Surface Water; SL Sludge or Solid Waste; MW Marine Water; GW Ground Water; DW Drinking Water; P Plant Tissue; F Filter; A Air; Ot Other (See Remarks)

Columbia Analytical Services Inc.
Cooler Receipt and Preservation Form

Project/Client ppb enr. Work Order K240 3205

Cooler received on 5/3/04 and opened on 5/3/04 by T Black

1. Were custody seals on outside of coolers? Y (N)
   If yes, how many and where?
2. Were seals intact and signature & date correct? Y (N)
3. Is the shipper's airbill available and filed? If no, record airbill number: (Y) N
4. COC#

Temperature of cooler(s) upon receipt:	3.8	0.4	4.2	2.3	4.1	5.0	4.3
Temperature Blank:	n/a	n/a	n/a	n/a	n/a	n/a	n/a

5. Were custody papers properly filled out (ink, signed, etc.)? (Y) N
6. Type of packing material present cardboard - mesh - loose iu
7. Did all bottles arrive in good condition (unbroken)? (Y) N
8. Were all bottle labels complete (i.e analysis, preservation, etc.)? (Y) N
9. Did all bottle labels and tags agree with custody papers? (Y) N
10. Were the correct types of bottles used for the tests indicated? (Y) N
11. Were all of the preserved bottles received at the lab with the appropriate pH? Y N
12. Were VOA vials checked for absence of air bubbles, and if present, noted below? ~~Y N~~
13. Did the bottles originate from CAS/K or a branch laboratory? (Y) N
14. Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection? ~~Y N~~
15. 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

Metals

Columbia Analytical Services

METALS

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: PPB Environmental

Service Request: K2403205

Project No.:

Project Name: USACE-Port of Everglades 2004

Sample No.	Lab Sample ID.
E-PE04-1 elutriate	K2403205-001
E-PE04-1 elutriateD	K2403205-001D
E-PE04-1 elutriateS	K2403205-001S
E-PE04-1 dup elutriate	K2403205-002
E-PE04-2 elutriate	K2403205-003
E-PE04-3 elutriate	K2403205-004
E-PE04-4 elutriate	K2403205-005
E-PE04-sitewater	K2403205-006
Method Blank	K2403205-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:

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 above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Date:

Columbia Analytical Services

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental

Project No.: NA

Project Name: USACE-Port of Everglades 2004

Matrix: WATER

Service Request: K2403205

Date Collected: 04/30/04

Date Received: 05/03/04

Units: µG/L

Basis: NA

Sample Name: E-PE04-1 elutriate

Lab Code: K2403205-001

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	1.000	0.180	1	5/11/04	5/14/04	2.360		
Arsenic	6020	0.50	0.02	1	5/18/04	5/26/04	10.4		
Cadmium	6020	0.020	0.003	1	5/18/04	5/26/04	0.037		
Chromium	6020	0.20	0.04	1	5/18/04	5/26/04	0.92		
Copper	6020	0.10	0.01	1	5/18/04	5/26/04	5.66		
Lead	6020	0.020	0.009	1	5/18/04	5/26/04	0.478		
Mercury	7470A	0.2	0.1	1	5/6/04	5/7/04	0.1	U	
Nickel	6020	0.20	0.02	1	5/18/04	5/26/04	6.56		
Silver	6020	0.020	0.005	1	5/18/04	5/26/04	0.116		
Zinc	6020	0.50	0.02	1	5/18/04	5/26/04	12.3		

% Solids: 0.0

Comments:

Columbia Analytical Services

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port of Everglades 2004
Matrix: WATER

Service Request: K2403205
Date Collected: 04/30/04
Date Received: 05/03/04
Units: µG/L
Basis: NA

Sample Name: E-PE04-1 dup elutriate
Lab Code: K2403205-002

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	1.000	0.180	1	5/11/04	5/14/04	2.300		
Arsenic	6020	0.50	0.02	1	5/18/04	5/26/04	9.56		
Cadmium	6020	0.020	0.003	1	5/18/04	5/26/04	0.026		
Chromium	6020	0.20	0.04	1	5/18/04	5/26/04	0.20		
Copper	6020	0.10	0.01	1	5/18/04	5/26/04	0.72		
Lead	6020	0.020	0.009	1	5/18/04	5/26/04	0.091		
Mercury	7470A	0.2	0.1	1	5/6/04	5/7/04	0.1	U	
Nickel	6020	0.20	0.02	1	5/18/04	5/26/04	2.47		
Silver	6020	0.020	0.005	1	5/18/04	5/26/04	0.032		
Zinc	6020	0.50	0.02	1	5/18/04	5/26/04	6.39		

% Solids: 0.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port of Everglades 2004
Matrix: WATER

Service Request: K2403205
Date Collected: 04/30/04
Date Received: 05/03/04
Units: µG/L
Basis: NA

Sample Name: E-PE04-2 elutriate
Lab Code: K2403205-003

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	1.000	0.180	1	5/11/04	5/14/04	1.760		
Arsenic	6020	0.50	0.02	1	5/18/04	5/26/04	6.46		
Cadmium	6020	0.020	0.003	1	5/18/04	5/26/04	0.016	B	
Chromium	6020	0.20	0.04	1	5/18/04	5/26/04	0.08	B	
Copper	6020	0.10	0.01	1	5/18/04	5/26/04	1.14		
Lead	6020	0.020	0.009	1	5/18/04	5/26/04	0.281		
Mercury	7470A	0.2	0.1	1	5/6/04	5/7/04	0.1	U	
Nickel	6020	0.20	0.02	1	5/18/04	5/26/04	1.28		
Silver	6020	0.020	0.005	1	5/18/04	5/26/04	0.114		
Zinc	6020	0.50	0.02	1	5/18/04	5/26/04	4.98		

% Solids: 0.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port of Everglades 2004
Matrix: WATER

Service Request: K2403205
Date Collected: 04/30/04
Date Received: 05/03/04
Units: µG/L
Basis: NA

Sample Name: E-PE04-3 elutriate
Lab Code: K2403205-004

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	1.000	0.180	1	5/11/04	5/14/04	1.300		
Arsenic	6020	0.50	0.02	1	5/18/04	5/26/04	6.39		
Cadmium	6020	0.020	0.003	1	5/18/04	5/26/04	0.011	B	
Chromium	6020	0.20	0.04	1	5/18/04	5/26/04	0.54		
Copper	6020	0.10	0.01	1	5/18/04	5/26/04	1.09		
Lead	6020	0.020	0.009	1	5/18/04	5/26/04	0.128		
Mercury	7470A	0.2	0.1	1	5/6/04	5/7/04	0.1	U	
Nickel	6020	0.20	0.02	1	5/18/04	5/26/04	2.19		
Silver	6020	0.020	0.005	1	5/18/04	5/26/04	0.019	B	
Zinc	6020	0.50	0.02	1	5/18/04	5/26/04	4.32		

% Solids: 0.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port of Everglades 2004
Matrix: WATER

Service Request: K2403205
Date Collected: 04/30/04
Date Received: 05/03/04
Units: µG/L
Basis: NA

Sample Name: E-PE04-4 elutriate
Lab Code: K2403205-005

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	1.000	0.180	1	5/11/04	5/14/04	1.410		
Arsenic	6020	0.50	0.02	1	5/18/04	5/26/04	8.02		
Cadmium	6020	0.020	0.003	1	5/18/04	5/26/04	0.021		
Chromium	6020	0.20	0.04	1	5/18/04	5/26/04	0.22		
Copper	6020	0.10	0.01	1	5/18/04	5/26/04	0.90		
Lead	6020	0.020	0.009	1	5/18/04	5/26/04	0.092		
Mercury	7470A	0.2	0.1	1	5/6/04	5/7/04	0.1	U	
Nickel	6020	0.20	0.02	1	5/18/04	5/26/04	1.90		
Silver	6020	0.020	0.005	1	5/18/04	5/26/04	0.025		
Zinc	6020	0.50	0.02	1	5/18/04	5/26/04	3.94		

% Solids: 0.0

Comments:

Columbia Analytical Services

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port of Everglades 2004
Matrix: WATER

Service Request: K2403205
Date Collected: 04/30/04
Date Received: 05/03/04
Units: µG/L
Basis: NA

Sample Name: E-PE04-sitewater
Lab Code: K2403205-006

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	1.000	0.180	1	5/11/04	5/14/04	0.302	B	
Arsenic	6020	0.50	0.02	1	5/18/04	5/26/04	1.21		
Cadmium	6020	0.020	0.003	1	5/18/04	5/26/04	0.015	B	
Chromium	6020	0.20	0.04	1	5/18/04	5/26/04	0.29		
Copper	6020	0.10	0.01	1	5/18/04	5/26/04	3.42		
Lead	6020	0.020	0.009	1	5/18/04	5/26/04	0.104		
Mercury	7470A	0.2	0.1	1	5/6/04	5/7/04	0.1	U	
Nickel	6020	0.20	0.02	1	5/18/04	5/26/04	1.13		
Silver	6020	0.020	0.005	1	5/18/04	5/26/04	0.053		
Zinc	6020	0.50	0.02	1	5/18/04	5/26/04	6.63		

% Solids: 0.0

Comments:

Columbia Analytical Services

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port of Everglades 2004
Matrix: WATER

Service Request: K2403205
Date Collected:
Date Received:
Units: µG/L
Basis: NA

Sample Name: Method Blank
Lab Code: K2403205-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	1.000	0.180	1	5/11/04	5/14/04	0.180	U	
Arsenic	6020	0.50	0.02	1	5/18/04	5/26/04	0.02	U	
Cadmium	6020	0.020	0.003	1	5/18/04	5/26/04	0.003	U	
Chromium	6020	0.20	0.04	1	5/18/04	5/26/04	0.04	U	
Copper	6020	0.10	0.01	1	5/18/04	5/26/04	0.01	U	
Lead	6020	0.020	0.009	1	5/18/04	5/26/04	0.009	U	
Mercury	7470A	0.2	0.1	1	5/6/04	5/7/04	0.1	U	
Nickel	6020	0.20	0.02	1	5/18/04	5/26/04	0.02	U	
Silver	6020	0.020	0.005	1	5/18/04	5/26/04	0.005	U	
Zinc	6020	0.50	0.02	1	5/18/04	5/26/04	0.02	U	

% Solids: 0.0

Comments:

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2403205

Project No.:

Project Name: USACE-Port of Everglades 20

ICV Source: Inorganic Ventures

CCV Source: CAS Mixed Solutions

Concentration Units: ug/I

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	24.8	99	25.0	25.5	102	26.1	104	6020
Arsenic	25.0	25.8	103	25.0	25.1	100	24.4	98	6020
Cadmium	12.5	12.7	102	25.0	25.0	100	24.5	98	6020
Chromium	10.0	10.1	101	25.0	25.2	101	24.8	99	6020
Copper	12.5	12.7	102	25.0	24.9	100	24.6	98	6020
Lead	25.0	24.5	98	25.0	24.3	97	24.5	98	6020
Mercury	5.0	4.53	91	5.0	4.94	99	4.58	92	7470A
Nickel	25.0	25.1	101	25.0	25.0	100	25.1	100	6020
Silver	12.5	12.7	102	25.0	24.9	100	24.7	99	6020
Zinc	25.0	25.7	103	25.0	25.0	100	24.7	99	6020

METALS
-3-
BLANKS

Client: PPB Environmental

Service Request: K2403205

Project No.:

Project Name: USACE-Port of Everglades 20

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	0.010	B	0.009	U	0.009	U	0.009	U					6020
Arsenic	0.20	U	0.20	U	0.20	U	0.20	U					6020
Cadmium	0.030	U	0.030	U	0.03	U	0.030	U					6020
Chromium	0.40	U	0.40	U	0.40	U	0.40	U					6020
Copper	0.08	U	0.08	U	0.08	U	0.08	U					6020
Lead	0.090	U	0.090	U	0.09	U	0.090	U					6020
Mercury	0.1	U	0.1	U	0.1	U							7470A
Nickel	0.20	U	0.20	U	0.20	U	0.20	U					6020
Silver	0.050	U	0.050	U	0.05	U	0.050	U					6020
Zinc	0.20	U	0.20	U	0.20	U	0.20	U					6020

METALS
- 5a -
SPIKE SAMPLE RECOVERY

Client: PPB Environmental
Service Request: K2403205
Project No.:
Units: µg/L
Project Name: USACE-Port of Everglades 2004
Basis: NA
Matrix: WATER
% Solids: 0.0

Sample Name: E-PE04-1 elutriateS
Lab Code: K2403205-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	70 - 130	378		2.360		400	94		6020
Mercury	75 - 125	0.8		0.1	U	1.0	82		7470A

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

METALS
-7-
LABORATORY CONTROL SAMPLE

Client: PPB Environmental

Service Request: K2403205

Project No.:

Project Name: USACE-Port of Everglades 2004

Aqueous LCS Source: Inorganic Ventures

Solid LCS Source:

Analyte	Aqueous ug/L True	Aqueous ug/L Found	Aqueous ug/L %R	Solid (mg/kg) True	Solid (mg/kg) Found	C	Limits		%R
Antimony	20.0	17.8	89						
Arsenic	2.00	2.08	104						
Cadmium	2.00	2.07	104						
Chromium	2.00	1.94	97						
Copper	2.00	2.01	101						
Lead	2.00	1.96	98						
Nickel	2.00	1.97	99						
Silver	2.00	1.98	99						
Zinc	2.00	2.19	110						

Oil & Grease
EPA Method 1664

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	4/30/04
Sample Matrix:	Water	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-1 elutriate	Units:	mg/L (ppm)
Lab Code:	K2403205-001	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	5/4/04	5/5/04	ND	

Approved By: M Gulu Date: 5/7/04

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	4/30/04
Sample Matrix:	Water	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-1 dup elutriate	Units:	mg/L (ppm)
Lab Code:	K2403205-002	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	5/4/04	5/5/04	ND	

Approved By: M Culer Date: 5/7/04

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	4/30/04
Sample Matrix:	Water	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-2 elutriate	Units:	mg/L (ppm)
Lab Code:	K2403205-003	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	5/4/04	5/5/04	ND	

Approved By: M. Curlin Date: 5/7/04

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	4/30/04
Sample Matrix:	Water	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-3 elutriate	Units:	mg/L (ppm)
Lab Code:	K2403205-004	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	5/4/04	5/5/04	ND	

Approved By: [signature] Date: 5/7/04

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	4/30/04
Sample Matrix:	Water	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-4 elutriate	Units:	mg/L (ppm)
Lab Code:	K2403205-005	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	5/4/04	5/5/04	ND	

Approved By: M Cuba Date: 5/7/04

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	4/30/04
Sample Matrix:	Water	**Date Received:**	5/3/04

Oil and Grease

Sample Name:	E-PE04-sitewater	Units:	mg/L (ppm)
Lab Code:	K2403205-006	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	5/4/04	5/5/04	ND	

Approved By: MM Curler Date: 5/7/04

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Oil and Grease

Sample Name:	Method Blank	Units:	mg/L (ppm)
Lab Code:	K040504-WB	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	0.83	1	5/4/04	5/5/04	ND	

Approved By: M Culer Date: 5/7/04

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	5/4/04
		Date Analyzed:	5/5/04

Matrix Spike Summary
Oil and Grease

Sample Name:	Batch QC	Units:	mg/L (ppm)
Lab Code:	K2403092-002MS	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Oil and Grease, Total (HEM)	METHOD	1664	5.0	40	0.90J	36	90	78-114	

Approved By: M Curlu Date: 5/7/04

MS/072898p
03205PHC.CQ1 - MS 5/7/04

Page No.:

Butyltins

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port of Everglades 2004

Service Request: K2403205

Cover Page - Organic Analysis Data Package
Butyltins

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-1 elutriate	K2403205-001	04/30/2004	05/03/2004
E-PE04-1 dup elutriate	K2403205-002	04/30/2004	05/03/2004
E-PE04-2 elutriate	K2403205-003	04/30/2004	05/03/2004
E-PE04-3 elutriate	K2403205-004	04/30/2004	05/03/2004
E-PE04-4 elutriate	K2403205-005	04/30/2004	05/03/2004
E-PE04-sitewater	K2403205-006	04/30/2004	05/03/2004
E-PE04-sitewaterMS	KWG0406375-3	04/30/2004	05/03/2004
E-PE04-sitewaterDMS	KWG0406375-4	04/30/2004	05/03/2004

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

Signature: [signature]

Name: Todd Poyhnik

Date: 5/17/04

Title:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	04/30/2004
Sample Matrix:	Water	**Date Received:**	05/03/2004

Butyltins

Sample Name:	E-PE04-1 elutriate	**Units:**	ug/L
Lab Code:	K2403205-001	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	05/05/04	05/11/04	KWG0406375	
Tri-n-butyltin	ND	U	0.020	0.0071	1	05/05/04	05/11/04	KWG0406375	
Di-n-butyltin	ND	U	0.050	0.0050	1	05/05/04	05/11/04	KWG0406375	
n-Butyltin	**0.017**	J	0.050	0.0047	1	05/05/04	05/11/04	KWG0406375	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	54	19-146	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Butyltins

Sample Name: E-PE04-1 dup elutriate
Lab Code: K2403205-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	05/05/04	05/11/04	KWG0406375	
Tri-n-butyltin	ND	U	0.020	0.0071	1	05/05/04	05/11/04	KWG0406375	
Di-n-butyltin	ND	U	0.050	0.0050	1	05/05/04	05/11/04	KWG0406375	
n-Butyltin	**0.015**	J	0.050	0.0047	1	05/05/04	05/11/04	KWG0406375	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	64	19-146	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	04/30/2004
Sample Matrix:	Water	**Date Received:**	05/03/2004

Butyltins

Sample Name:	E-PE04-2 elutriate	**Units:**	ug/L
Lab Code:	K2403205-003	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	05/05/04	05/11/04	KWG0406375	
Tri-n-butyltin	**0.0092**	J	0.020	0.0071	1	05/05/04	05/11/04	KWG0406375	
Di-n-butyltin	ND	U	0.050	0.0050	1	05/05/04	05/11/04	KWG0406375	
n-Butyltin	**0.014**	J	0.050	0.0047	1	05/05/04	05/11/04	KWG0406375	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	66	19-146	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Butyltins

Sample Name: E-PE04-3 elutriate
Lab Code: K2403205-004

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	05/05/04	05/11/04	KWG0406375	
Tri-n-butyltin	**0.0084**	J	0.020	0.0071	1	05/05/04	05/11/04	KWG0406375	
Di-n-butyltin	ND	U	0.050	0.0050	1	05/05/04	05/11/04	KWG0406375	
n-Butyltin	**0.014**	J	0.050	0.0047	1	05/05/04	05/11/04	KWG0406375	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	63	19-146	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Butyltins

Sample Name: E-PE04-4 elutriate
Lab Code: K2403205-005

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	05/05/04	05/11/04	KWG0406375	
Tri-n-butyltin	**0.011**	J	0.020	0.0071	1	05/05/04	05/11/04	KWG0406375	
Di-n-butyltin	**0.0053**	J	0.050	0.0050	1	05/05/04	05/11/04	KWG0406375	
n-Butyltin	**0.016**	J	0.050	0.0047	1	05/05/04	05/11/04	KWG0406375	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	65	19-146	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Collected:**	04/30/2004
Sample Matrix:	Water	**Date Received:**	05/03/2004

Butyltins

Sample Name:	E-PE04-sitewater	**Units:**	ug/L
Lab Code:	K2403205-006	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	05/05/04	05/11/04	KWG0406375	
Tri-n-butyltin	**0.026**		0.020	0.0071	1	05/05/04	05/11/04	KWG0406375	
Di-n-butyltin	**0.014**	J	0.050	0.0050	1	05/05/04	05/11/04	KWG0406375	
n-Butyltin	**0.017**	J	0.050	0.0047	1	05/05/04	05/11/04	KWG0406375	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	66	19-146	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: NA
Date Received: NA

Butyltins

Sample Name: Method Blank
Lab Code: KWG0406375-6

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: Krone

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.0032	1	05/05/04	05/10/04	KWG0406375	
Tri-n-butyltin	ND	U	0.020	0.0071	1	05/05/04	05/10/04	KWG0406375	
Di-n-butyltin	ND	U	0.050	0.0050	1	05/05/04	05/10/04	KWG0406375	
n-Butyltin	ND	U	0.050	0.0047	1	05/05/04	05/10/04	KWG0406375	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	64	19-146	05/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205

Surrogate Recovery Summary
Butyltins

Extraction Method: EPA 3520C
Analysis Method: Krone

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-1 elutriate	K2403205-001	54
E-PE04-1 dup elutriate	K2403205-002	64
E-PE04-2 elutriate	K2403205-003	66
E-PE04-3 elutriate	K2403205-004	63
E-PE04-4 elutriate	K2403205-005	65
E-PE04-sitewater	K2403205-006	66
Method Blank	KWG0406375-6	64
Batch QC	K2403164-012	61
Batch QCMS	KWG0406375-1	61
Batch QCDMS	KWG0406375-2	62
E-PE04-sitewaterMS	KWG0406375-3	54
E-PE04-sitewaterDMS	KWG0406375-4	59
Lab Control Sample	KWG0406375-5	71

Surrogate Recovery Control Limits (%)

Sur1 = Tri-n-propyltin 19-146

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:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Extracted:**	05/05/2004
Sample Matrix:	Water	**Date Analyzed:**	05/11/2004

Matrix Spike/Duplicate Matrix Spike Summary
Butyltins

Sample Name:	Batch QC	**Units:**	ug/L
Lab Code:	K2403164-012	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	Krone	**Extraction Lot:**	KWG0406375

		Batch QCMS KWG0406375-1 Matrix Spike			Batch QCDMS KWG0406375-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Tetra-n-butyltin	ND	0.197	0.500	39	0.219	0.500	44	10-93	11	30
Tri-n-butyltin	0.011	0.352	0.446	76	0.377	0.446	82	14-143	7	30
Di-n-butyltin	0.0057	0.289	0.384	74	0.308	0.384	79	10-151	6	30
n-Butyltin	0.0059	0.241	0.312	75	0.260	0.312	81	10-151	7	30

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:	PPB Environmental	**Service Request:**	K2403205
Project:	USACE-Port of Everglades 2004	**Date Extracted:**	05/05/2004
Sample Matrix:	Water	**Date Analyzed:**	05/11/2004

Matrix Spike/Duplicate Matrix Spike Summary
Butyltins

Sample Name:	E-PE04-sitewater	**Units:**	ug/L
Lab Code:	K2403205-006	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	Krone	**Extraction Lot:**	KWG0406375

		E-PE04-sitewaterMS KWG0406375-3 Matrix Spike			E-PE04-sitewaterDMS KWG0406375-4 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Tetra-n-butyltin	ND	0.217	0.500	43	0.241	0.500	48	10-93	11	30
Tri-n-butyltin	0.026	0.304	0.446	62	0.368	0.446	77	14-143	19	30
Di-n-butyltin	0.014	0.237	0.384	58	0.298	0.384	74	10-151	23	30
n-Butyltin	0.017	0.236	0.312	70	0.283	0.312	85	10-151	18	30

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: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Extracted: 05/05/2004
Date Analyzed: 05/11/2004

Lab Control Spike Summary
Butyltins

Extraction Method: EPA 3520C
Analysis Method: Krone

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0406375

	Lab Control Sample KWG0406375-5 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Tetra-n-butyltin	0.355	0.500	71	10-112
Tri-n-butyltin	0.367	0.446	82	11-145
Di-n-butyltin	0.309	0.384	81	10-128
n-Butyltin	0.282	0.312	90	13-167

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.

Organochlorine Pesticides
EPA Method 8081

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port of Everglades 2004

Service Request: K2403205

Cover Page - Organic Analysis Data Package
Organochlorine Pesticides

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-1 elutriate	K2403205-001	04/30/2004	05/03/2004
E-PE04-1 dup elutriate	K2403205-002	04/30/2004	05/03/2004
E-PE04-2 elutriate	K2403205-003	04/30/2004	05/03/2004
E-PE04-3 elutriate	K2403205-004	04/30/2004	05/03/2004
E-PE04-4 elutriate	K2403205-005	04/30/2004	05/03/2004
E-PE04-sitewater	K2403205-006	04/30/2004	05/03/2004

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

Signature: _____ Name: Todd Martin

Date: 5/18/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-1 elutriate
Lab Code: K2403205-001

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.0097	0.0011	1	05/07/04	05/14/04	KWG0406496	
beta-BHC	ND	U	0.0097	0.0029	1	05/07/04	05/14/04	KWG0406496	
gamma-BHC (Lindane)	ND	U	0.0097	0.00076	1	05/07/04	05/14/04	KWG0406496	
delta-BHC	ND	U	0.0097	0.0016	1	05/07/04	05/14/04	KWG0406496	
Heptachlor	ND	U	0.0097	0.0011	1	05/07/04	05/14/04	KWG0406496	
Aldrin	ND	U	0.0097	0.00087	1	05/07/04	05/14/04	KWG0406496	
Heptachlor Epoxide	ND	U	0.0097	0.00060	1	05/07/04	05/14/04	KWG0406496	
Endosulfan I	ND	U	0.0097	0.0012	1	05/07/04	05/14/04	KWG0406496	
Dieldrin	ND	Ui	0.0097	0.0017	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDE	ND	U	0.0097	0.0015	1	05/07/04	05/14/04	KWG0406496	
Endrin	ND	U	0.0097	0.00065	1	05/07/04	05/14/04	KWG0406496	
Endosulfan II	ND	U	0.0097	0.0011	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDD	ND	U	0.0097	0.0019	1	05/07/04	05/14/04	KWG0406496	
Endrin Aldehyde	ND	U	0.0097	0.0023	1	05/07/04	05/14/04	KWG0406496	
Endosulfan Sulfate	ND	U	0.0097	0.0029	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDT	ND	U	0.0097	0.00064	1	05/07/04	05/14/04	KWG0406496	
Methoxychlor	ND	U	0.0097	0.00090	1	05/07/04	05/14/04	KWG0406496	
Toxaphene	ND	U	0.49	0.037	1	05/07/04	05/14/04	KWG0406496	
Chlordane	ND	U	0.20	0.039	1	05/07/04	05/14/04	KWG0406496	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	68	17-128	05/14/04	Acceptable
Decachlorobiphenyl	89	10-136	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-1 dup elutriate
Lab Code: K2403205-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	0.010	0.0019	1	05/07/04	05/14/04	KWG0406496	
beta-BHC	ND	U	0.010	0.0029	1	05/07/04	05/14/04	KWG0406496	
gamma-BHC (Lindane)	ND	U	0.010	0.00076	1	05/07/04	05/14/04	KWG0406496	
delta-BHC	ND	U	0.010	0.0016	1	05/07/04	05/14/04	KWG0406496	
Heptachlor	ND	Ui	0.010	0.0085	1	05/07/04	05/14/04	KWG0406496	
Aldrin	ND	U	0.010	0.00087	1	05/07/04	05/14/04	KWG0406496	
Heptachlor Epoxide	ND	U	0.010	0.00060	1	05/07/04	05/14/04	KWG0406496	
Endosulfan I	ND	U	0.010	0.0012	1	05/07/04	05/14/04	KWG0406496	
Dieldrin	ND	Ui	0.010	0.0020	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDE	ND	U	0.010	0.0015	1	05/07/04	05/14/04	KWG0406496	
Endrin	ND	U	0.010	0.00065	1	05/07/04	05/14/04	KWG0406496	
Endosulfan II	ND	U	0.010	0.0011	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDD	**0.0020**	JP	0.010	0.0019	1	05/07/04	05/14/04	KWG0406496	
Endrin Aldehyde	ND	U	0.010	0.0023	1	05/07/04	05/14/04	KWG0406496	
Endosulfan Sulfate	ND	U	0.010	0.0029	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDT	ND	U	0.010	0.00064	1	05/07/04	05/14/04	KWG0406496	
Methoxychlor	ND	U	0.010	0.00090	1	05/07/04	05/14/04	KWG0406496	
Toxaphene	ND	Ui	0.50	0.16	1	05/07/04	05/14/04	KWG0406496	
Chlordane	ND	U	0.20	0.039	1	05/07/04	05/14/04	KWG0406496	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	70	17-128	05/14/04	Acceptable
Decachlorobiphenyl	89	10-136	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-2 elutriate
Lab Code: K2403205-003

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.010	0.0011	1	05/07/04	05/14/04	KWG0406496	
beta-BHC	ND	U	0.010	0.0029	1	05/07/04	05/14/04	KWG0406496	
gamma-BHC (Lindane)	ND	Ui	0.010	0.0024	1	05/07/04	05/14/04	KWG0406496	
delta-BHC	ND	Ui	0.010	0.0023	1	05/07/04	05/14/04	KWG0406496	
Heptachlor	ND	Ui	0.010	0.0057	1	05/07/04	05/14/04	KWG0406496	
Aldrin	ND	U	0.010	0.00087	1	05/07/04	05/14/04	KWG0406496	
Heptachlor Epoxide	ND	U	0.010	0.00060	1	05/07/04	05/14/04	KWG0406496	
Endosulfan I	ND	U	0.010	0.0012	1	05/07/04	05/14/04	KWG0406496	
Dieldrin	ND	Ui	0.010	0.0038	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDE	ND	U	0.010	0.0015	1	05/07/04	05/14/04	KWG0406496	
Endrin	ND	Ui	0.010	0.00097	1	05/07/04	05/14/04	KWG0406496	
Endosulfan II	ND	U	0.010	0.0011	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDD	ND	Ui	0.010	0.010	1	05/07/04	05/14/04	KWG0406496	
Endrin Aldehyde	ND	U	0.010	0.0023	1	05/07/04	05/14/04	KWG0406496	
Endosulfan Sulfate	ND	U	0.010	0.0029	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDT	ND	U	0.010	0.00064	1	05/07/04	05/14/04	KWG0406496	
Methoxychlor	ND	U	0.010	0.00090	1	05/07/04	05/14/04	KWG0406496	
Toxaphene	ND	Ui	0.50	0.11	1	05/07/04	05/14/04	KWG0406496	
Chlordane	ND	U	0.20	0.039	1	05/07/04	05/14/04	KWG0406496	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	107	17-128	05/14/04	Acceptable
Decachlorobiphenyl	88	10-136	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-3 elutriate
Lab Code: K2403205-004

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	0.0097	0.0056	1	05/07/04	05/14/04	KWG0406496	
beta-BHC	ND	Ui	0.0097	0.0049	1	05/07/04	05/14/04	KWG0406496	
gamma-BHC (Lindane)	ND	U	0.0097	0.00076	1	05/07/04	05/14/04	KWG0406496	
delta-BHC	ND	Ui	0.0097	0.0026	1	05/07/04	05/14/04	KWG0406496	
Heptachlor	ND	U	0.0097	0.0011	1	05/07/04	05/14/04	KWG0406496	
Aldrin	ND	U	0.0097	0.00087	1	05/07/04	05/14/04	KWG0406496	
Heptachlor Epoxide	ND	U	0.0097	0.00060	1	05/07/04	05/14/04	KWG0406496	
Endosulfan I	ND	Ui	0.0097	0.0023	1	05/07/04	05/14/04	KWG0406496	
Dieldrin	ND	Ui	0.0097	0.0069	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDE	ND	U	0.0097	0.0015	1	05/07/04	05/14/04	KWG0406496	
Endrin	ND	Ui	0.0097	0.0097	1	05/07/04	05/14/04	KWG0406496	
Endosulfan II	ND	Ui	0.0097	0.0058	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDD	ND	Ui	0.0097	0.0022	1	05/07/04	05/14/04	KWG0406496	
Endrin Aldehyde	ND	U	0.0097	0.0023	1	05/07/04	05/14/04	KWG0406496	
Endosulfan Sulfate	ND	Ui	0.0097	0.0034	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDT	ND	Ui	0.0097	0.0019	1	05/07/04	05/14/04	KWG0406496	
Methoxychlor	ND	Ui	0.0097	0.0015	1	05/07/04	05/14/04	KWG0406496	
Toxaphene	ND	Ui	0.49	0.17	1	05/07/04	05/14/04	KWG0406496	
Chlordane	ND	Ui	0.20	0.11	1	05/07/04	05/14/04	KWG0406496	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	104	17-128	05/14/04	Acceptable
Decachlorobiphenyl	74	10-136	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-4 elutriate
Lab Code: K2403205-005

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.0097	0.0011	1	05/07/04	05/14/04	KWG0406496	
beta-BHC	ND	U	0.0097	0.0029	1	05/07/04	05/14/04	KWG0406496	
gamma-BHC (Lindane)	ND	Ui	0.0097	0.0050	1	05/07/04	05/14/04	KWG0406496	
delta-BHC	ND	U	0.0097	0.0016	1	05/07/04	05/14/04	KWG0406496	
Heptachlor	ND	Ui	0.0097	0.0037	1	05/07/04	05/14/04	KWG0406496	
Aldrin	ND	U	0.0097	0.00087	1	05/07/04	05/14/04	KWG0406496	
Heptachlor Epoxide	ND	Ui	0.0097	0.00061	1	05/07/04	05/14/04	KWG0406496	
Endosulfan I	ND	U	0.0097	0.0012	1	05/07/04	05/14/04	KWG0406496	
Dieldrin	ND	Ui	0.0097	0.0022	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDE	ND	U	0.0097	0.0015	1	05/07/04	05/14/04	KWG0406496	
Endrin	ND	U	0.0097	0.00065	1	05/07/04	05/14/04	KWG0406496	
Endosulfan II	ND	U	0.0097	0.0011	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDD	ND	Ui	0.0097	0.0097	1	05/07/04	05/14/04	KWG0406496	
Endrin Aldehyde	ND	U	0.0097	0.0023	1	05/07/04	05/14/04	KWG0406496	
Endosulfan Sulfate	ND	U	0.0097	0.0029	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDT	ND	U	0.0097	0.00064	1	05/07/04	05/14/04	KWG0406496	
Methoxychlor	ND	Ui	0.0097	0.0022	1	05/07/04	05/14/04	KWG0406496	
Toxaphene	ND	Ui	0.49	0.43	1	05/07/04	05/14/04	KWG0406496	
Chlordane	ND	U	0.20	0.039	1	05/07/04	05/14/04	KWG0406496	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	56	17-128	05/14/04	Acceptable
Decachlorobiphenyl	88	10-136	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Organochlorine Pesticides

Sample Name: E-PE04-sitewater
Lab Code: K2403205-006

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.010	0.0011	1	05/07/04	05/14/04	KWG0406496	
beta-BHC	ND	U	0.010	0.0029	1	05/07/04	05/14/04	KWG0406496	
gamma-BHC (Lindane)	ND	Ui	0.010	0.0017	1	05/07/04	05/14/04	KWG0406496	
delta-BHC	ND	U	0.010	0.0016	1	05/07/04	05/14/04	KWG0406496	
Heptachlor	ND	U	0.010	0.0011	1	05/07/04	05/14/04	KWG0406496	
Aldrin	ND	U	0.010	0.00087	1	05/07/04	05/14/04	KWG0406496	
Heptachlor Epoxide	ND	Ui	0.010	0.00075	1	05/07/04	05/14/04	KWG0406496	
Endosulfan I	ND	U	0.010	0.0012	1	05/07/04	05/14/04	KWG0406496	
Dieldrin	ND	Ui	0.010	0.0034	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDE	ND	U	0.010	0.0015	1	05/07/04	05/14/04	KWG0406496	
Endrin	ND	Ui	0.010	0.0048	1	05/07/04	05/14/04	KWG0406496	
Endosulfan II	ND	U	0.010	0.0011	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDD	**0.0056**	JP	0.010	0.0019	1	05/07/04	05/14/04	KWG0406496	
Endrin Aldehyde	ND	U	0.010	0.0023	1	05/07/04	05/14/04	KWG0406496	
Endosulfan Sulfate	ND	U	0.010	0.0029	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDT	ND	U	0.010	0.00064	1	05/07/04	05/14/04	KWG0406496	
Methoxychlor	ND	Ui	0.010	0.0013	1	05/07/04	05/14/04	KWG0406496	
Toxaphene	ND	Ui	0.50	0.086	1	05/07/04	05/14/04	KWG0406496	
Chlordane	ND	U	0.20	0.039	1	05/07/04	05/14/04	KWG0406496	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	58	17-128	05/14/04	Acceptable
Decachlorobiphenyl	82	10-136	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0406496-7

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.0097	0.0011	1	05/07/04	05/14/04	KWG0406496	
beta-BHC	ND	U	0.0097	0.0029	1	05/07/04	05/14/04	KWG0406496	
gamma-BHC (Lindane)	ND	U	0.0097	0.00076	1	05/07/04	05/14/04	KWG0406496	
delta-BHC	ND	U	0.0097	0.0016	1	05/07/04	05/14/04	KWG0406496	
Heptachlor	ND	U	0.0097	0.0011	1	05/07/04	05/14/04	KWG0406496	
Aldrin	ND	U	0.0097	0.00087	1	05/07/04	05/14/04	KWG0406496	
Heptachlor Epoxide	ND	U	0.0097	0.00060	1	05/07/04	05/14/04	KWG0406496	
Endosulfan I	ND	U	0.0097	0.0012	1	05/07/04	05/14/04	KWG0406496	
Dieldrin	ND	U	0.0097	0.0013	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDE	ND	U	0.0097	0.0015	1	05/07/04	05/14/04	KWG0406496	
Endrin	ND	U	0.0097	0.00065	1	05/07/04	05/14/04	KWG0406496	
Endosulfan II	ND	U	0.0097	0.0011	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDD	**0.0036**	JP	0.0097	0.0019	1	05/07/04	05/14/04	KWG0406496	
Endrin Aldehyde	ND	U	0.0097	0.0023	1	05/07/04	05/14/04	KWG0406496	
Endosulfan Sulfate	ND	U	0.0097	0.0029	1	05/07/04	05/14/04	KWG0406496	
4,4'-DDT	ND	U	0.0097	0.00064	1	05/07/04	05/14/04	KWG0406496	
Methoxychlor	ND	U	0.0097	0.00090	1	05/07/04	05/14/04	KWG0406496	
Toxaphene	ND	U	0.49	0.037	1	05/07/04	05/14/04	KWG0406496	
Chlordane	ND	U	0.20	0.039	1	05/07/04	05/14/04	KWG0406496	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	17-128	05/14/04	Acceptable
Decachlorobiphenyl	103	10-136	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
E-PE04-1 elutriate	K2403205-001	68	89
E-PE04-1 dup elutriate	K2403205-002	70	89
E-PE04-2 elutriate	K2403205-003	107	88
E-PE04-3 elutriate	K2403205-004	104	74
E-PE04-4 elutriate	K2403205-005	56	88
E-PE04-sitewater	K2403205-006	58	82
Method Blank	KWG0406496-7	72	103
Lab Control Sample	KWG0406496-1	67	94
Duplicate Lab Control Sample	KWG0406496-2	73	98

Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	17-128
Sur2 =	Decachlorobiphenyl	10-136

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: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Extracted: 05/07/2004
Date Analyzed: 05/14/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0406496

	Lab Control Sample KWG0406496-1 Lab Control Spike			Duplicate Lab Control Sample KWG0406496-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	0.167	0.200	84	0.169	0.200	84	56-132	1	30
beta-BHC	0.167	0.200	83	0.166	0.200	83	42-145	0	30
gamma-BHC (Lindane)	0.165	0.200	83	0.172	0.200	86	59-130	4	30
delta-BHC	0.176	0.200	88	0.180	0.200	90	57-142	2	30
Heptachlor	0.159	0.200	79	0.167	0.200	84	39-120	5	30
Aldrin	0.155	0.200	78	0.167	0.200	83	38-121	7	30
Heptachlor Epoxide	0.162	0.200	81	0.169	0.200	84	62-119	4	30
Endosulfan I	0.135	0.200	68	0.140	0.200	70	59-111	3	30
Dieldrin	0.171	0.200	85	0.183	0.200	91	64-126	7	30
4,4'-DDE	0.170	0.200	85	0.177	0.200	88	66-122	4	30
Endrin	0.176	0.200	88	0.185	0.200	93	63-128	5	30
Endosulfan II	0.151	0.200	75	0.158	0.200	79	62-115	4	30
4,4'-DDD	0.180	0.200	90	0.196	0.200	98	47-151	8	30
Endrin Aldehyde	0.142	0.200	71	0.150	0.200	75	52-121	6	30
Endosulfan Sulfate	0.167	0.200	83	0.176	0.200	88	60-125	5	30
4,4'-DDT	0.184	0.200	92	0.193	0.200	97	47-157	5	30
Methoxychlor	0.190	0.200	95	0.200	0.200	100	49-148	5	30
Toxaphene	2.30	2.50	92	2.33	2.50	93	70-130	1	30
Chlordane	2.18	2.00	109	2.26	2.00	113	70-130	4	30

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

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

Polychlorinated Biphenyls
PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port of Everglades 2004

Service Request: K2403205

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-1 elutriate	K2403205-001	04/30/2004	05/03/2004
E-PE04-1 dup elutriate	K2403205-002	04/30/2004	05/03/2004
E-PE04-2 elutriate	K2403205-003	04/30/2004	05/03/2004
E-PE04-3 elutriate	K2403205-004	04/30/2004	05/03/2004
E-PE04-4 elutriate	K2403205-005	04/30/2004	05/03/2004
E-PE04-sitewater	K2403205-006	04/30/2004	05/03/2004

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

Signature: _____ Name: Todd Poynhair

Date: 5/18/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-1 elutriate
Lab Code: K2403205-001

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.10	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1221	ND	U	0.39	0.050	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1232	ND	U	0.20	0.048	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1242	ND	U	0.20	0.090	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1248	ND	U	0.20	0.031	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1254	ND	U	0.20	0.030	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1260	ND	U	0.20	0.021	1	05/07/04	05/13/04	KWG0406497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	106	10-147	05/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-1 dup elutriate
Lab Code: K2403205-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.10	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1221	ND	U	0.40	0.050	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1232	ND	U	0.20	0.048	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1242	ND	U	0.20	0.090	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1248	ND	U	0.20	0.031	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1254	ND	U	0.20	0.030	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1260	ND	U	0.20	0.021	1	05/07/04	05/13/04	KWG0406497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	88	10-147	05/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-2 elutriate
Lab Code: K2403205-003

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.10	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1221	ND	U	0.40	0.050	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1232	ND	U	0.20	0.048	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1242	ND	U	0.20	0.090	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1248	ND	U	0.20	0.031	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1254	ND	U	0.20	0.030	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1260	ND	U	0.20	0.021	1	05/07/04	05/13/04	KWG0406497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	86	10-147	05/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-3 elutriate
Lab Code: K2403205-004

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.10	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1221	ND	U	0.39	0.050	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1232	ND	U	0.20	0.048	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1242	ND	U	0.20	0.090	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1248	ND	U	0.20	0.031	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1254	ND	U	0.20	0.030	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1260	ND	U	0.20	0.021	1	05/07/04	05/13/04	KWG0406497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	77	10-147	05/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-4 elutriate
Lab Code: K2403205-005

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.10	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1221	ND	U	0.39	0.050	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1232	ND	U	0.20	0.048	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1242	ND	U	0.20	0.090	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1248	ND	U	0.20	0.031	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1254	ND	U	0.20	0.030	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1260	ND	U	0.20	0.021	1	05/07/04	05/13/04	KWG0406497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	88	10-147	05/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: E-PE04-sitewater
Lab Code: K2403205-006

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.10	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1221	ND	U	0.40	0.050	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1232	ND	U	0.20	0.048	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1242	ND	U	0.20	0.090	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1248	ND	U	0.20	0.031	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1254	ND	U	0.20	0.030	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1260	ND	U	0.20	0.021	1	05/07/04	05/13/04	KWG0406497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	101	10-147	05/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0406497-3

Extraction Method: EPA 3535
Analysis Method: 8082

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.10	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1221	ND	U	0.39	0.050	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1232	ND	U	0.20	0.048	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1242	ND	U	0.20	0.090	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1248	ND	U	0.20	0.031	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1254	ND	U	0.20	0.030	1	05/07/04	05/13/04	KWG0406497	
Aroclor 1260	ND	U	0.20	0.021	1	05/07/04	05/13/04	KWG0406497	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	102	10-147	05/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-1 elutriate	K2403205-001	106
E-PE04-1 dup elutriate	K2403205-002	88
E-PE04-2 elutriate	K2403205-003	86
E-PE04-3 elutriate	K2403205-004	77
E-PE04-4 elutriate	K2403205-005	88
E-PE04-sitewater	K2403205-006	101
Method Blank	KWG0406497-3	102
Lab Control Sample	KWG0406497-1	93
Duplicate Lab Control Sample	KWG0406497-2	101

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-147

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: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Extracted: 05/07/2004
Date Analyzed: 05/13/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3535
Analysis Method: 8082

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0406497

	Lab Control Sample KWG0406497-1 Lab Control Spike			Duplicate Lab Control Sample KWG0406497-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	1.99	2.00	100	1.96	2.00	98	46-143	2	30
Aroclor 1260	2.00	2.00	100	2.10	2.00	105	50-139	5	30

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

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

Congener Specific PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port of Everglades 2004

Service Request: K2403205

Cover Page - Organic Analysis Data Package
Congener Specific PCBs

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-1 elutriate	K2403205-001	04/30/2004	05/03/2004
E-PE04-1 dup elutriate	K2403205-002	04/30/2004	05/03/2004
E-PE04-2 elutriate	K2403205-003	04/30/2004	05/03/2004
E-PE04-3 elutriate	K2403205-004	04/30/2004	05/03/2004
E-PE04-4 elutriate	K2403205-005	04/30/2004	05/03/2004
E-PE04-sitewater	K2403205-006	04/30/2004	05/03/2004

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

Signature: _____ Name: Todd Poyhair

Date: 5/21/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-1 elutriate
Lab Code: K2403205-001

Extraction Method: EPA 3520C
Analysis Method: 8082

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 18	ND	U	5.0	2.0	1	05/05/04	05/14/04	KWG0406372	
PCB 28	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 44	ND	U	5.0	2.2	1	05/05/04	05/14/04	KWG0406372	
PCB 52	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 66	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 87	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 101	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 138	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 156	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 180	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 183	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 184	ND	U	5.0	2.4	1	05/05/04	05/14/04	KWG0406372	
PCB 187	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 195	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 206	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 209	ND	U	5.0	2.1	1	05/05/04	05/14/04	KWG0406372	
PCB 49	ND	U	5.0	0.51	1	05/05/04	05/14/04	KWG0406372	
PCB 77	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	
PCB 105	ND	U	5.0	0.26	1	05/05/04	05/14/04	KWG0406372	
PCB 118	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 126	ND	U	5.0	0.34	1	05/05/04	05/14/04	KWG0406372	
PCB 128	ND	U	5.0	0.39	1	05/05/04	05/14/04	KWG0406372	
PCB 153	ND	U	5.0	0.89	1	05/05/04	05/14/04	KWG0406372	
PCB 169	ND	U	5.0	0.33	1	05/05/04	05/14/04	KWG0406372	
PCB 170	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	76	10-125	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-1 dup elutriate
Lab Code: K2403205-002

Extraction Method: EPA 3520C
Analysis Method: 8082

Units: ng/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 18	ND	U	5.0	2.0	1	05/05/04	05/14/04	KWG0406372	
PCB 28	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 44	ND	U	5.0	2.2	1	05/05/04	05/14/04	KWG0406372	
PCB 52	ND	Ui	5.0	5.0	1	05/05/04	05/14/04	KWG0406372	
PCB 66	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 87	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 101	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 138	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 156	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 180	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 183	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 184	ND	U	5.0	2.4	1	05/05/04	05/14/04	KWG0406372	
PCB 187	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 195	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 206	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 209	ND	U	5.0	2.1	1	05/05/04	05/14/04	KWG0406372	
PCB 49	ND	U	5.0	0.51	1	05/05/04	05/14/04	KWG0406372	
PCB 77	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	
PCB 105	ND	U	5.0	0.26	1	05/05/04	05/14/04	KWG0406372	
PCB 118	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 126	ND	U	5.0	0.34	1	05/05/04	05/14/04	KWG0406372	
PCB 128	ND	U	5.0	0.39	1	05/05/04	05/14/04	KWG0406372	
PCB 153	ND	U	5.0	0.89	1	05/05/04	05/14/04	KWG0406372	
PCB 169	ND	U	5.0	0.33	1	05/05/04	05/14/04	KWG0406372	
PCB 170	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	69	10-125	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-2 elutriate
Lab Code: K2403205-003

Units: ng/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 18	ND	U	5.0	2.0	1	05/05/04	05/14/04	KWG0406372	
PCB 28	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 44	ND	U	5.0	2.2	1	05/05/04	05/14/04	KWG0406372	
PCB 52	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 66	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 87	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 101	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 138	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 156	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 180	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 183	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 184	ND	U	5.0	2.4	1	05/05/04	05/14/04	KWG0406372	
PCB 187	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 195	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 206	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 209	ND	U	5.0	2.1	1	05/05/04	05/14/04	KWG0406372	
PCB 49	ND	U	5.0	0.51	1	05/05/04	05/14/04	KWG0406372	
PCB 77	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	
PCB 105	ND	U	5.0	0.26	1	05/05/04	05/14/04	KWG0406372	
PCB 118	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 126	ND	U	5.0	0.34	1	05/05/04	05/14/04	KWG0406372	
PCB 128	ND	U	5.0	0.39	1	05/05/04	05/14/04	KWG0406372	
PCB 153	ND	U	5.0	0.89	1	05/05/04	05/14/04	KWG0406372	
PCB 169	ND	U	5.0	0.33	1	05/05/04	05/14/04	KWG0406372	
PCB 170	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	83	10-125	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-3 elutriate
Lab Code: K2403205-004

Extraction Method: EPA 3520C
Analysis Method: 8082

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 18	ND	U	5.0	2.0	1	05/05/04	05/14/04	KWG0406372	
PCB 28	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 44	ND	U	5.0	2.2	1	05/05/04	05/14/04	KWG0406372	
PCB 52	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 66	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 87	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 101	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 138	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 156	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 180	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 183	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 184	ND	U	5.0	2.4	1	05/05/04	05/14/04	KWG0406372	
PCB 187	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 195	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 206	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 209	ND	U	5.0	2.1	1	05/05/04	05/14/04	KWG0406372	
PCB 49	ND	U	5.0	0.51	1	05/05/04	05/14/04	KWG0406372	
PCB 77	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	
PCB 105	ND	U	5.0	0.26	1	05/05/04	05/14/04	KWG0406372	
PCB 118	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 126	ND	U	5.0	0.34	1	05/05/04	05/14/04	KWG0406372	
PCB 128	ND	U	5.0	0.39	1	05/05/04	05/14/04	KWG0406372	
PCB 153	ND	U	5.0	0.89	1	05/05/04	05/14/04	KWG0406372	
PCB 169	ND	U	5.0	0.33	1	05/05/04	05/14/04	KWG0406372	
PCB 170	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	77	10-125	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-4 elutriate
Lab Code: K2403205-005

Units: ng/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 18	ND	U	5.0	2.0	1	05/05/04	05/14/04	KWG0406372	
PCB 28	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 44	ND	U	5.0	2.2	1	05/05/04	05/14/04	KWG0406372	
PCB 52	ND	Ui	8.2	8.2	1	05/05/04	05/14/04	KWG0406372	
PCB 66	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 87	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 101	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 138	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 156	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 180	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 183	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 184	ND	U	5.0	2.4	1	05/05/04	05/14/04	KWG0406372	
PCB 187	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 195	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 206	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 209	ND	U	5.0	2.1	1	05/05/04	05/14/04	KWG0406372	
PCB 49	ND	U	5.0	0.51	1	05/05/04	05/14/04	KWG0406372	
PCB 77	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	
PCB 105	ND	U	5.0	0.26	1	05/05/04	05/14/04	KWG0406372	
PCB 118	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 126	ND	U	5.0	0.34	1	05/05/04	05/14/04	KWG0406372	
PCB 128	ND	U	5.0	0.39	1	05/05/04	05/14/04	KWG0406372	
PCB 153	ND	U	5.0	0.89	1	05/05/04	05/14/04	KWG0406372	
PCB 169	ND	U	5.0	0.33	1	05/05/04	05/14/04	KWG0406372	
PCB 170	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	77	10-125	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Congener Specific PCBs

Sample Name: E-PE04-sitewater
Lab Code: K2403205-006

Units: ng/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 18	ND	U	5.0	2.0	1	05/05/04	05/14/04	KWG0406372	
PCB 28	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 44	ND	U	5.0	2.2	1	05/05/04	05/14/04	KWG0406372	
PCB 52	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 66	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 87	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 101	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 138	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 156	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 180	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 183	ND	U	5.0	1.3	1	05/05/04	05/14/04	KWG0406372	
PCB 184	ND	U	5.0	2.4	1	05/05/04	05/14/04	KWG0406372	
PCB 187	ND	U	5.0	1.9	1	05/05/04	05/14/04	KWG0406372	
PCB 195	ND	U	5.0	1.2	1	05/05/04	05/14/04	KWG0406372	
PCB 206	ND	U	5.0	1.5	1	05/05/04	05/14/04	KWG0406372	
PCB 209	ND	U	5.0	2.1	1	05/05/04	05/14/04	KWG0406372	
PCB 49	ND	U	5.0	0.51	1	05/05/04	05/14/04	KWG0406372	
PCB 77	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	
PCB 105	ND	U	5.0	0.26	1	05/05/04	05/14/04	KWG0406372	
PCB 118	ND	U	5.0	1.4	1	05/05/04	05/14/04	KWG0406372	
PCB 126	ND	U	5.0	0.34	1	05/05/04	05/14/04	KWG0406372	
PCB 128	ND	U	5.0	0.39	1	05/05/04	05/14/04	KWG0406372	
PCB 153	ND	U	5.0	0.89	1	05/05/04	05/14/04	KWG0406372	
PCB 169	ND	U	5.0	0.33	1	05/05/04	05/14/04	KWG0406372	
PCB 170	ND	U	5.0	0.40	1	05/05/04	05/14/04	KWG0406372	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	68	10-125	05/14/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0406372-3

Units: ng/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	5.0	1.4	1	05/05/04	05/13/04	KWG0406372	
PCB 18	ND	U	5.0	2.0	1	05/05/04	05/13/04	KWG0406372	
PCB 28	ND	U	5.0	1.2	1	05/05/04	05/13/04	KWG0406372	
PCB 44	ND	U	5.0	2.2	1	05/05/04	05/13/04	KWG0406372	
PCB 52	ND	U	5.0	1.5	1	05/05/04	05/13/04	KWG0406372	
PCB 66	ND	U	5.0	1.2	1	05/05/04	05/13/04	KWG0406372	
PCB 87	ND	U	5.0	1.4	1	05/05/04	05/13/04	KWG0406372	
PCB 101	ND	U	5.0	1.9	1	05/05/04	05/13/04	KWG0406372	
PCB 138	ND	U	5.0	1.3	1	05/05/04	05/13/04	KWG0406372	
PCB 156	ND	U	5.0	1.2	1	05/05/04	05/13/04	KWG0406372	
PCB 180	ND	U	5.0	1.4	1	05/05/04	05/13/04	KWG0406372	
PCB 183	ND	U	5.0	1.3	1	05/05/04	05/13/04	KWG0406372	
PCB 184	ND	U	5.0	2.4	1	05/05/04	05/13/04	KWG0406372	
PCB 187	ND	U	5.0	1.9	1	05/05/04	05/13/04	KWG0406372	
PCB 195	ND	U	5.0	1.2	1	05/05/04	05/13/04	KWG0406372	
PCB 206	ND	U	5.0	1.5	1	05/05/04	05/13/04	KWG0406372	
PCB 209	ND	U	5.0	2.1	1	05/05/04	05/13/04	KWG0406372	
PCB 49	ND	U	5.0	0.51	1	05/05/04	05/13/04	KWG0406372	
PCB 77	ND	U	5.0	0.40	1	05/05/04	05/13/04	KWG0406372	
PCB 105	ND	U	5.0	0.26	1	05/05/04	05/13/04	KWG0406372	
PCB 118	ND	U	5.0	1.4	1	05/05/04	05/13/04	KWG0406372	
PCB 126	ND	U	5.0	0.34	1	05/05/04	05/13/04	KWG0406372	
PCB 128	ND	U	5.0	0.39	1	05/05/04	05/13/04	KWG0406372	
PCB 153	ND	U	5.0	0.89	1	05/05/04	05/13/04	KWG0406372	
PCB 169	ND	U	5.0	0.33	1	05/05/04	05/13/04	KWG0406372	
PCB 170	ND	U	5.0	0.40	1	05/05/04	05/13/04	KWG0406372	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	65	10-125	05/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3520C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
E-PE04-1 elutriate	K2403205-001	76
E-PE04-1 dup elutriate	K2403205-002	69
E-PE04-2 elutriate	K2403205-003	83
E-PE04-3 elutriate	K2403205-004	77
E-PE04-4 elutriate	K2403205-005	77
E-PE04-sitewater	K2403205-006	68
Method Blank	KWG0406372-3	65
Lab Control Sample	KWG0406372-1	66
Duplicate Lab Control Sample	KWG0406372-2	76

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-125

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: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Extracted: 05/05/2004
Date Analyzed: 05/18/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Congener Specific PCBs

Extraction Method: EPA 3520C
Analysis Method: 8082

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG0406372

	Lab Control Sample KWG0406372-1 Lab Control Spike			Duplicate Lab Control Sample KWG0406372-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
PCB 8	85.8	100	86	92.0	100	92	70-130	7	30
PCB 18	73.9	100	74	77.3	100	77	70-130	4	30
PCB 28	101	100	101	115	100	115	70-130	13	30
PCB 44	87.8	100	88	90.6	100	91	70-130	3	30
PCB 52	90.8	100	91	79.3	100	79	70-130	14	30
PCB 66	84.9	100	85	86.4	100	86	70-130	2	30
PCB 87	88.8	100	89	89.6	100	90	70-130	1	30
PCB 101	106	100	106	106	100	106	70-130	0	30
PCB 138	85.6	100	86	86.3	100	86	70-130	1	30
PCB 156	106	100	106	107	100	107	70-130	1	30
PCB 180	101	100	101	102	100	102	70-130	1	30
PCB 183	87.9	100	88	89.5	100	89	70-130	2	30
PCB 184	107	100	107	106	100	106	70-130	1	30
PCB 195	96.1	100	96	98.7	100	99	70-130	3	30
PCB 206	96.7	100	97	98.2	100	98	70-130	2	30
PCB 209	92.1	100	92	93.7	100	94	70-130	2	30
PCB 77	83.3	100	83	85.9	100	86	70-130	3	30
PCB 105	101	100	101	103	100	103	70-130	1	30
PCB 118	108	100	108	109	100	109	70-130	0	30
PCB 126	89.7	100	90	90.1	100	90	70-130	0	30
PCB 153	89.2	100	89	90.4	100	90	70-130	1	30
PCB 169	97.0	100	97	98.2	100	98	70-130	1	30
PCB 170	99.0	100	99	100	100	100	70-130	1	30

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

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

Polynuclear Aromatic Hydrocarbons
EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port of Everglades 2004

Service Request: K2403205

Cover Page - Organic Analysis Data Package
Polynuclear Aromatic Hydrocarbons

Sample Name	Lab Code	Date Collected	Date Received
E-PE04-1 elutriate	K2403205-001	04/30/2004	05/03/2004
E-PE04-1 dup elutriate	K2403205-002	04/30/2004	05/03/2004
E-PE04-2 elutriate	K2403205-003	04/30/2004	05/03/2004
E-PE04-3 elutriate	K2403205-004	04/30/2004	05/03/2004
E-PE04-4 elutriate	K2403205-005	04/30/2004	05/03/2004
E-PE04-sitewater	K2403205-006	04/30/2004	05/03/2004

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

Signature: [signature]

Name: Jeff Grundstaff

Date: 5/18/04

Title: GC/MS Manager

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-1 elutriate
Lab Code: K2403205-001

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.026**		0.020	0.0039	1	05/04/04	05/07/04	KWG0406289	
Acenaphthylene	ND	U	0.020	0.0011	1	05/04/04	05/07/04	KWG0406289	
Acenaphthene	**0.0027**	J	0.020	0.0024	1	05/04/04	05/07/04	KWG0406289	
Fluorene	ND	U	0.020	0.0024	1	05/04/04	05/07/04	KWG0406289	
Phenanthrene	**0.0038**	J	0.020	0.0028	1	05/04/04	05/07/04	KWG0406289	
Anthracene	ND	U	0.020	0.0022	1	05/04/04	05/07/04	KWG0406289	
Fluoranthene	ND	U	0.020	0.0030	1	05/04/04	05/07/04	KWG0406289	
Pyrene	ND	U	0.020	0.0024	1	05/04/04	05/07/04	KWG0406289	
Benz(a)anthracene	ND	U	0.020	0.0022	1	05/04/04	05/07/04	KWG0406289	
Chrysene	ND	U	0.020	0.0028	1	05/04/04	05/07/04	KWG0406289	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	05/04/04	05/07/04	KWG0406289	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	05/04/04	05/07/04	KWG0406289	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	05/04/04	05/07/04	KWG0406289	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	05/04/04	05/07/04	KWG0406289	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	05/04/04	05/07/04	KWG0406289	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	05/04/04	05/07/04	KWG0406289	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	56	37-107	05/07/04	Acceptable
Fluoranthene-d10	63	18-137	05/07/04	Acceptable
Terphenyl-d14	74	18-153	05/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-1 dup elutriate
Lab Code: K2403205-002

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.029**		0.020	0.0039	1	05/04/04	05/07/04	KWG0406289	
Acenaphthylene	ND	U	0.020	0.0011	1	05/04/04	05/07/04	KWG0406289	
Acenaphthene	**0.0029**	J	0.020	0.0024	1	05/04/04	05/07/04	KWG0406289	
Fluorene	ND	U	0.020	0.0024	1	05/04/04	05/07/04	KWG0406289	
Phenanthrene	**0.0040**	J	0.020	0.0028	1	05/04/04	05/07/04	KWG0406289	
Anthracene	ND	U	0.020	0.0022	1	05/04/04	05/07/04	KWG0406289	
Fluoranthene	ND	U	0.020	0.0030	1	05/04/04	05/07/04	KWG0406289	
Pyrene	**0.0025**	J	0.020	0.0024	1	05/04/04	05/07/04	KWG0406289	
Benz(a)anthracene	ND	U	0.020	0.0022	1	05/04/04	05/07/04	KWG0406289	
Chrysene	ND	U	0.020	0.0028	1	05/04/04	05/07/04	KWG0406289	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	05/04/04	05/07/04	KWG0406289	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	05/04/04	05/07/04	KWG0406289	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	05/04/04	05/07/04	KWG0406289	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	05/04/04	05/07/04	KWG0406289	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	05/04/04	05/07/04	KWG0406289	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	05/04/04	05/07/04	KWG0406289	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	45	37-107	05/07/04	Acceptable
Fluoranthene-d10	50	18-137	05/07/04	Acceptable
Terphenyl-d14	61	18-153	05/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-2 elutriate
Lab Code: K2403205-003

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.026**		0.020	0.0039	1	05/04/04	05/11/04	KWG0406289	
Acenaphthylene	**0.0022**	J	0.020	0.0011	1	05/04/04	05/11/04	KWG0406289	
Acenaphthene	**0.0041**	J	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Fluorene	**0.0030**	J	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Phenanthrene	**0.0060**	J	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Anthracene	**0.0035**	J	0.020	0.0022	1	05/04/04	05/11/04	KWG0406289	
Fluoranthene	**0.0059**	J	0.020	0.0030	1	05/04/04	05/11/04	KWG0406289	
Pyrene	**0.0051**	J	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Benz(a)anthracene	**0.0036**	J	0.020	0.0022	1	05/04/04	05/11/04	KWG0406289	
Chrysene	**0.0036**	J	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Benzo(b)fluoranthene	**0.0037**	J	0.020	0.0020	1	05/04/04	05/11/04	KWG0406289	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	05/04/04	05/11/04	KWG0406289	
Benzo(a)pyrene	**0.0030**	J	0.020	0.0013	1	05/04/04	05/11/04	KWG0406289	
Indeno(1,2,3-cd)pyrene	**0.0030**	J	0.020	0.0015	1	05/04/04	05/11/04	KWG0406289	
Dibenz(a,h)anthracene	**0.0031**	J	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Benzo(g,h,i)perylene	**0.0035**	J	0.020	0.0033	1	05/04/04	05/11/04	KWG0406289	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	37-107	05/11/04	Acceptable
Fluoranthene-d10	70	18-137	05/11/04	Acceptable
Terphenyl-d14	77	18-153	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-3 elutriate
Lab Code: K2403205-004

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.022**		0.020	0.0039	1	05/04/04	05/11/04	KWG0406289	
Acenaphthylene	ND	U	0.020	0.0011	1	05/04/04	05/11/04	KWG0406289	
Acenaphthene	ND	U	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Fluorene	ND	U	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Phenanthrene	**0.0036**	J	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Anthracene	ND	U	0.020	0.0022	1	05/04/04	05/11/04	KWG0406289	
Fluoranthene	ND	U	0.020	0.0030	1	05/04/04	05/11/04	KWG0406289	
Pyrene	ND	U	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Benz(a)anthracene	ND	U	0.020	0.0022	1	05/04/04	05/11/04	KWG0406289	
Chrysene	ND	U	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	05/04/04	05/11/04	KWG0406289	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	05/04/04	05/11/04	KWG0406289	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	05/04/04	05/11/04	KWG0406289	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	05/04/04	05/11/04	KWG0406289	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	05/04/04	05/11/04	KWG0406289	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	47	37-107	05/11/04	Acceptable
Fluoranthene-d10	55	18-137	05/11/04	Acceptable
Terphenyl-d14	65	18-153	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-4 elutriate
Lab Code: K2403205-005

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.019**	J	0.020	0.0039	1	05/04/04	05/11/04	KWG0406289	
Acenaphthylene	ND	U	0.020	0.0011	1	05/04/04	05/11/04	KWG0406289	
Acenaphthene	ND	U	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Fluorene	ND	U	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Phenanthrene	**0.0046**	J	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Anthracene	ND	U	0.020	0.0022	1	05/04/04	05/11/04	KWG0406289	
Fluoranthene	ND	U	0.020	0.0030	1	05/04/04	05/11/04	KWG0406289	
Pyrene	ND	U	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Benz(a)anthracene	ND	U	0.020	0.0022	1	05/04/04	05/11/04	KWG0406289	
Chrysene	ND	U	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	05/04/04	05/11/04	KWG0406289	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	05/04/04	05/11/04	KWG0406289	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	05/04/04	05/11/04	KWG0406289	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	05/04/04	05/11/04	KWG0406289	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	05/04/04	05/11/04	KWG0406289	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	42	37-107	05/11/04	Acceptable
Fluoranthene-d10	52	18-137	05/11/04	Acceptable
Terphenyl-d14	64	18-153	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: 04/30/2004
Date Received: 05/03/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: E-PE04-sitewater
Lab Code: K2403205-006

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0056**	J	0.020	0.0039	1	05/04/04	05/11/04	KWG0406289	
Acenaphthylene	ND	U	0.020	0.0011	1	05/04/04	05/11/04	KWG0406289	
Acenaphthene	ND	U	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Fluorene	ND	U	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Phenanthrene	**0.0053**	J	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Anthracene	ND	U	0.020	0.0022	1	05/04/04	05/11/04	KWG0406289	
Fluoranthene	**0.0045**	J	0.020	0.0030	1	05/04/04	05/11/04	KWG0406289	
Pyrene	**0.0070**	J	0.020	0.0024	1	05/04/04	05/11/04	KWG0406289	
Benz(a)anthracene	ND	U	0.020	0.0022	1	05/04/04	05/11/04	KWG0406289	
Chrysene	ND	U	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	05/04/04	05/11/04	KWG0406289	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	05/04/04	05/11/04	KWG0406289	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	05/04/04	05/11/04	KWG0406289	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	05/04/04	05/11/04	KWG0406289	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	05/04/04	05/11/04	KWG0406289	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	05/04/04	05/11/04	KWG0406289	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	52	37-107	05/11/04	Acceptable
Fluoranthene-d10	61	18-137	05/11/04	Acceptable
Terphenyl-d14	69	18-153	05/11/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0406289-4

Units: ug/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0057**	J	0.020	0.0039	1	05/04/04	05/07/04	KWG0406289	
Acenaphthylene	ND	U	0.020	0.0011	1	05/04/04	05/07/04	KWG0406289	
Acenaphthene	ND	U	0.020	0.0024	1	05/04/04	05/07/04	KWG0406289	
Fluorene	ND	U	0.020	0.0024	1	05/04/04	05/07/04	KWG0406289	
Phenanthrene	ND	U	0.020	0.0028	1	05/04/04	05/07/04	KWG0406289	
Anthracene	ND	U	0.020	0.0022	1	05/04/04	05/07/04	KWG0406289	
Fluoranthene	ND	U	0.020	0.0030	1	05/04/04	05/07/04	KWG0406289	
Pyrene	ND	U	0.020	0.0024	1	05/04/04	05/07/04	KWG0406289	
Benz(a)anthracene	ND	U	0.020	0.0022	1	05/04/04	05/07/04	KWG0406289	
Chrysene	ND	U	0.020	0.0028	1	05/04/04	05/07/04	KWG0406289	
Benzo(b)fluoranthene	ND	U	0.020	0.0020	1	05/04/04	05/07/04	KWG0406289	
Benzo(k)fluoranthene	ND	U	0.020	0.0036	1	05/04/04	05/07/04	KWG0406289	
Benzo(a)pyrene	ND	U	0.020	0.0013	1	05/04/04	05/07/04	KWG0406289	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0015	1	05/04/04	05/07/04	KWG0406289	
Dibenz(a,h)anthracene	ND	U	0.020	0.0028	1	05/04/04	05/07/04	KWG0406289	
Benzo(g,h,i)perylene	ND	U	0.020	0.0033	1	05/04/04	05/07/04	KWG0406289	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	64	37-107	05/07/04	Acceptable
Fluoranthene-d10	65	18-137	05/07/04	Acceptable
Terphenyl-d14	63	18-153	05/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1		Sur2	Sur3
E-PE04-1 elutriate	K2403205-001	56		63	74
E-PE04-1 dup elutriate	K2403205-002	45		50	61
E-PE04-2 elutriate	K2403205-003	66		70	77
E-PE04-3 elutriate	K2403205-004	47		55	65
E-PE04-4 elutriate	K2403205-005	42		52	64
E-PE04-sitewater	K2403205-006	52		61	69
Method Blank	KWG0406289-4	64		65	63
Batch QC	K2403164-012	61		59	57
Batch QCMS	KWG0406289-1	28	*	34	41
Batch QCDMS	KWG0406289-2	56		58	54
Lab Control Sample	KWG0406289-3	62		63	58

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	37-107
Sur2 =	Fluoranthene-d10	18-137
Sur3 =	Terphenyl-d14	18-153

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: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Extracted: 05/04/2004
Date Analyzed: 05/07/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name: Batch QC
Lab Code: K2403164-012

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: ug/L
Basis: NA

Level: Low
Extraction Lot: KWG0406289

Analyte Name	Sample Result	Batch QCMS KWG0406289-1 Matrix Spike			Batch QCDMS KWG0406289-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Naphthalene	0.0061	0.920	2.50	37	2.11	2.50	84	28-110	79 *	30
Acenaphthylene	ND	0.986	2.50	39 *	2.22	2.50	89	42-112	77 *	30
Acenaphthene	ND	0.992	2.50	40 *	2.28	2.50	91	41-105	79 *	30
Fluorene	ND	1.03	2.50	41	2.26	2.50	91	40-115	75 *	30
Phenanthrene	ND	1.06	2.50	42	2.22	2.50	89	40-112	71 *	30
Anthracene	0.0045	1.21	2.50	48	2.25	2.50	90	25-118	60 *	30
Fluoranthene	0.0096	1.26	2.50	50	2.34	2.50	93	32-131	60 *	30
Pyrene	0.0078	1.31	2.50	52	2.22	2.50	89	27-131	52 *	30
Benz(a)anthracene	0.0031	1.52	2.50	60	2.24	2.50	90	21-133	39 *	30
Chrysene	0.0041	1.60	2.50	64	2.28	2.50	91	24-128	35 *	30
Benzo(b)fluoranthene	0.0061	1.53	2.50	61	2.24	2.50	89	17-142	38 *	30
Benzo(k)fluoranthene	0.0069	1.63	2.50	65	2.31	2.50	92	19-135	35 *	30
Benzo(a)pyrene	0.0040	1.53	2.50	61	2.22	2.50	88	10-146	37 *	30
Indeno(1,2,3-cd)pyrene	0.0033	1.41	2.50	56	2.13	2.50	85	16-145	40 *	30
Dibenz(a,h)anthracene	ND	1.47	2.50	59	2.21	2.50	88	16-142	40 *	30
Benzo(g,h,i)perylene	0.0040	1.56	2.50	62	2.25	2.50	90	18-132	36 *	30

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: PPB Environmental
Project: USACE-Port of Everglades 2004
Sample Matrix: Water

Service Request: K2403205
Date Extracted: 05/04/2004
Date Analyzed: 05/07/2004

Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3535
Analysis Method: 8270C SIM

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0406289

Analyte Name	Lab Control Sample KWG0406289-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
Naphthalene	2.01	2.38	84	44-101
Acenaphthylene	1.81	2.38	76	49-114
Acenaphthene	2.02	2.38	85	48-107
Fluorene	2.03	2.38	85	55-111
Phenanthrene	2.00	2.38	84	56-108
Anthracene	2.17	2.38	91	42-117
Fluoranthene	2.17	2.38	91	61-123
Pyrene	2.14	2.38	90	53-123
Benz(a)anthracene	2.14	2.38	90	53-123
Chrysene	2.22	2.38	93	57-118
Benzo(b)fluoranthene	2.15	2.38	90	57-132
Benzo(k)fluoranthene	2.27	2.38	95	54-126
Benzo(a)pyrene	2.17	2.38	91	38-142
Indeno(1,2,3-cd)pyrene	2.08	2.38	87	49-139
Dibenz(a,h)anthracene	2.15	2.38	90	47-138
Benzo(g,h,i)perylene	2.16	2.38	91	50-125

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.

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

Columbia Analytical Services INC.
An Employee - Owned Company

November 3, 2004

Service Request No: K2407004

Bryan Cotter
PPB Environmental Laboratories, Inc.
6821 SW Archer Road
Gainesville, FL 32608

RE: USACE-Port Everglades 2004 Tissues

Dear Bryan:

Enclosed are the results of the sample(s) submitted to our laboratory on September 11, 2004. For your reference, these analyses have been assigned our service request number K2407004.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Harvey Jacky
Project Chemist

HJ/jeb

NELAP Accredited ACIL Seal of Excellence Award

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.

3

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	PPB Environmental Laboratories, Inc.	**Service Request No.:**	K2407004
Project:	USACE - Port Everglades 2004 Tissues	**Date Received:**	9/11/04
Sample Matrix:	Tissue		

CASE NARRATIVE

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

Sample Receipt

Thirty tissue samples were received for analysis at Columbia Analytical Services on 9/11/04. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

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

Organochlorine Pesticides by EPA Method 8081A

Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) 1012F111, 1012F130, 1012F148: for several analytes. 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 Endrin and Endosulfan I for sample BatchQCMS, BatchQCDMS 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 bias in this matrix. No further corrective action was appropriate.

The matrix spike recovery of Toxaphene for sample Composite-2,3,4-5'sMS and Composite-2,3,4-5'sDMS was 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 bias in this matrix. No further corrective action was appropriate.

The recovery of Chlordane in Composite-2,3,4-5'sMS and Composite-2,3,4-5'sDMS were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed are in the range expected for this procedure. No further corrective action was taken.

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

Approved by HE **Date** 11/4/04

The confirmation comparison criteria of 40% difference for beta-BHC was exceeded in sample(s) Composite 2,3,4-3's. The higher of the two values is reported because no evidence of a matrix interference was observed.

Elevated Method Reporting Limits:
The reporting limit is elevated for several analytes in nearly all samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compound(s) at the reporting limit. The result(s) is/are flagged to indicate the matrix interference.

Laboratory Control Sample (LCS) Exceptions:
The recovery of Chlordane in KWG0415193-3 was outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed are in the range expected for this procedure. No further corrective action was taken.

PCB Aroclors by EPA Method 8082

Elevated Method Reporting Limits:
The detection/reporting limit is elevated for several analytes in samples Composite 2,3,4-1's, Composite 2,3,4-2's, Composite 2,3,4-3's, Composite 2,3,4-4's, and Composite 2,3,4-5's. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection/reporting limit. The results are flagged to indicate the matrix interference.

PCB Congeners by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Congeners 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 PCB 28. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action

Continuing Calibration Verification (CCV) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) 1020F017, 1020F028: PCB 123, PCB 177. 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.

Surrogate Exceptions:
The upper control criterion was exceeded for the following surrogate in virtaully all samples: Tetrachloro-m-xylene. The upper control limit is unusually low at 97%. All surrogate recoveries are below 115%, within CCV criteria, therefore the data quality is not affected.

Elevated Method Reporting Limits:
The reporting limit is elevated for a few analytes in a few 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).

Organotin Compounds

Matrix Spike Recovery Exceptions:
The recovery of n-Butyltin in Batch QC was outside the control limits listed in the results summary. The limits are client specific values. Based on the CAS statistical control limits, the recoveries observed are in the range expected for this procedure. No further corrective action was taken.

Approved by HS **Date** 11/4/04

Elevated Method Reporting Limits:
All samples required dilution due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilution.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270C

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID CAL3848: Naphthalene, 2-Methylnaphthalene, Biphenyl, Acenaphthylene, Dibenzofuran, Dibenzothiophene, Phenanthrene, Pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene. 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 12.6%. 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.

Approved by HS **Date** 11/4/04

Chain of Custody Documentation

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

Samples: 2, 3, 4

CHAIN-OF-CUSTODY RECORD

K2407004

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor: CAS Kelso
		Shipping Method: Fed Ex-P

CLIENT NAME: PPB-USACE-Port Everglades 2004
CLIENT PROJECT:

SITE NAME & ADDRESS: Tissues

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As Per SOW

PRESERVATION
CF Chilled-Filtered
SF Sulfuric-Filtered
NF Nitric-Filtered
C Chilled
S Sulfuric
N Nitric
B Basic/NaOH
Z Zinc
T Thiosulfate
H HCL
Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
	9/10/04	1200			E-PE04-2,3,4-A clams ~~worms~~ BC	T	6	~~1-70~~ TB
					-B		6	rec'd A-I ea. 2,3,4
					-C		6	
					-D		6	
					-E		6	
	9/10/04	1200			E-PE04-2,3,4-A worms ~~clams~~ BC		3	separate SR. K2407005
					B		3	
					C		3	
					D		3	
					E		3	

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time 9/10/04 1730	Received by: *(Signature)* Tracy Black CAS	Date / Time 9/10/04 1100
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time

Remarks and Observations

Matrix Types S Soil or Sediment WW Wastewater T Animal Tissue SW Surface Water SL Sludge or Solid Waste MW Marine Water GW Ground Water DW Drinking Water P Plant Tissue F Filter A Air Ot Other (See Remarks)

Cooler Receipt and Preservation Form

HJ

Project/Client PPB Work Order K240 7004

Cooler received on 9/11/04 and opened on 9/14/04 by TBlack

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: 79133584 69160 Y (N)
5. COC#

COC#				
Temperature of cooler(s) upon receipt: (°C)	0.1	0.2		
Temperature Blank: (°C)	N/a	N/a		

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 loose ice - bags
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~~ (N) !
11. **Were the correct types of bottles used for the tests indicated?** (Y) N
12. Were all of the preserved bottles received at the lab with the appropriate pH? ~~Y~~ ~~N~~
13. Were VOA vials checked for absence of air bubbles, and if present, noted below? ~~Y~~ ~~N~~
14. Did the bottles originate from CAS/K or a branch laboratory? (Y) N
15. **Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?** ~~Y~~ ~~N~~
16. Was C12/Res negative? ~~Y~~ ~~N~~

Explain any discrepancies: Samples 2, 3, 4 A-E on COC are A-J on bags - 10 ea, not 6.

RESOLUTION: _____

Samples that required preservation or received out of temperature:

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

Metals

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 9/10/04
Date Received: 9/11/04

Solids, Total

Prep Method: NONE
Analysis Method: Freeze Dry
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
Composite 2,3,4-1's	K2407004-034	10/5/04	13.0	
Composite 2,3,4-2's	K2407004-035	10/5/04	11.6	
Composite 2,3,4-3's	K2407004-036	10/5/04	11.8	
Composite 2,3,4-4's	K2407004-037	10/5/04	11.0	
Composite 2,3,4-5's	K2407004-038	10/5/04	12.7	

Approved By: _____ Date: 10/20/04

1A/052595

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 9/10/04
Date Received: 9/11/04
Date Extracted: NA
Date Analyzed: 10/5/04

Duplicate Summary
Total Metals

Sample Name: Composite 2,3,4-2's
Lab Code: K2407004-035D
Test Notes:

Units: PERCENT
Basis: Wet

Analyte	Prep Method	Analysis Method	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Solids, Total	NA	Freeze Dry	11.6	11.7	11.6	<1	

Approved By: _____ Date: 10/20/04

DUP/052595

Columbia Analytical Services

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite 2,3,4-1's
Lab Code: K2407004-034

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.115		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	18.1		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.356		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	5.3		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	24.1		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	2.530		
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.06		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	5.34		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.243		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	143		

% Solids: 13.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite 2,3,4-2's
Lab Code: K2407004-035

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.106		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	19.1		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.318		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	2.1		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	20.7		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	2.420		
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.05		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	3.26		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.305		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	128		

% Solids: 11.6

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite 2,3,4-3's
Lab Code: K2407004-036

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.117		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	21.2		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.287		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.4		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	20.7		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.930		
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.05		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	2.91		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.342		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	139		

% Solids: 11.8

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite 2,3,4-4's
Lab Code: K2407004-037

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.122		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	20.8		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.320		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.5		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	20.4		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.820		
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.07		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	3.24		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.196		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	165		

% Solids: 11.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.111		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	20.1		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.323		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	2.0		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	25.1		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	2.530		
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.06		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	3.31		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.364		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	133		

% Solids: 12.7

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected:
Date Received:
Units: MG/KG
Basis: Dry

Sample Name: Method Blank
Lab Code: K2407004-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.005	U	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	0.03	U	
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.005	U	
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.3	U	
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	0.07	U	
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.007	U	
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.01	U	
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	0.03	U	
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.004	U	N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	0.06	U	

% Solids: 100.0

Comments:

METALS

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: PPB Environmental

Service Request: K2407004

Project No.:

Project Name: USACE-Port Everglades 2004 Tissues

Sample No.	Lab Sample ID.
Batch QCD	K2407003-008D
Batch QCS	K2407003-008S
Composite 2,3,4-1's	K2407004-034
Composite 2,3,4-2's	K2407004-035
Composite 2,3,4-2'sD	K2407004-035D
Composite 2,3,4-2'sS	K2407004-035S
Composite 2,3,4-3's	K2407004-036
Composite 2,3,4-4's	K2407004-037
Composite 2,3,4-5's	K2407004-038
Method Blank	K2407004-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: 10/20/04

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite 2,3,4-1's
Lab Code: K2407004-034

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0065	0.0007	5	10/8/04	10/12/04	0.0149		
Arsenic	200.8	0.065	0.004	5	10/8/04	10/12/04	2.350		
Cadmium	200.8	0.0026	0.0007	5	10/8/04	10/12/04	0.0463		
Chromium	6010B	0.07	0.04	1	10/8/04	10/13/04	0.69		
Copper	200.8	0.013	0.009	5	10/8/04	10/12/04	3.130		
Lead	200.8	0.0026	0.0009	5	10/8/04	10/12/04	0.3290		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.007		
Nickel	200.8	0.026	0.004	5	10/8/04	10/12/04	0.694		
Silver	200.8	0.0026	0.0005	5	10/8/04	10/12/04	0.0316		N
Zinc	200.8	0.065	0.008	5	10/8/04	10/12/04	18.5		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite 2,3,4-2's
Lab Code: K2407004-035

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0058	0.0006	5	10/8/04	10/12/04	0.0123		
Arsenic	200.8	0.058	0.003	5	10/8/04	10/12/04	2.210		
Cadmium	200.8	0.0023	0.0006	5	10/8/04	10/12/04	0.0368		
Chromium	6010B	0.06	0.03	1	10/8/04	10/13/04	0.25		
Copper	200.8	0.012	0.008	5	10/8/04	10/12/04	2.400		
Lead	200.8	0.0023	0.0008	5	10/8/04	10/12/04	0.2800		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.005		
Nickel	200.8	0.023	0.003	5	10/8/04	10/12/04	0.378		
Silver	200.8	0.0023	0.0005	5	10/8/04	10/12/04	0.0353		N
Zinc	200.8	0.058	0.007	5	10/8/04	10/12/04	14.8		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite 2,3,4-3's
Lab Code: K2407004-036

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0059	0.0006	5	10/8/04	10/12/04	0.0138		
Arsenic	200.8	0.059	0.004	5	10/8/04	10/12/04	2.500		
Cadmium	200.8	0.0024	0.0006	5	10/8/04	10/12/04	0.0339		
Chromium	6010B	0.06	0.04	1	10/8/04	10/13/04	0.16		
Copper	200.8	0.012	0.008	5	10/8/04	10/12/04	2.440		
Lead	200.8	0.0024	0.0008	5	10/8/04	10/12/04	0.2280		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.006		
Nickel	200.8	0.024	0.004	5	10/8/04	10/12/04	0.344		
Silver	200.8	0.0024	0.0005	5	10/8/04	10/12/04	0.0404		N
Zinc	200.8	0.059	0.007	5	10/8/04	10/12/04	16.4		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite 2,3,4-4's
Lab Code: K2407004-037

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0055	0.0006	5	10/8/04	10/12/04	0.0134		
Arsenic	200.8	0.055	0.003	5	10/8/04	10/12/04	2.290		
Cadmium	200.8	0.0022	0.0006	5	10/8/04	10/12/04	0.0352		
Chromium	6010B	0.06	0.03	1	10/8/04	10/13/04	0.17		
Copper	200.8	0.011	0.008	5	10/8/04	10/12/04	2.240		
Lead	200.8	0.0022	0.0008	5	10/8/04	10/12/04	0.2000		
Mercury	7471A	0.004	0.001	1	10/15/04	10/18/04	0.008		
Nickel	200.8	0.022	0.003	5	10/8/04	10/12/04	0.356		
Silver	200.8	0.0022	0.0004	5	10/8/04	10/12/04	0.0216		N
Zinc	200.8	0.055	0.007	5	10/8/04	10/12/04	18.1		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407004
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0064	0.0006	5	10/8/04	10/12/04	0.0141		
Arsenic	200.8	0.064	0.004	5	10/8/04	10/12/04	2.550		
Cadmium	200.8	0.0025	0.0006	5	10/8/04	10/12/04	0.0411		
Chromium	6010B	0.06	0.04	1	10/8/04	10/13/04	0.26		
Copper	200.8	0.013	0.009	5	10/8/04	10/12/04	3.190		
Lead	200.8	0.0025	0.0009	5	10/8/04	10/12/04	0.3210		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.007		
Nickel	200.8	0.025	0.004	5	10/8/04	10/12/04	0.420		
Silver	200.8	0.0025	0.0005	5	10/8/04	10/12/04	0.0463		N
Zinc	200.8	0.064	0.008	5	10/8/04	10/12/04	16.9		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental

Project No.: NA

Project Name: USACE-Port Everglades 2004 Tissues

Matrix: TISSUE

Service Request: K2407004

Date Collected:

Date Received:

Units: MG/KG

Basis: Wet

Sample Name: Method Blank

Lab Code: K2407004-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0050	0.0005	5	10/8/04	10/12/04	0.0005	U	
Arsenic	200.8	0.050	0.003	5	10/8/04	10/12/04	0.003	U	
Cadmium	200.8	0.0020	0.0005	5	10/8/04	10/12/04	0.0005	U	
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.03	U	
Copper	200.8	0.010	0.007	5	10/8/04	10/12/04	0.007	U	
Lead	200.8	0.0020	0.0007	5	10/8/04	10/12/04	0.0007	U	
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.002	U	
Nickel	200.8	0.020	0.003	5	10/8/04	10/12/04	0.003	U	
Silver	200.8	0.0020	0.0004	5	10/8/04	10/12/04	0.0004	U	N
Zinc	200.8	0.050	0.006	5	10/8/04	10/12/04	0.006	U	

% Solids: NA

Comments:

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2407004

Project No.:

Project Name: USACE-Port Everglades 2004 T

ICV Source: Inorganic Ventures

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	26.1	105	25.0	25.4	102	24.7	99	200.8
Arsenic	25.0	25.9	104	25.0	24.6	98	26.0	104	200.8
Cadmium	12.5	12.8	102	25.0	24.6	98	24.7	99	200.8
Chromium	500	509	102	500	491	98	501	100	6010B
Copper	12.5	12.8	102	25.0	24.6	98	25.9	104	200.8
Lead	25.0	25.9	104	25.0	25.0	100	24.1	96	200.8
Mercury	5.0	4.84	97	5.0	5.06	101	4.90	98	7471A
Nickel	25.0	25.7	103	25.0	25.0	100	25.6	102	200.8
Silver	12.5	12.8	102	25.0	24.8	99	24.8	99	200.8
Zinc	25.0	25.5	102	25.0	24.8	99	26.3	105	200.8

Butyltins

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407004

Cover Page - Organic Analysis Data Package
Butyltins (as cation)

Sample Name	Lab Code	Date Collected	Date Received
Composite 2,3,4-1's	K2407004-034	09/10/2004	09/11/2004
Composite 2,3,4-2's	K2407004-035	09/10/2004	09/11/2004
Composite 2,3,4-3's	K2407004-036	09/10/2004	09/11/2004
Composite 2,3,4-4's	K2407004-037	09/10/2004	09/11/2004
Composite 2,3,4-5's	K2407004-038	09/10/2004	09/11/2004

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

Signature: [signature]

Name: Todd Ryhair

Date: 11/3/04

Title:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite 2,3,4-1's
Lab Code: K2407004-034

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	**65**	D	10	3.3	10	10/24/04	11/01/04	KWG0415205	
Di-n-butyltin	**19**		1.0	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	**3.2**		1.0	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	52	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407004
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	Composite 2,3,4-2's	**Units:**	ug/Kg
Lab Code:	K2407004-035	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	**74**	D	9.9	3.3	10	10/24/04	11/01/04	KWG0415205	
Di-n-butyltin	**26**		0.99	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	**3.4**		0.99	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	54	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite 2,3,4-3's
Lab Code: K2407004-036

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	**56**	D	10	3.3	10	10/24/04	11/01/04	KWG0415205	
Di-n-butyltin	**17**		1.0	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	**2.2**		1.0	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	48	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite 2,3,4-4's
Lab Code: K2407004-037

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	**57**	D	9.9	3.3	10	10/24/04	11/01/04	KWG0415205	
Di-n-butyltin	**18**		0.99	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	**2.5**		0.99	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	47	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	**70**	D	9.9	3.3	10	10/24/04	11/01/04	KWG0415205	
Di-n-butyltin	**19**		0.99	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	**2.6**		0.99	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	49	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: NA
Date Received: NA

Butyltins (as cation)

Sample Name: Method Blank
Lab Code: KWG0415205-4

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	ND	U	1.0	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	ND	U	1.0	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	50	26-169	10/27/04	Acceptable

Comments:

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004

Surrogate Recovery Summary
Butyltins (as cation)

Extraction Method: METHOD
Analysis Method: GC-FPD

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Composite 2,3,4-1's	K2407004-034	52
Composite 2,3,4-2's	K2407004-035	54
Composite 2,3,4-3's	K2407004-036	48
Composite 2,3,4-4's	K2407004-037	47
Composite 2,3,4-5's	K2407004-038	49
Method Blank	KWG0415205-4	50
Batch QC	K2407003-007	49
Batch QCMS	KWG0415205-1	45
Batch QCDMS	KWG0415205-2	45
Lab Control Sample	KWG0415205-3	49
Duplicate Lab Control Sample	KWG0415205-5	45

Surrogate Recovery Control Limits (%)

Sur1 = Tri-n-propyltin 26-169

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Extracted: 10/24/2004
Date Analyzed: 10/27/2004

Matrix Spike/Duplicate Matrix Spike Summary
Butyltins (as cation)

Sample Name: Batch QC
Lab Code: K2407003-007

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low
Extraction Lot: KWG0415205

Analyte Name	Sample Result	Batch QCMS KWG0415205-1 Matrix Spike			Batch QCDMS KWG0415205-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Tetra-n-butyltin	ND	19.3	50.1	38	19.1	50.2	38	29-120	1	50
Tri-n-butyltin	ND	18.6	51.1	36	17.7	51.2	35	10-155	5	50
Di-n-butyltin	ND	13.9	44.2	31	16.6	44.3	37	30-131	18	50
n-Butyltin	ND	7.19	40.3	18	7.19	40.4	18	10-178	0	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Extracted: 10/24/2004
Date Analyzed: 10/27/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Butyltins (as cation)

Extraction Method: METHOD
Analysis Method: GC-FPD

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415205

	Lab Control Sample KWG0415205-3 Lab Control Spike			Duplicate Lab Control Sample KWG0415205-5 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Tetra-n-butyltin	25.3	25.5	99	23.6	25.5	92	32-134	7	40
Tri-n-butyltin	20.9	26.0	81	19.6	26.0	75	39-146	7	40
Di-n-butyltin	16.2	22.5	72	15.4	22.5	69	42-142	5	40
n-Butyltin	11.7	20.5	57	10.8	20.5	53	28-125	8	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.

Lipids

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 9/10/2004
Date Received: 9/11/2004

Lipids, Total

Prep Method: EPA 3540
Analysis Method: NOAA
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Sample Name	Lab Code	MRL	Date Extracted	Date Analyzed	Result	Result Notes
Composite 2,3,4-1's	K2407004-034	0.025	10/5/2004	10/14/2004	0.81	
Composite 2,3,4-2's	K2407004-035	0.025	10/5/2004	10/14/2004	0.68	
Composite 2,3,4-3's	K2407004-036	0.025	10/5/2004	10/14/2004	0.87	
Composite 2,3,4-4's	K2407004-037	0.025	10/5/2004	10/14/2004	0.85	
Composite 2,3,4-5's	K2407004-038	0.025	10/5/2004	10/14/2004	1.0	

Approved By: Carol Jones Date: 10-19-04

1A/092099p

07004SVG.ab1 - Sample 10/18/2004

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 9/10/2004
Date Received: 9/11/2004
Date Extracted: 10/5/2004
Date Analyzed: 10/14/2004

Duplicate Summary
Lipids, Total

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Lab Code	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
K2407004-038	EPA 3540	NOAA	0.025	1.0	0.73	0.87	31	

Approved By: Carl Jones Date: 10-19-04

DUP (22) /091599p

07004SVG.ab1 - DUP 10/18/2004

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 9/10/2004
Date Received: 9/11/2004
Date Extracted: 10/5/2004
Date Analyzed: 10/14/2004

Triplicate Summary
Lipids, Total

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Lab Code	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Triplicate Sample Result	Average	Percent Relative Standard Deviation	Result Notes
K2407004-038	EPA 3540	NOAA	0.025	1.0	0.73	0.74	0.82	19	

Approved By: Carol Jones Date: 10-19-04

DUP/091599p

07004SVG.abl - TRP 10/18/2004

Page No.:

Organochlorine Pesticides
EPA Method 8081

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407004

Cover Page - Organic Analysis Data Package
Organochlorine Pesticides

Sample Name	Lab Code	Date Collected	Date Received
Composite 2,3,4-1's	K2407004-034	09/10/2004	09/11/2004
Composite 2,3,4-2's	K2407004-035	09/10/2004	09/11/2004
Composite 2,3,4-3's	K2407004-036	09/10/2004	09/11/2004
Composite 2,3,4-4's	K2407004-037	09/10/2004	09/11/2004
Composite 2,3,4-5's	K2407004-038	09/10/2004	09/11/2004
Composite 2,3,4-5'sMS	KWG0415193-5	09/10/2004	09/11/2004
Composite 2,3,4-5'sDMS	KWG0415193-6	09/10/2004	09/11/2004

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

Signature: [signature]

Name: [signature]

Date: 10/21/04

Title:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite 2,3,4-1's
Lab Code: K2407004-034

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.99	0.16	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	ND	U	0.99	0.21	1	10/05/04	10/13/04	KWG0415193	
gamma-BHC (Lindane)	ND	Ui	0.99	0.49	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	U	0.99	0.34	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Aldrin	ND	U	0.99	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	U	0.99	0.15	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	U	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	**0.18**	JP	0.99	0.12	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	Ui	0.99	0.16	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	ND	U	0.99	0.35	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDD	**0.28**	J	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	0.99	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	0.99	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	ND	U	0.99	0.38	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	7.5	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	Ui	9.9	5.1	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	80	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite 2,3,4-2's
Lab Code: K2407004-035

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.99	0.16	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	**1.7**		0.99	0.21	1	10/05/04	10/13/04	KWG0415193	
gamma-BHC (Lindane)	ND	U	0.99	0.28	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	U	0.99	0.34	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Aldrin	ND	U	0.99	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	U	0.99	0.15	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	U	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	U	0.99	0.11	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	ND	Ui	0.99	0.47	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	Ui	0.99	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	ND	U	0.99	0.35	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDD	ND	U	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	0.99	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	0.99	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	ND	U	0.99	0.38	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	U	50	5.8	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	Ui	9.9	6.8	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	81	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite 2,3,4-3's
Lab Code: K2407004-036

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	**2.1**	P	1.0	0.21	1	10/05/04	10/13/04	KWG0415193	*
gamma-BHC (Lindane)	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	U	1.0	0.34	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Aldrin	ND	U	1.0	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	U	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	**0.26**	JP	1.0	0.12	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	U	1.0	0.099	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	ND	U	1.0	0.35	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDD	**0.34**	J	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	**0.66**	JP	1.0	0.38	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	11	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	Ui	10	10	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite 2,3,4-4's
Lab Code: K2407004-037

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.99	0.16	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	**1.4**		0.99	0.21	1	10/05/04	10/13/04	KWG0415193	*
gamma-BHC (Lindane)	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	U	0.99	0.34	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Aldrin	ND	U	0.99	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	U	0.99	0.15	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	U	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	ND	Ui	0.99	0.91	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	U	0.99	0.099	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	ND	U	0.99	0.35	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDD	**0.19**	J	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	0.99	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	0.99	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	ND	U	0.99	0.38	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	7.5	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	Ui	9.9	5.7	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	ND	U	1.0	0.21	1	10/05/04	10/13/04	KWG0415193	
gamma-BHC (Lindane)	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	Ui	1.3	1.3	1	10/05/04	10/13/04	KWG0415193	
Aldrin	ND	U	1.0	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	U	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	**0.23**	JP	1.0	0.12	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	U	1.0	0.099	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	ND	U	1.0	0.35	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDD	**0.19**	J	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	ND	U	1.0	0.38	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	7.5	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	Ui	10	3.1	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0415193-4

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.99	0.16	1	10/05/04	10/12/04	KWG0415193	
beta-BHC	ND	U	0.99	0.21	1	10/05/04	10/12/04	KWG0415193	
gamma-BHC (Lindane)	ND	U	0.99	0.28	1	10/05/04	10/12/04	KWG0415193	
delta-BHC	ND	U	0.99	0.34	1	10/05/04	10/12/04	KWG0415193	
Heptachlor	ND	U	0.99	0.45	1	10/05/04	10/12/04	KWG0415193	
Aldrin	ND	U	0.99	0.20	1	10/05/04	10/12/04	KWG0415193	
Heptachlor Epoxide	ND	U	0.99	0.15	1	10/05/04	10/12/04	KWG0415193	
Endosulfan I	ND	U	0.99	0.13	1	10/05/04	10/12/04	KWG0415193	
Dieldrin	ND	U	0.99	0.11	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDE	ND	U	0.99	0.12	1	10/05/04	10/12/04	KWG0415193	
Endrin	ND	U	0.99	0.099	1	10/05/04	10/12/04	KWG0415193	
Endosulfan II	ND	U	0.99	0.35	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDD	ND	U	0.99	0.13	1	10/05/04	10/12/04	KWG0415193	
Endrin Aldehyde	ND	U	0.99	0.17	1	10/05/04	10/12/04	KWG0415193	
Endosulfan Sulfate	ND	U	0.99	0.27	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDT	ND	U	0.99	0.38	1	10/05/04	10/12/04	KWG0415193	
Methoxychlor	ND	U	0.99	0.27	1	10/05/04	10/12/04	KWG0415193	
Toxaphene	ND	U	50	5.8	1	10/05/04	10/12/04	KWG0415193	
Chlordane	ND	U	9.9	2.7	1	10/05/04	10/12/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	10-171	10/12/04	Acceptable

Comments:

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Composite 2,3,4-1's	K2407004-034	80
Composite 2,3,4-2's	K2407004-035	81
Composite 2,3,4-3's	K2407004-036	82
Composite 2,3,4-4's	K2407004-037	82
Composite 2,3,4-5's	K2407004-038	82
Method Blank	KWG0415193-4	72
Batch QC	K2407003-006	78
Batch QCMS	KWG0415193-1	75
Batch QCDMS	KWG0415193-2	74
Composite 2,3,4-5'sMS	KWG0415193-5	73
Composite 2,3,4-5'sDMS	KWG0415193-6	75
Lab Control Sample	KWG0415193-3	71

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-171

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

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Extracted: 10/05/2004
Date Analyzed: 10/13/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: Batch QC
Lab Code: K2407003-006

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415193

Analyte Name	Sample Result	Batch QCMS KWG0415193-1 Matrix Spike			Batch QCDMS KWG0415193-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	ND	14.3	19.8	72	13.6	19.8	69	51-125	5	40
beta-BHC	ND	14.7	19.8	74 #	16.6	19.8	84 #	10-164	12	40
gamma-BHC (Lindane)	ND	13.7	19.8	69 #	13.7	19.8	70 #	46-130	0	40
delta-BHC	ND	11.2	19.8	57	10.8	19.8	55	52-132	4	40
Heptachlor	ND	12.8	19.8	65	12.0	19.8	61	39-132	6	40
Aldrin	ND	13.0	19.8	66	7.38	19.8	37	34-145	55 *	40
Heptachlor Epoxide	ND	11.8	19.8	60	11.7	19.8	59	51-129	1	40
Endosulfan I	ND	10.3	19.8	52	9.15	19.8	46	37-141	11	40
Dieldrin	ND	10.8	19.8	55	11.4	19.8	58	25-156	5	40
4,4'-DDE	ND	11.1	19.8	56	11.4	19.8	58	10-181	3	40
Endrin	ND	11.8	19.8	60	11.4	19.8	58 *	60-131	3	40
Endosulfan II	1.9	12.6	19.8	54	10.8	19.8	45	38-141	15	40
4,4'-DDD	ND	11.0	19.8	56	10.2	19.8	52	11-177	7	40
Endrin Aldehyde	ND	7.50	19.8	38	7.12	19.8	36	10-120	5	40
Endosulfan Sulfate	ND	11.1	19.8	56	11.2	19.8	57	40-134	1	40
4,4'-DDT	0.78	12.8	19.8	61	13.7	19.8	65	14-164	7	40
Methoxychlor	ND	12.8	19.8	65	12.9	19.8	65	32-151	1	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Extracted: 10/05/2004
Date Analyzed: 10/13/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415193

Analyte Name	Sample Result	Composite 2,3,4-5'sMS KWG0415193-5 Matrix Spike			Composite 2,3,4-5'sDMS KWG0415193-6 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Toxaphene	ND	131	198	66 *	157	198	79	70-130	18	40
Chlordane	ND	96.5	198	49 *	94.9	198	48 *	70-130	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Extracted: 10/05/2004
Date Analyzed: 10/12/2004

Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415193

Analyte Name	Lab Control Sample KWG0415193-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
alpha-BHC	15.4	19.7	79	54-128
beta-BHC	14.4	19.7	73	54-119
gamma-BHC (Lindane)	14.8	19.7	75	58-125
delta-BHC	16.0	19.7	81	61-131
Heptachlor	14.6	19.7	74	48-117
Aldrin	14.6	19.7	74	56-120
Heptachlor Epoxide	14.9	19.7	76	60-118
Endosulfan I	12.4	19.7	63	55-114
Dieldrin	15.0	19.7	76	61-122
4,4'-DDE	15.1	19.7	77	58-131
Endrin	15.5	19.7	79	62-129
Endosulfan II	12.8	19.7	65	55-115
4,4'-DDD	14.8	19.7	75	47-141
Endrin Aldehyde	11.3	19.7	58	10-109
Endosulfan Sulfate	16.3	19.7	83	57-121
4,4'-DDT	15.4	19.7	78	52-143
Methoxychlor	15.9	19.7	81	60-128
Toxaphene	142	197	72	70-130
Chlordane	118	197	60 *	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.

Polychlorinated Biphenyls
PCB's
EPA Method 8082

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407004

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
Composite 2,3,4-1's	K2407004-034	09/10/2004	09/11/2004
Composite 2,3,4-2's	K2407004-035	09/10/2004	09/11/2004
Composite 2,3,4-3's	K2407004-036	09/10/2004	09/11/2004
Composite 2,3,4-4's	K2407004-037	09/10/2004	09/11/2004
Composite 2,3,4-5's	K2407004-038	09/10/2004	09/11/2004

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

Signature: _____ Name: _____

Date: 10/20/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite 2,3,4-1's
Lab Code: K2407004-034

Units: ug/Kg
Basis: Wet

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	Ui	9.9	4.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	Ui	20	16	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	Ui	11	11	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	Ui	9.9	6.8	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	Ui	9.9	1.8	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	Ui	9.9	4.2	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	9.9	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	78	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite 2,3,4-2's
Lab Code: K2407004-035

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	Ui	20	20	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	Ui	9.9	4.4	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	9.9	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	Ui	9.9	3.2	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	Ui	9.9	3.6	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	9.9	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	73	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite 2,3,4-3's
Lab Code: K2407004-036

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	Ui	20	15	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	Ui	10	5.3	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	10	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	Ui	10	2.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	Ui	10	6.8	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	10	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	75	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite 2,3,4-4's
Lab Code: K2407004-037

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	Ui	20	20	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	Ui	9.9	4.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	9.9	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	Ui	9.9	3.3	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	Ui	9.9	3.9	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	9.9	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	75	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	Ui	20	20	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	Ui	10	5.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	10	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	Ui	10	3.9	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	Ui	10	4.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	10	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0415208-4

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	U	9.9	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	9.9	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	U	9.9	0.76	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	U	9.9	1.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	9.9	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	79	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Composite 2,3,4-1's	K2407004-034	78
Composite 2,3,4-2's	K2407004-035	73
Composite 2,3,4-3's	K2407004-036	75
Composite 2,3,4-4's	K2407004-037	75
Composite 2,3,4-5's	K2407004-038	72
Method Blank	KWG0415208-4	79
Batch QC	K2407003-008	91
Batch QCMS	KWG0415208-1	87
Batch QCDMS	KWG0415208-2	87
Lab Control Sample	KWG0415208-3	74

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 18-123

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Extracted: 10/05/2004
Date Analyzed: 10/10/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: Batch QC
Lab Code: K2407003-008

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low
Extraction Lot: KWG0415208

Analyte Name	Sample Result	Batch QCMS KWG0415208-1 Matrix Spike			Batch QCDMS KWG0415208-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Aroclor 1016	ND	184	198	93	173	198	87	27-190	6	50
Aroclor 1260	12	192	198	91	184	198	87	28-130	4	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Extracted: 10/05/2004
Date Analyzed: 10/10/2004

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415208

	Lab Control Sample KWG0415208-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Aroclor 1016	183	197	93	38-150
Aroclor 1260	180	197	91	30-149

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.

Polychlorinated Biphenyls
PCB's
EPA Method 8082

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407004

Cover Page - Organic Analysis Data Package
Congener Specific PCBs

Sample Name	Lab Code	Date Collected	Date Received
Composite 2,3,4-1's	K2407004-034	09/10/2004	09/11/2004
Composite 2,3,4-2's	K2407004-035	09/10/2004	09/11/2004
Composite 2,3,4-3's	K2407004-036	09/10/2004	09/11/2004
Composite 2,3,4-4's	K2407004-037	09/10/2004	09/11/2004
Composite 2,3,4-5's	K2407004-038	09/10/2004	09/11/2004
Composite 2,3,4-1'sMS	KWG0415227-1	09/10/2004	09/11/2004
Composite 2,3,4-1'sDMS	KWG0415227-2	09/10/2004	09/11/2004

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Signature: _____ Name: _____

Date: 10/26/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite 2,3,4-1's
Lab Code: K2407004-034

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	**0.38**	JP	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	Ui	0.50	0.35	1	10/05/04	10/21/04	KWG0415227	
PCB 52	**0.36**	J	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	Ui	0.50	0.17	1	10/05/04	10/21/04	KWG0415227	
PCB 101	**0.28**	J	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	**0.28**	J	0.50	0.10	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	**0.36**	J	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	103	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite 2,3,4-2's
Lab Code: K2407004-035

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	U	0.50	0.063	1	10/05/04	10/21/04	KWG0415227	
PCB 52	**0.24**	J	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	Ui	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 101	**0.24**	J	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	**0.25**	J	0.50	0.10	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	**0.34**	J	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	104	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite 2,3,4-3's
Lab Code: K2407004-036

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	Ui	0.50	0.50	1	10/05/04	10/21/04	KWG0415227	
PCB 18	**0.26**	JP	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	**0.19**	JP	0.50	0.063	1	10/05/04	10/21/04	KWG0415227	
PCB 52	**0.40**	J	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	Ui	0.50	0.50	1	10/05/04	10/21/04	KWG0415227	
PCB 101	**0.56**		0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	**0.48**	J	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	**0.54**		0.50	0.10	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	**0.10**	JP	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	**0.49**	J	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	105	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite 2,3,4-4's
Lab Code: K2407004-037

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	**0.25**	JP	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	U	0.50	0.063	1	10/05/04	10/21/04	KWG0415227	
PCB 52	**0.27**	J	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	Ui	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 101	**0.22**	J	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	**0.21**	J	0.50	0.10	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	**0.30**	J	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	103	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	**0.26**	JP	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	U	0.50	0.063	1	10/05/04	10/21/04	KWG0415227	
PCB 52	**0.28**	J	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	Ui	0.50	0.16	1	10/05/04	10/21/04	KWG0415227	
PCB 101	**0.26**	J	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	**0.27**	J	0.50	0.10	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	**0.33**	J	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	96	34-97	10/21/04	Acceptable

Comments:

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0415227-4

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/20/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/20/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/20/04	KWG0415227	
PCB 44	ND	U	0.50	0.063	1	10/05/04	10/20/04	KWG0415227	
PCB 52	ND	U	0.50	0.080	1	10/05/04	10/20/04	KWG0415227	
PCB 66	ND	U	0.50	0.073	1	10/05/04	10/20/04	KWG0415227	
PCB 101	ND	U	0.50	0.065	1	10/05/04	10/20/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/20/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/20/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/20/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/20/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/20/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/20/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/20/04	KWG0415227	
PCB 118	ND	U	0.50	0.10	1	10/05/04	10/20/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/20/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/20/04	KWG0415227	
PCB 153	ND	U	0.50	0.15	1	10/05/04	10/20/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/20/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/20/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	34-97	10/20/04	Acceptable

Comments:

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	
Composite 2,3,4-1's	K2407004-034	103	*
Composite 2,3,4-2's	K2407004-035	104	*
Composite 2,3,4-3's	K2407004-036	105	*
Composite 2,3,4-4's	K2407004-037	103	*
Composite 2,3,4-5's	K2407004-038	96	
Method Blank	KWG0415227-4	97	
Composite 2,3,4-1'sMS	KWG0415227-1	105	*
Composite 2,3,4-1'sDMS	KWG0415227-2	109	*
Lab Control Sample	KWG0415227-3	99	*

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 34-97

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

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Extracted: 10/05/2004
Date Analyzed: 10/21/2004

Matrix Spike/Duplicate Matrix Spike Summary
Congener Specific PCBs

Sample Name: Composite 2,3,4-1's
Lab Code: K2407004-034

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415227

Analyte Name	Sample Result	Composite 2,3,4-1'sMS KWG0415227-1 Matrix Spike			Composite 2,3,4-1'sDMS KWG0415227-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
PCB 8	ND	10.6	9.88	107	10.2	9.87	104	35-140	3	50
PCB 18	0.38	8.86	9.88	86	8.79	9.87	85	28-125	1	50
PCB 28	ND	10.6	9.88	107	10.4	9.87	105	34-149	2	50
PCB 44	ND	9.12	9.88	92	8.95	9.87	91	40-134	2	50
PCB 52	0.36	8.48	9.88	82	8.53	9.87	83	44-133	1	50
PCB 66	ND	8.27	9.88	84	8.36	9.87	85	27-138	1	50
PCB 101	0.28	10.7	9.88	105	10.8	9.87	107	43-142	1	50
PCB 138	ND	8.16	9.88	83	8.35	9.87	85	17-147	2	50
PCB 180	ND	9.05	9.88	92	9.06	9.87	92	27-142	0	50
PCB 206	ND	9.00	9.88	91	8.94	9.87	91	31-143	1	50
PCB 209	ND	8.81	9.88	89	8.87	9.87	90	30-141	1	50
PCB 77	ND	7.86	9.88	80	8.09	9.87	82	15-204	3	50
PCB 105	ND	8.42	9.88	85	8.05	9.87	82	20-159	4	50
PCB 118	0.28	9.07	9.88	89	9.03	9.87	89	26-159	0	50
PCB 126	ND	7.96	9.88	81	8.10	9.87	82	42-141	2	50
PCB 153	0.36	7.70	9.88	74	7.67	9.87	74	25-129	0	50
PCB 169	ND	8.26	9.88	84	8.37	9.87	85	37-154	1	50
PCB 170	ND	7.91	9.88	80	7.95	9.87	81	30-134	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.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Extracted: 10/05/2004
Date Analyzed: 10/20/2004

Lab Control Spike Summary
Congener Specific PCBs

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415227

Analyte Name	Lab Control Sample KWG0415227-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
PCB 8	9.68	10.0	97	25-152
PCB 18	8.45	10.0	85	13-134
PCB 28	10.0	10.0	100	13-167
PCB 44	8.90	10.0	89	23-147
PCB 52	8.30	10.0	83	32-136
PCB 66	7.87	10.0	79	23-140
PCB 101	10.1	10.0	101	16-172
PCB 138	7.90	10.0	79	24-140
PCB 180	8.80	10.0	88	28-148
PCB 206	8.80	10.0	88	28-147
PCB 209	8.73	10.0	87	31-143
PCB 77	7.52	10.0	75	14-174
PCB 105	7.82	10.0	78	14-165
PCB 118	8.64	10.0	86	18-171
PCB 126	8.36	10.0	84	46-143
PCB 153	7.06	10.0	71	31-135
PCB 169	8.43	10.0	84	36-154
PCB 170	7.95	10.0	80	27-148

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.

Polynuclear Aromatic Hydrocarbons
EPA Method 8270C

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407004

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Polynuclear Aromatic Hydrocarbons

Sample Name	Lab Code	Date Collected	Date Received
Composite 2,3,4-1's	K2407004-034	09/10/2004	09/11/2004
Composite 2,3,4-2's	K2407004-035	09/10/2004	09/11/2004
Composite 2,3,4-3's	K2407004-036	09/10/2004	09/11/2004
Composite 2,3,4-4's	K2407004-037	09/10/2004	09/11/2004
Composite 2,3,4-5's	K2407004-038	09/10/2004	09/11/2004
Composite 2,3,4-5'sMS	KWG0415153-4	09/10/2004	09/11/2004
Composite 2,3,4-5'sDMS	KWG0415153-5	09/10/2004	09/11/2004

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

Signature: [signature]

Name: Carl Degner

Date: 10/22/04

Title: SVM Supervisor

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite 2,3,4-1's
Lab Code: K2407004-034

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**0.21**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**0.16**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**0.26**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.12**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.44**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**1.8**	J	5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**0.67**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**6.0**		5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**7.6**		5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**2.4**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**3.8**	J	5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	**5.4**		5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	**3.6**	J	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	**3.2**	J	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**2.3**	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**7.2**		5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	60	53-103	10/07/04	Acceptable
Fluoranthene-d10	78	56-109	10/07/04	Acceptable
Terphenyl-d14	86	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite 2,3,4-2's
Lab Code: K2407004-035

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.0**	J	5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**0.70**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**0.53**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**0.43**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.14**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.42**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**3.2**	J	5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**0.99**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**8.5**		5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**12**		5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**3.5**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**4.7**	J	5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	**5.4**		5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	**3.5**	J	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	**4.2**	J	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**2.9**	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**3.3**	J	5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	53-103	10/07/04	Acceptable
Fluoranthene-d10	78	56-109	10/07/04	Acceptable
Terphenyl-d14	91	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite 2,3,4-3's
Lab Code: K2407004-036

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.4**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415153	
2-Methylnaphthalene	**1.0**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415153	
1-Methylnaphthalene	**0.64**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415153	
Acenaphthylene	**0.46**	J	5.0	0.050	1	10/05/04	10/08/04	KWG0415153	
Acenaphthene	**0.19**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415153	
Fluorene	**0.42**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415153	
Phenanthrene	**1.7**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415153	
Anthracene	**0.74**	J	5.0	0.055	1	10/05/04	10/08/04	KWG0415153	
Fluoranthene	**5.5**		5.0	0.053	1	10/05/04	10/08/04	KWG0415153	
Pyrene	**7.9**		5.0	0.070	1	10/05/04	10/08/04	KWG0415153	
Benz(a)anthracene	**2.1**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415153	
Chrysene	**3.3**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415153	
Benzo(b)fluoranthene	**4.2**	J	5.0	0.045	1	10/05/04	10/08/04	KWG0415153	
Benzo(k)fluoranthene	**2.9**	J	5.0	0.081	1	10/05/04	10/08/04	KWG0415153	
Benzo(a)pyrene	**2.7**	J	5.0	0.076	1	10/05/04	10/08/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**1.7**	J	5.0	0.073	1	10/05/04	10/08/04	KWG0415153	
Dibenz(a,h)anthracene	**0.43**	J	5.0	0.079	1	10/05/04	10/08/04	KWG0415153	
Benzo(g,h,i)perylene	**1.9**	J	5.0	0.097	1	10/05/04	10/08/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	53-103	10/08/04	Acceptable
Fluoranthene-d10	79	56-109	10/08/04	Acceptable
Terphenyl-d14	91	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite 2,3,4-4's
Lab Code: K2407004-037

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.3**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415153	
2-Methylnaphthalene	**0.84**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415153	
1-Methylnaphthalene	**0.62**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415153	
Acenaphthylene	ND	U	5.0	0.050	1	10/05/04	10/08/04	KWG0415153	
Acenaphthene	ND	U	5.0	0.074	1	10/05/04	10/08/04	KWG0415153	
Fluorene	**0.31**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415153	
Phenanthrene	**1.3**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415153	
Anthracene	**0.54**	J	5.0	0.055	1	10/05/04	10/08/04	KWG0415153	
Fluoranthene	**4.9**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415153	
Pyrene	**7.0**		5.0	0.070	1	10/05/04	10/08/04	KWG0415153	
Benz(a)anthracene	**2.2**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415153	
Chrysene	**3.0**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415153	
Benzo(b)fluoranthene	**4.1**	J	5.0	0.045	1	10/05/04	10/08/04	KWG0415153	
Benzo(k)fluoranthene	**2.9**	J	5.0	0.081	1	10/05/04	10/08/04	KWG0415153	
Benzo(a)pyrene	**2.4**	J	5.0	0.076	1	10/05/04	10/08/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**1.6**	J	5.0	0.073	1	10/05/04	10/08/04	KWG0415153	
Dibenz(a,h)anthracene	**0.41**	J	5.0	0.079	1	10/05/04	10/08/04	KWG0415153	
Benzo(g,h,i)perylene	**1.9**	J	5.0	0.097	1	10/05/04	10/08/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	71	53-103	10/08/04	Acceptable
Fluoranthene-d10	79	56-109	10/08/04	Acceptable
Terphenyl-d14	90	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite 2,3,4-5's
Lab Code: K2407004-038

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.6**	J	5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**1.1**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**0.76**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**0.36**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.24**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.67**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**1.6**	J	5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**0.92**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**5.8**		5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**8.2**		5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**2.5**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**3.8**	J	5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	**4.4**	J	5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	**3.9**	J	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	**3.1**	J	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**2.0**	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	**0.57**	J	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**2.2**	J	5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	69	53-103	10/07/04	Acceptable
Fluoranthene-d10	76	56-109	10/07/04	Acceptable
Terphenyl-d14	89	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0415153-3

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.57**	J	4.9	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	ND	U	4.9	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	ND	U	4.9	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	ND	U	4.9	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	ND	U	4.9	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	ND	U	4.9	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**0.27**	J	4.9	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	ND	U	4.9	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**0.27**	J	4.9	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**0.18**	J	4.9	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	ND	U	4.9	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	ND	U	4.9	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	ND	U	4.9	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	ND	U	4.9	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	ND	U	4.9	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	ND	U	4.9	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	ND	U	4.9	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	ND	U	4.9	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	70	53-103	10/07/04	Acceptable
Fluoranthene-d10	71	56-109	10/07/04	Acceptable
Terphenyl-d14	97	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407004

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Composite 2,3,4-1's	K2407004-034	60	78	86
Composite 2,3,4-2's	K2407004-035	66	78	91
Composite 2,3,4-3's	K2407004-036	73	79	91
Composite 2,3,4-4's	K2407004-037	71	79	90
Composite 2,3,4-5's	K2407004-038	69	76	89
Method Blank	KWG0415153-3	70	71	97
Composite 2,3,4-5'sMS	KWG0415153-4	74 D	82 D	91 D
Composite 2,3,4-5'sDMS	KWG0415153-5	95 D	106 D	117 D
Lab Control Sample	KWG0415153-1	67 D	73 D	87 D
Duplicate Lab Control Sample	KWG0415153-2	65 D	73 D	86 D

urrogate Recovery Control Limits (%)

ur1 =	Fluorene-d10	53-103
ur2 =	Fluoranthene-d10	56-109
ur3 =	Terphenyl-d14	50-124

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

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

Columbia Analytical Services INC.
An Employee - Owned Company

October 29, 2004

Service Request No: K2407005

Bryan Cotter
PPB Environmental Laboratories, Inc.
6821 SW Archer Road
Gainesville, FL 32608

RE: USACE-Port Everglades 2004 Tissues

Dear Bryan:

Enclosed are the results of the sample(s) submitted to our laboratory on September 11, 2004. For your reference, these analyses have been assigned our service request number K2407005.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Harvey Jacky
Project Chemist

HJ/jeb

ACIL Seal of Excellence Award NELAP Accredited ACIL Seal of Excellence Award

Acronyms

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

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

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

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	PPB Environmental laboratories, Inc.	**Service Request No.:**	K2407005
Project:	USACE - Port Everglades 2004 Tissues	**Date Received:**	9/11/04
Sample Matrix:	Tissue		

CASE NARRATIVE

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

Sample Receipt

Fifteen tissue samples were received for analysis at Columbia Analytical Services on 9/11/04. As instructed, the fifteen discreet worm samples were composited at the laboratory to create five composite samples. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored frozen at –20°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 Silver for sample Composite A-1 was below the lower control limit established for biological tissues analyzed at CAS/Kelso. The recovery of 52% (versus the control limit of 70%) suggest a potential low bias to these samples. The recoveries for Silver in the Standard Reference Materials (SRM) were very good, which indicate the analytical batch was in control. No further corrective action was appropriate.

The matrix spike recovery of Zinc for sample Composite A-1 was outside the CAS control criteria as a result of the heterogeneous character of the sample. The Relative Percent Difference (RPD) for the replicate analysis supports this. Since the unspiked samples contain high analyte concentrations relative to the amount spiked, the variability between replicates was sufficient to bias the percent recoveries outside normal CAS control criteria. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicate the analysis was in control. No further corrective action was appropriate.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate analysis of Zinc in sample Composite A-1 was outside the normal CAS control limits. The variability in the results is attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

Organochlorine Pesticides by EPA Method 8081A

Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for several analytes in the following analytes in Continuing Calibration Verifications (CCV) 1015F048, 1015F074. 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.

Approved by _____ **Date** 11/3/04

Beta-BHC has been reported in sample Composite 2,3,4-3's from a column using average criteria.

Endoslufan II, and 4,4'-DDT have been reported in sample Batch QC from a column using average criteria.
Delta-BHC, Endoslufan II, Endosulfan Sulfate and 4,4'-DDT have been reported in samples Batch QCMS/DMS from a column using average criteria.

4,4'-DDT, and Methoxychlor have been reported in sample Lab Control Sample KWG0415193-3 from a column using average criteria.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of Chlordane for sample Composite B-2 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed are in the range expected for this procedure. No further corrective action was appropriate

Laboratory Control Sample (LCS) Exceptions:
The recovery of Chlordane in sample Laboratory Control Sample KWG0415326-3 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed are in the range expected for this procedure. No further corrective action was appropriate

Sample Confirmation Notes:
The confirmation comparison criteria of 40% difference for 4,4-DDE was exceeded in samples Composite A-1 and Composite E-5. The higher of the two values is reported because no evidence of a matrix interference was observed.

The confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

Elevated Method Reporting Limits:
The reporting limit is elevated for a few analytes in sample in few 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.

The MDL is elevated for Toxaphene in sample Method Blank KWG0415326-7. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the MDL. Note the level of background was relatively low compared to the MDL, so the affect on the results was minimal. The results are flagged to indicate the problem.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the following analyte in the replicate matrix spike analyses of Batch QC was outside control criteria: Aldrin. 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 taken.

PCB Aroclors by EPA Method 8082

Elevated Method Reporting Limits:
The reporting limit is elevated for Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260 and Aroclor 1262 in samples Composite A-1, Composite B-2 Composite C-3, Composite D-4 and Composite E-5. 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.

Approved by _____ **Date** 11/3/04

PCB Congeners by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Congeners 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 PCB 28. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action

Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) 1023F003, 1023F016: Tetrachloro-m-xylene, PCB 8, PCB 206, PCB 209. 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 the following analytes: Tetrachloro-m-xylene and PCB 206 in all samples and QC have been reported from a column using average percent recovery of all analytes in the verification standard.

Surrogate Exceptions:
The upper control criterion was exceeded for the following surrogate in sample Composite A-1: Tetrachloro-m-xylene. The upper control limit is unusually low at 97%. Surrogate recovery is below 115%, within CCV criteria; therefore the data quality is not affected.

Elevated Method Reporting Limits:
The detection/reporting limit is elevated for a few analytes in a few samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection/reporting limit. The results are flagged to indicate the matrix interference.

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

Flag P: The confirmation comparison criteria of 40% difference for PCB 138 was exceeded in samples Composite A-1, Composite B-2, Composite C-3, Composite D-4, Composite E-5. The higher of the two values is reported because no evidence of matrix interference was observed.

Organotin Compounds

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Di-n-butyltin for sample Composite B-2 are not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270C

Initial Calibration (Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID CAL3848: Naphthalene, 2-Methylnaphthalene, Biphenyl, Acenaphthylene, Dibenzofuran, Dibenzothiophene, Phenanthrene, Pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene. 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 12.6%. 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.

Approved by _____ **Date** 11/3/04

Chain of Custody Documentation

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

Samples: 2, 3, 4

CHAIN-OF-CUSTODY RECORD

K2407005

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor: CAS Kelso
		Shipping Method: Fed Ex-P

CLIENT NAME: PPB-USACE-Port Everglades 2004
CLIENT PROJECT:
SITE NAME & ADDRESS: Tissues
SAMPLERS: (Signature)
LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As Per SOW

PRESERVATION
CF Chilled-Filtered
SF Sulfuric-Filtered
NF Nitric-Filtered
C Chilled
S Sulfuric
N Nitric
B Basic/NaOH
Z Zinc
T Thiosulfate
H HCL
Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
	9/10/04	1200			E-PE04-2,3,4-A clams ~~worms~~	T	6	K2407004
					-B		6	
					-C		6	
					-D		6	
					-E		6	
	9/10/04	1200			E-PE04-2,3,4-A worms ~~clams~~		3	K2407005 1/3
					B		3	4/6
					C		3	7/9
					D		3	10/12
					E		3	13/15

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time 9/10/04 1730	Received by: (Signature) Tracy Black CAS	Date / Time 9/11/04 1100
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time

Remarks and Observations

Matrix Types: S Soil or Sediment, WW Wastewater, T Animal Tissue, SW Surface Water, SL Sludge or Solid Waste, MW Marine Water, GW Ground Water, DW Drinking Water, P Plant Tissue, F Filter, A Air, Ot Other (See Remarks)

Columbia Analytical Services Inc.

Cooler Receipt and Preservation Form

#7

Project/Client PPB Work Order K240 7005

Cooler received on 9/11/04 and opened on 9/11/04 by TBlack

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: 79133584 69160 Y (N)
5. COC#

Temperature of cooler(s) upon receipt: (°C)	0.1	0.2		
Temperature Blank: (°C)	n/a	n/a		

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 loose ice - bags
8. **Did all bottles arrive in good condition (unbroken)?** (Y) N
9. Were all bottle labels complete (i.e analysis, preservation, etc.)? (Y) N
10. Did all bottle labels and tags agree with custody papers? (Y) N
11. **Were the correct types of bottles used for the tests indicated?** (Y) N
12. Were all of the preserved bottles received at the lab with the appropriate pH? ~~Y N~~
13. Were VOA vials checked for absence of air bubbles, and if present, noted below? ~~Y N~~
14. Did the bottles originate from CAS/K or a branch laboratory? (Y) N
15. **Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?** ~~Y N~~
16. Was C12/Res negative? ~~Y N~~

Explain any discrepancies: _____

RESOLUTION: _____

Samples that required preservation or received out of temperature:

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

Metals

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 9/10/04
Date Received: 9/11/04

Solids, Total

Prep Method: NONE
Analysis Method: Freeze Dry
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
Composite A-1	K2407005-017	10/5/04	13.0	
Composite B-2	K2407005-018	10/5/04	12.3	
Composite C-3	K2407005-019	10/5/04	13.7	
Composite D-4	K2407005-020	10/5/04	13.0	
Composite E-5	K2407005-021	10/5/04	13.8	

Approved By: _____ Date: 10/20/04

1A/052595

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 9/10/04
Date Received: 9/11/04
Date Extracted: NA
Date Analyzed:

Duplicate Summary
Total Metals

Sample Name: Composite A-1
Lab Code: K2407005-017D
Test Notes:

Units: PERCENT
Basis: Wet

Analyte	Prep Method	Analysis Method	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Solids, Total	NA	Freeze Dry	13.0	13.0	13.0	<1	

Approved By: _____ Date: 10/20/04

DUP/052595

07005ICP.EA1 - DUP 10/13/04

Page No.:

METALS
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INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite A-1
Lab Code: K2407005-017

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.011	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	15.6		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.216		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.6		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	17.5		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.714		
Mercury	7471A	0.029	0.012	1	10/15/04	10/18/04	0.088		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	1.41		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.102		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	170		*N

% Solids: 13.0

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite B-2
Lab Code: K2407005-018

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.011	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	16.7		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.217		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.8		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	11.0		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.717		
Mercury	7471A	0.032	0.013	1	10/15/04	10/18/04	0.084		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	0.87		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.120		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	184		*N

% Solids: 12.3

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite C-3
Lab Code: K2407005-019

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.013	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	16.1		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.205		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.5		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	11.6		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	2.260		
Mercury	7471A	0.029	0.011	1	10/15/04	10/18/04	0.095		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	0.96		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.089		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	69.1		*N

% Solids: 13.7

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite D-4
Lab Code: K2407005-020

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.010	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	15.8		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.212		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.9		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	10.2		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.745		
Mercury	7471A	0.030	0.012	1	10/15/04	10/18/04	0.082		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	0.82		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.095		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	169		*N

% Solids: 13.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite E-5
Lab Code: K2407005-021

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.013	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	17.3		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.228		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.1		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	11.3		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.650		
Mercury	7471A	0.028	0.011	1	10/15/04	10/18/04	0.091		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	1.13		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.099		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	244		*N

% Solids: 13.8

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected:
Date Received:
Units: MG/KG
Basis: Dry

Sample Name: Method Blank
Lab Code: K2407005-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.005	0.001	5	10/8/04	10/12/04	0.001	U	
Arsenic	200.8	0.05	0.00	5	10/8/04	10/12/04	0.01	B	
Cadmium	200.8	0.002	0.001	5	10/8/04	10/12/04	0.001	U	
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.3	U	
Copper	200.8	0.01	0.01	5	10/8/04	10/12/04	0.01	U	
Lead	200.8	0.002	0.001	5	10/8/04	10/12/04	0.001	U	
Mercury	7471A	0.033	0.013	1	10/15/04	10/18/04	0.013	U	
Nickel	200.8	0.02	0.00	5	10/8/04	10/12/04	0.00	U	
Silver	200.8	0.002	0.000	5	10/8/04	10/12/04	0.000	U	N
Zinc	200.8	0.05	0.01	5	10/8/04	10/12/04	0.01	B	*N

% Solids: 100.0

Comments:

METALS

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: PPB Environmental

Service Request: K2407005

Project No.:

Project Name: USACE-Port Everglades 2004 Tissues

Sample No.	Lab Sample ID.
Composite A-1	K2407005-017
Composite A-1D	K2407005-017D
Composite A-1S	K2407005-017S
Composite B-2	K2407005-018
Composite C-3	K2407005-019
Composite D-4	K2407005-020
Composite E-5	K2407005-021
Method Blank	K2407005-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: 10/20/04

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite A-1

Lab Code: K2407005-017

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0065	0.0006	5	10/8/04	10/12/04	0.0014	B	
Arsenic	200.8	0.065	0.004	5	10/8/04	10/12/04	2.030		
Cadmium	200.8	0.0026	0.0006	5	10/8/04	10/12/04	0.0280		
Chromium	6010B	0.06	0.04	1	10/8/04	10/13/04	0.20		
Copper	200.8	0.013	0.009	5	10/8/04	10/12/04	2.270		
Lead	200.8	0.0026	0.0009	5	10/8/04	10/12/04	0.0929		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.012		
Nickel	200.8	0.026	0.004	5	10/8/04	10/12/04	0.184		
Silver	200.8	0.0026	0.0005	5	10/8/04	10/12/04	0.0133		N
Zinc	200.8	0.065	0.008	5	10/8/04	10/12/04	22.1		*N

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite B-2
Lab Code: K2407005-018

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0062	0.0006	5	10/8/04	10/12/04	0.0014	B	
Arsenic	200.8	0.062	0.004	5	10/8/04	10/12/04	2.060		
Cadmium	200.8	0.0025	0.0006	5	10/8/04	10/12/04	0.0266		
Chromium	6010B	0.06	0.04	1	10/8/04	10/13/04	0.10		
Copper	200.8	0.012	0.009	5	10/8/04	10/12/04	1.350		
Lead	200.8	0.0025	0.0009	5	10/8/04	10/12/04	0.0882		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.010		
Nickel	200.8	0.025	0.004	5	10/8/04	10/12/04	0.107		
Silver	200.8	0.0025	0.0005	5	10/8/04	10/12/04	0.0147		N
Zinc	200.8	0.062	0.007	5	10/8/04	10/12/04	22.6		*N

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite C-3
Lab Code: K2407005-019

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0068	0.0007	5	10/8/04	10/12/04	0.0018	B	
Arsenic	200.8	0.068	0.004	5	10/8/04	10/12/04	2.200		
Cadmium	200.8	0.0027	0.0007	5	10/8/04	10/12/04	0.0281		
Chromium	6010B	0.07	0.04	1	10/8/04	10/13/04	0.20		
Copper	200.8	0.014	0.010	5	10/8/04	10/12/04	1.590		
Lead	200.8	0.0027	0.0010	5	10/8/04	10/12/04	0.3090		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.013		
Nickel	200.8	0.027	0.004	5	10/8/04	10/12/04	0.131		
Silver	200.8	0.0027	0.0005	5	10/8/04	10/12/04	0.0122		N
Zinc	200.8	0.068	0.008	5	10/8/04	10/12/04	9.470		*N

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite D-4

Lab Code: K2407005-020

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0065	0.0007	5	10/8/04	10/12/04	0.0013	B	
Arsenic	200.8	0.065	0.004	5	10/8/04	10/12/04	2.060		
Cadmium	200.8	0.0026	0.0007	5	10/8/04	10/12/04	0.0276		
Chromium	6010B	0.07	0.04	1	10/8/04	10/13/04	0.12		
Copper	200.8	0.013	0.009	5	10/8/04	10/12/04	1.330		
Lead	200.8	0.0026	0.0009	5	10/8/04	10/12/04	0.0968		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.011		
Nickel	200.8	0.026	0.004	5	10/8/04	10/12/04	0.106		
Silver	200.8	0.0026	0.0005	5	10/8/04	10/12/04	0.0123		N
Zinc	200.8	0.065	0.008	5	10/8/04	10/12/04	22.0		*N

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite E-5
Lab Code: K2407005-021

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0069	0.0007	5	10/8/04	10/12/04	0.0017	B	
Arsenic	200.8	0.069	0.004	5	10/8/04	10/12/04	2.380		
Cadmium	200.8	0.0028	0.0007	5	10/8/04	10/12/04	0.0315		
Chromium	6010B	0.07	0.04	1	10/8/04	10/13/04	0.15		
Copper	200.8	0.014	0.010	5	10/8/04	10/12/04	1.550		
Lead	200.8	0.0028	0.0010	5	10/8/04	10/12/04	0.2280		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.013		
Nickel	200.8	0.028	0.004	5	10/8/04	10/12/04	0.156		
Silver	200.8	0.0028	0.0006	5	10/8/04	10/12/04	0.0137		N
Zinc	200.8	0.069	0.008	5	10/8/04	10/12/04	33.7		*N

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407005
Date Collected:
Date Received:
Units: MG/KG
Basis: Wet

Sample Name: Method Blank
Lab Code: K2407005-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0050	0.0005	5	10/8/04	10/12/04	0.0005	U	
Arsenic	200.8	0.050	0.003	5	10/8/04	10/12/04	0.007	B	
Cadmium	200.8	0.0020	0.0005	5	10/8/04	10/12/04	0.0005	U	
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.03	U	
Copper	200.8	0.010	0.007	5	10/8/04	10/12/04	0.007	U	
Lead	200.8	0.0020	0.0007	5	10/8/04	10/12/04	0.0007	U	
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.002	U	
Nickel	200.8	0.020	0.003	5	10/8/04	10/12/04	0.003	U	
Silver	200.8	0.0020	0.0004	5	10/8/04	10/12/04	0.0004	U	N
Zinc	200.8	0.050	0.006	5	10/8/04	10/12/04	0.015	B	*N

% Solids: NA

Comments:

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2407005

Project No.:

Project Name: USACE-Port Everglades 2004 T

ICV Source: Inorganic Ventures

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	26.1	105	25.0	25.4	102	24.7	99	200.8
Arsenic	25.0	25.9	104	25.0	24.6	98	26.0	104	200.8
Cadmium	12.5	12.8	102	25.0	24.6	98	24.7	99	200.8
Chromium	500	509	102	500	491	98	501	100	6010B
Copper	12.5	12.8	102	25.0	24.6	98	25.9	104	200.8
Lead	25.0	25.9	104	25.0	25.0	100	24.1	96	200.8
Mercury	5.0	4.84	97	5.0	5.06	101	4.90	98	7471A
Nickel	25.0	25.7	103	25.0	25.0	100	25.6	102	200.8
Silver	12.5	12.8	102	25.0	24.8	99	24.8	99	200.8
Zinc	25.0	25.5	102	25.0	24.8	99	26.3	105	200.8

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2407005

Project No.:

Project Name: USACE-Port Everglades 2004 T

ICV Source:

CCV Source: Various

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony				25.0	24.7	99	24.5	98	200.8
Arsenic				25.0	26.1	105	26.2	105	200.8
Cadmium				25.0	24.4	98	24.1	96	200.8
Chromium				500	501	100	514	103	6010B
Copper				25.0	25.9	104	26.4	106	200.8
Lead				25.0	24.2	97	24.3	97	200.8
Mercury				5.0	5.00	100	4.96	99	7471A
Nickel				25.0	26.0	104	26.1	104	200.8
Silver				25.0	24.5	98	24.5	98	200.8
Zinc				25.0	26.7	107	27.1	108	200.8

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2407005

Project No.:

Project Name: USACE-Port Everglades 2004 T

ICV Source:

CCV Source: Various

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony				25.0	24.4	98	25.0	100	200.8
Arsenic				25.0	26.7	107	28.7	115	200.8
Cadmium				25.0	24.3	97	25.0	100	200.8
Chromium				500	502	100	500	100	6010B
Copper				25.0	26.6	106	27.2	109	200.8
Lead				25.0	24.7	99	23.6	94	200.8
Mercury				5.0	4.94	99	5.04	101	7471A
Nickel				25.0	26.1	104	26.5	106	200.8
Silver				25.0	24.4	98	24.7	99	200.8
Zinc				25.0	27.3	109	28.7	115	200.8

Lipids

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 9/10/2004
Date Received: 9/11/2004

Lipids, Total

Prep Method: EPA 3540
Analysis Method: NOAA
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Sample Name	Lab Code	MRL	Date Extracted	Date Analyzed	Result	Result Notes
Composite A-1	K2407005-017	0.025	10/6/2004	10/13/2004	1.2	
Composite B-2	K2407005-018	0.025	10/6/2004	10/13/2004	1.1	
Composite C-3	K2407005-019	0.025	10/6/2004	10/13/2004	1.3	
Composite D-4	K2407005-020	0.025	10/6/2004	10/13/2004	1.1	
Composite E-5	K2407005-021	0.025	10/6/2004	10/13/2004	1.2	

Approved By: Carl Jones Date: 10-19-04

1A/092099p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 9/10/2004
Date Received: 9/11/2004
Date Extracted: 10/6/2004
Date Analyzed: 10/13/2004

Duplicate Summary
Lipids, Total

Sample Name: Composite A-1
Lab Code: K2407005-017
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Lab Code	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
K2407005-017	EPA 3540	NOAA	0.025	1.2	1.2	1.2	<1	

Approved By: Carl Jones Date: 10-19-04

DUP (22) /091599p

07005SVG.ab1 - DUP 10/14/2004

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 9/10/2004
Date Received: 9/11/2004
Date Extracted: 10/6/2004
Date Analyzed: 10/13/2004

Triplicate Summary
Lipids, Total

Sample Name: Composite A-1
Lab Code: K2407005-017
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Lab Code	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Triplicate Sample Result	Average	Percent Relative Standard Deviation	Result Notes
K2407005-017	EPA 3540	NOAA	0.025	1.2	1.2	1.2	1.2	0.0	

Approved By: Carol Jones Date: 10-19-04

DUP/091599p

07005SVG.ab1 - TRP 10/19/2004

Page No.:

Butyltins

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407005

Cover Page - Organic Analysis Data Package
Butyltins (as cation)

Sample Name	Lab Code	Date Collected	Date Received
Composite A-1	K2407005-017	09/10/2004	09/11/2004
Composite B-2	K2407005-018	09/10/2004	09/11/2004
Composite C-3	K2407005-019	09/10/2004	09/11/2004
Composite D-4	K2407005-020	09/10/2004	09/11/2004
Composite E-5	K2407005-021	09/10/2004	09/11/2004
Composite B-2MS	KWG0415207-1	09/10/2004	09/11/2004
Composite B-2DMS	KWG0415207-2	09/10/2004	09/11/2004

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

Signature: M. Hendrickson

Name: M. Hendrickson

Date: 10/22/04

Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite A-1
Lab Code: K2407005-017

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	**12**		0.99	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**28**		0.99	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**7.4**		0.99	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	75	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite B-2
Lab Code: K2407005-018

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	**11**		0.99	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**30**		0.99	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**8.2**		0.99	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	71	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite C-3
Lab Code: K2407005-019

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	**14**		0.99	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**29**		0.99	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**8.0**		0.99	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	70	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite D-4
Lab Code: K2407005-020

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.98	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	**12**		0.98	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**29**		0.98	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**7.4**		0.98	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	71	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite E-5
Lab Code: K2407005-021

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	**11**		0.99	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**28**		0.99	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**8.2**		0.99	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	70	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: NA
Date Received: NA

Butyltins (as cation)

Sample Name: Method Blank
Lab Code: KWG0415207-4

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	ND	U	1.0	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	ND	U	1.0	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	ND	U	1.0	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	77	26-169	10/15/04	Acceptable

Comments:

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005

Surrogate Recovery Summary
Butyltins (as cation)

Extraction Method: METHOD
Analysis Method: GC-FPD

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Composite A-1	K2407005-017	75
Composite B-2	K2407005-018	71
Composite C-3	K2407005-019	70
Composite D-4	K2407005-020	71
Composite E-5	K2407005-021	70
Method Blank	KWG0415207-4	77
Composite B-2MS	KWG0415207-1	67
Composite B-2DMS	KWG0415207-2	70
Lab Control Sample	KWG0415207-3	71

Surrogate Recovery Control Limits (%)

Sur1 = Tri-n-propyltin 26-169

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

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Extracted: 10/10/2004
Date Analyzed: 10/15/2004

Matrix Spike/Duplicate Matrix Spike Summary
Butyltins (as cation)

Sample Name: Composite B-2
Lab Code: K2407005-018

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low
Extraction Lot: KWG0415207

Analyte Name	Sample Result	Composite B-2MS KWG0415207-1 Matrix Spike			Composite B-2DMS KWG0415207-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Tetra-n-butyltin	ND	23.1	50.3	46	23.9	50.3	47	29-120	3	50
Tri-n-butyltin	11	32.2	51.3	41	35.5	51.3	47	10-155	10	50
Di-n-butyltin	30	47.2E	44.4	40	52.8E	44.4	52	30-131	11	50
n-Butyltin	8.2	23.0	40.4	37	25.8	40.4	44	10-178	11	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Extracted: 10/10/2004
Date Analyzed: 10/15/2004

Lab Control Spike Summary
Butyltins (as cation)

Extraction Method: METHOD
Analysis Method: GC-FPD

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415207

Analyte Name	Lab Control Sample KWG0415207-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
Tetra-n-butyltin	34.0	51.0	67	32-134
Tri-n-butyltin	26.0	52.0	50	39-146
Di-n-butyltin	20.4	45.0	45	42-142
n-Butyltin	15.5	41.0	38	28-125

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.

Organochlorine Pesticides
EPA Method 8081

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407005

Cover Page - Organic Analysis Data Package
Organochlorine Pesticides

Sample Name	Lab Code	Date Collected	Date Received
Composite A-1	K2407005-017	09/10/2004	09/11/2004
Composite B-2	K2407005-018	09/10/2004	09/11/2004
Composite C-3	K2407005-019	09/10/2004	09/11/2004
Composite D-4	K2407005-020	09/10/2004	09/11/2004
Composite E-5	K2407005-021	09/10/2004	09/11/2004
Composite A-1MS	KWG0415326-1	09/10/2004	09/11/2004
Composite A-1DMS	KWG0415326-2	09/10/2004	09/11/2004
Composite B-2MS	KWG0415326-4	09/10/2004	09/11/2004
Composite B-2DMS	KWG0415326-5	09/10/2004	09/11/2004

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

Signature: _____ Name: _____

Date: 10/21/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite A-1
Lab Code: K2407005-017

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/16/04	KWG0415326	
beta-BHC	ND	U	1.0	0.21	1	10/06/04	10/16/04	KWG0415326	
gamma-BHC (Lindane)	ND	Ui	1.0	1.0	1	10/06/04	10/16/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/16/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/16/04	KWG0415326	
Aldrin	**0.79**	JP	1.0	0.20	1	10/06/04	10/16/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/16/04	KWG0415326	
Endosulfan I	**0.47**	J	1.0	0.13	1	10/06/04	10/16/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDE	**2.9**	P	1.0	0.12	1	10/06/04	10/16/04	KWG0415326	
Endrin	ND	Ui	1.0	0.18	1	10/06/04	10/16/04	KWG0415326	
Endosulfan II	**1.2**		1.0	0.35	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDD	ND	Ui	1.0	0.17	1	10/06/04	10/16/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/16/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDT	**0.74**	J	1.0	0.38	1	10/06/04	10/16/04	KWG0415326	
Methoxychlor	ND	U	1.0	0.27	1	10/06/04	10/16/04	KWG0415326	
Toxaphene	ND	Ui	50	14	1	10/06/04	10/16/04	KWG0415326	
Chlordane	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	92	10-171	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite B-2
Lab Code: K2407005-018

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/06/04	10/16/04	KWG0415326	
beta-BHC	ND	U	1.0	0.21	1	10/06/04	10/16/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/16/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/16/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/16/04	KWG0415326	
Aldrin	**0.48**	JP	1.0	0.20	1	10/06/04	10/16/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/16/04	KWG0415326	
Endosulfan I	**0.25**	JP	1.0	0.13	1	10/06/04	10/16/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDE	ND	Ui	1.0	1.0	1	10/06/04	10/16/04	KWG0415326	
Endrin	ND	Ui	1.0	0.23	1	10/06/04	10/16/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDD	**0.18**	J	1.0	0.13	1	10/06/04	10/16/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/16/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDT	**0.95**	J	1.0	0.38	1	10/06/04	10/16/04	KWG0415326	
Methoxychlor	**4.9**		1.0	0.27	1	10/06/04	10/16/04	KWG0415326	
Toxaphene	ND	Ui	50	36	1	10/06/04	10/16/04	KWG0415326	
Chlordane	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	78	10-171	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite C-3
Lab Code: K2407005-019

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	ND	Ui	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	**4.4**		1.0	0.12	1	10/06/04	10/17/04	KWG0415326	
Endrin	ND	Ui	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	**0.74**	J	1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	**0.22**	J	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	**0.61**	J	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	11	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	10	8.0	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	78	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite D-4
Lab Code: K2407005-020

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	0.64	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	**0.42**	JP	1.0	0.20	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	ND	U	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Endrin	ND	Ui	1.0	0.25	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	**0.28**	J	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	ND	Ui	1.0	0.98	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	16	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	10	8.2	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	89	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite E-5
Lab Code: K2407005-021

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	0.30	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	Ui	1.0	0.66	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	**4.7**	P	1.0	0.12	1	10/06/04	10/17/04	KWG0415326	
Endrin	ND	U	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	**0.22**	J	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	ND	Ui	1.0	0.88	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	14	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	12	12	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	90	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0415326-7

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/06/04	10/16/04	KWG0415326	
beta-BHC	ND	U	1.0	0.21	1	10/06/04	10/16/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/16/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/16/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/16/04	KWG0415326	
Aldrin	ND	U	1.0	0.20	1	10/06/04	10/16/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/16/04	KWG0415326	
Endosulfan I	ND	U	1.0	0.13	1	10/06/04	10/16/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDE	ND	U	1.0	0.12	1	10/06/04	10/16/04	KWG0415326	
Endrin	ND	U	1.0	0.099	1	10/06/04	10/16/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDD	ND	U	1.0	0.13	1	10/06/04	10/16/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/16/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDT	ND	U	1.0	0.38	1	10/06/04	10/16/04	KWG0415326	
Methoxychlor	**0.39**	J	1.0	0.27	1	10/06/04	10/16/04	KWG0415326	
Toxaphene	ND	Ui	50	6.6	1	10/06/04	10/16/04	KWG0415326	
Chlordane	ND	U	10	2.7	1	10/06/04	10/16/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	10-171	10/16/04	Acceptable

Comments:

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Composite A-1	K2407005-017	92
Composite B-2	K2407005-018	78
Composite C-3	K2407005-019	78
Composite D-4	K2407005-020	89
Composite E-5	K2407005-021	90
Method Blank	KWG0415326-7	66
Composite A-1MS	KWG0415326-1	71
Composite A-1DMS	KWG0415326-2	78
Composite B-2MS	KWG0415326-4	67
Composite B-2DMS	KWG0415326-5	66
Lab Control Sample	KWG0415326-3	64
Lab Control Sample	KWG0415326-6	66

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-171

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: Composite A-1
Lab Code: K2407005-017

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low
Extraction Lot: KWG0415326

Analyte Name	Sample Result	Composite A-1MS KWG0415326-1 Matrix Spike			Composite A-1DMS KWG0415326-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	ND	14.4	19.9	72	14.4	20.0	72	51-125	0	40
beta-BHC	ND	16.2	19.9	81	16.0	20.0	80	10-164	1	40
gamma-BHC (Lindane)	ND	14.7	19.9	74	14.5	20.0	73	46-130	2	40
delta-BHC	ND	13.8	19.9	69	13.9	20.0	70	52-132	0	40
Heptachlor	ND	13.4	19.9	67	13.7	20.0	68	39-132	2	40
Aldrin	0.79	13.9	19.9	66	14.4	20.0	68	34-145	3	40
Heptachlor Epoxide	ND	13.7	19.9	69	13.8	20.0	69	51-129	1	40
Endosulfan I	0.47	10.7	19.9	51	10.8	20.0	52	37-141	1	40
Dieldrin	ND	13.3	19.9	67	13.4	20.0	67	25-156	0	40
4,4'-DDE	2.9	13.6	19.9	53	14.0	20.0	56	10-181	3	40
Endrin	ND	14.6	19.9	73	14.6	20.0	73	60-131	0	40
Endosulfan II	1.2	11.7	19.9	52	11.9	20.0	54	38-141	2	40
4,4'-DDD	ND	13.5	19.9	68	13.5	20.0	68	11-177	0	40
Endrin Aldehyde	ND	8.29	19.9	42	9.25	20.0	46	10-120	11	40
Endosulfan Sulfate	ND	12.6	19.9	63	12.8	20.0	64	40-134	1	40
4,4'-DDT	0.74	14.9	19.9	71	15.3	20.0	73	14-164	3	40
Methoxychlor	ND	14.4	19.9	72	15.7	20.0	79	32-151	9	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:	PPB Environmental	**Service Request:**	K2407005
Project:	USACE-Port Everglades 2004 Tissues	**Date Extracted:**	10/06/2004
Sample Matrix:	Tissue	**Date Analyzed:**	10/16/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name:	Composite B-2	**Units:**	ug/Kg
Lab Code:	K2407005-018	**Basis:**	Wet
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8081A	**Extraction Lot:**	KWG0415326

		Composite B-2MS KWG0415326-4 Matrix Spike			Composite B-2DMS KWG0415326-5 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Chlordane	ND	116	199	58 *	112	199	56 *	70-130	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.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415326

Analyte Name	Lab Control Sample KWG0415326-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
alpha-BHC	16.3	20.0	82	54-128
beta-BHC	16.0	20.0	80	54-119
gamma-BHC (Lindane)	15.6	20.0	78	58-125
delta-BHC	17.1	20.0	85	61-131
Heptachlor	15.2	20.0	76	48-117
Aldrin	15.4	20.0	77	56-120
Heptachlor Epoxide	15.1	20.0	76	60-118
Endosulfan I	12.2	20.0	61	55-114
Dieldrin	15.8	20.0	79	61-122
4,4'-DDE	15.4	20.0	77	58-131
Endrin	16.1	20.0	80	62-129
Endosulfan II	12.3	20.0	62	55-115
4,4'-DDD	15.0	20.0	75	47-141
Endrin Aldehyde	14.2	20.0	71	10-109
Endosulfan Sulfate	17.0	20.0	85	57-121
4,4'-DDT	16.3	20.0	81	52-143
Methoxychlor	16.3	20.0	81	60-128

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

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

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415326

	Lab Control Sample KWG0415326-6 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Chlordane	135	200	68 *	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.

Polychlorinated Biphenyls
PCB's
EPA Method 8082

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407005

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Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
Composite A-1	K2407005-017	09/10/2004	09/11/2004
Composite B-2	K2407005-018	09/10/2004	09/11/2004
Composite C-3	K2407005-019	09/10/2004	09/11/2004
Composite D-4	K2407005-020	09/10/2004	09/11/2004
Composite E-5	K2407005-021	09/10/2004	09/11/2004
Composite C-3MS	KWG0415328-1	09/10/2004	09/11/2004
Composite C-3DMS	KWG0415328-2	09/10/2004	09/11/2004

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

Signature: _____ Name: Todd Rynhart

Date: 10/20/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite A-1
Lab Code: K2407005-017

Units: ug/Kg
Basis: Wet

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	Ui	10	6.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	20	6.4	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	10	9.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	11	11	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	Ui	10	7.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	6.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	8.9	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite B-2
Lab Code: K2407005-018

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	10	3.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	20	13	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	10	7.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	10	5.3	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	Ui	10	5.2	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	5.4	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	9.5	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	71	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite C-3
Lab Code: K2407005-019

Units: ug/Kg
Basis: Wet

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	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	20	12	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	6.4	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	9.2	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	76	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite D-4
Lab Code: K2407005-020

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	10	4.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	20	20	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	10	7.2	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	10	7.4	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	Ui	10	7.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	6.2	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	9.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite E-5
Lab Code: K2407005-021

Units: ug/Kg
Basis: Wet

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	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	36	36	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	13	13	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	10	9.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	5.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	9.5	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0415328-4

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	U	20	3.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	U	10	3.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	U	10	0.76	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	U	10	1.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	U	10	4.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	83	18-123	10/16/04	Acceptable

Comments:

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
Composite A-1	K2407005-017	82
Composite B-2	K2407005-018	71
Composite C-3	K2407005-019	76
Composite D-4	K2407005-020	74
Composite E-5	K2407005-021	74
Method Blank	KWG0415328-4	83
Composite C-3MS	KWG0415328-1	73
Composite C-3DMS	KWG0415328-2	70
Lab Control Sample	KWG0415328-3	79

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 18-123

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

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: Composite C-3
Lab Code: K2407005-019

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415328

Analyte Name	Sample Result	Composite C-3MS KWG0415328-1 Matrix Spike			Composite C-3DMS KWG0415328-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Aroclor 1016	ND	180	200	90	169	200	85	27-190	6	50
Aroclor 1260	ND	203	200	101	166	200	83	28-130	20	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.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415328

Analyte Name	Lab Control Sample KWG0415328-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
Aroclor 1016	164	200	82	38-150
Aroclor 1260	169	200	85	30-149

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.

Congener Specific PCB's
EPA Method 8082

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407005

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Congener Specific PCBs

Sample Name	Lab Code	Date Collected	Date Received
Composite A-1	K2407005-017	09/10/2004	09/11/2004
Composite B-2	K2407005-018	09/10/2004	09/11/2004
Composite C-3	K2407005-019	09/10/2004	09/11/2004
Composite D-4	K2407005-020	09/10/2004	09/11/2004
Composite E-5	K2407005-021	09/10/2004	09/11/2004
Composite D-4MS	KWG0415329-1	09/10/2004	09/11/2004
Composite D-4DMS	KWG0415329-2	09/10/2004	09/11/2004

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

Signature: _____ Name: _____

Date: 10/29/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite A-1
Lab Code: K2407005-017

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	**0.20**	J	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	Ui	0.50	0.22	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	Ui	0.50	0.13	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.43**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	**1.1**	P	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.65**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**0.98**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.26**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.22**	J	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	
PCB 77	ND	Ui	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.26**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.6**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.28**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	100	34-97	10/23/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite B-2
Lab Code: K2407005-018

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	**0.21**	J	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	Ui	0.50	0.19	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	Ui	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.48**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	**1.2**	P	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.75**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**0.99**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.29**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.26**	J	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	Ui	0.50	0.28	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.29**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.7**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.32**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	92	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite C-3
Lab Code: K2407005-019

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	**0.23**	J	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	Ui	0.50	0.50	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	Ui	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	Ui	0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.47**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	**1.2**	P	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.62**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**0.95**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.28**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.24**	J	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	Ui	0.50	0.24	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.39**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.6**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.28**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	96	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite D-4
Lab Code: K2407005-020

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	**0.20**	J	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	Ui	0.50	0.50	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.44**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	**1.3**	P	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.73**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**1.0**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.30**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.28**	JP	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	
PCB 77	ND	Ui	0.50	0.17	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	Ui	0.50	0.25	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.26**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.8**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.32**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	95	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite E-5
Lab Code: K2407005-021

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	**0.20**	J	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	Ui	0.50	0.50	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	Ui	0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 66	**0.35**	JP	0.50	0.073	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.43**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	**1.2**	P	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.65**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**0.96**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.29**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.27**	J	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	Ui	0.50	0.26	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.30**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	Ui	0.50	0.42	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.7**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.31**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	96	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0415329-4

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/22/04	KWG0415329	
PCB 18	ND	U	0.50	0.11	1	10/06/04	10/22/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/22/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/22/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/22/04	KWG0415329	
PCB 66	ND	U	0.50	0.073	1	10/06/04	10/22/04	KWG0415329	
PCB 101	ND	U	0.50	0.065	1	10/06/04	10/22/04	KWG0415329	
PCB 138	ND	U	0.50	0.23	1	10/06/04	10/22/04	KWG0415329	
PCB 180	ND	U	0.50	0.11	1	10/06/04	10/22/04	KWG0415329	
PCB 187	ND	U	0.50	0.18	1	10/06/04	10/22/04	KWG0415329	
PCB 206	ND	U	0.50	0.077	1	10/06/04	10/22/04	KWG0415329	
PCB 209	ND	U	0.50	0.095	1	10/06/04	10/22/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/22/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/22/04	KWG0415329	
PCB 118	ND	U	0.50	0.10	1	10/06/04	10/22/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/22/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/22/04	KWG0415329	
PCB 153	ND	U	0.50	0.15	1	10/06/04	10/22/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/22/04	KWG0415329	
PCB 170	ND	U	0.50	0.080	1	10/06/04	10/22/04	KWG0415329	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	34-97	10/22/04	Acceptable

Comments:

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	
Composite A-1	K2407005-017	100	*
Composite B-2	K2407005-018	92	
Composite C-3	K2407005-019	96	
Composite D-4	K2407005-020	95	
Composite E-5	K2407005-021	96	
Method Blank	KWG0415329-4	97	
Composite D-4MS	KWG0415329-1	93	
Composite D-4DMS	KWG0415329-2	86	
Lab Control Sample	KWG0415329-3	96	

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 34-97

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

Polynuclear Aromatic Hydrocarbons
EPA Method 8270C

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407005

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Polynuclear Aromatic Hydrocarbons

Sample Name	Lab Code	Date Collected	Date Received
Composite A-1	K2407005-017	09/10/2004	09/11/2004
Composite B-2	K2407005-018	09/10/2004	09/11/2004
Composite C-3	K2407005-019	09/10/2004	09/11/2004
Composite D-4	K2407005-020	09/10/2004	09/11/2004
Composite E-5	K2407005-021	09/10/2004	09/11/2004
Composite A-1MS	KWG0415152-4	09/10/2004	09/11/2004
Composite A-1DMS	KWG0415152-5	09/10/2004	09/11/2004

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

Signature: [signature]

Name: Carl Degner

Date: 10/12/04

Title: SVM Supervisor

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite A-1
Lab Code: K2407005-017

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.6**	J	4.9	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**1.2**	J	4.9	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**1.1**	J	4.9	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.41**	J	4.9	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.36**	J	4.9	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.34**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**1.1**	J	4.9	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	ND	U	4.9	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**1.9**	J	4.9	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**2.2**	J	4.9	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**0.82**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**1.2**	J	4.9	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	**0.71**	J	4.9	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	**0.56**	J	4.9	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	4.9	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**0.53**	J	4.9	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	**0.37**	J	4.9	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	**0.74**	J	4.9	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	62	53-103	10/08/04	Acceptable
Fluoranthene-d10	68	56-109	10/08/04	Acceptable
Terphenyl-d14	74	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite B-2
Lab Code: K2407005-018

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.6**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**1.2**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**1.1**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.35**	J	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.34**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.32**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**0.80**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	ND	U	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**1.5**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**1.9**	J	5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	ND	U	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.93**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**0.27**	J	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	ND	U	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	53-103	10/08/04	Acceptable
Fluoranthene-d10	80	56-109	10/08/04	Acceptable
Terphenyl-d14	90	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite C-3
Lab Code: K2407005-019

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.5**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**1.2**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**1.1**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.34**	J	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.31**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.28**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**0.84**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	ND	U	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**1.5**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**2.0**	J	5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**0.26**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.84**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	**0.39**	J	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	**0.42**	J	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	**1.1**	J	5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**0.30**	J	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	ND	U	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	53-103	10/08/04	Acceptable
Fluoranthene-d10	81	56-109	10/08/04	Acceptable
Terphenyl-d14	88	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite D-4
Lab Code: K2407005-020

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.5**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**1.2**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**1.0**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.45**	J	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.37**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.44**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**0.80**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	ND	U	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**1.4**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**1.8**	J	5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**0.31**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.97**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	**0.47**	J	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	**0.30**	J	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	**0.46**	J	5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	ND	U	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	72	53-103	10/08/04	Acceptable
Fluoranthene-d10	79	56-109	10/08/04	Acceptable
Terphenyl-d14	88	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite E-5
Lab Code: K2407005-021

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.9**	J	4.9	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**1.2**	J	4.9	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**1.1**	J	4.9	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.57**	J	4.9	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.34**	J	4.9	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.33**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**1.3**	J	4.9	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	ND	U	4.9	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**1.9**	J	4.9	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**2.4**	J	4.9	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**0.64**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**1.3**	J	4.9	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	**0.86**	J	4.9	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	**0.65**	J	4.9	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	**0.48**	J	4.9	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**0.73**	J	4.9	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	4.9	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	**0.76**	J	4.9	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	72	53-103	10/08/04	Acceptable
Fluoranthene-d10	80	56-109	10/08/04	Acceptable
Terphenyl-d14	87	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0415152-3

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.34**	J	4.9	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.17**	J	4.9	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	ND	U	4.9	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	ND	U	4.9	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.10**	J	4.9	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.14**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**0.32**	J	4.9	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.18**	J	4.9	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**0.29**	J	4.9	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**0.22**	J	4.9	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	ND	U	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	ND	U	4.9	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	4.9	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	4.9	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	4.9	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	ND	U	4.9	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	4.9	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	ND	U	4.9	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	53-103	10/08/04	Acceptable
Fluoranthene-d10	68	56-109	10/08/04	Acceptable
Terphenyl-d14	94	50-124	10/08/04	Acceptable

Comments:

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
Composite A-1	K2407005-017	62	68	74
Composite B-2	K2407005-018	74	80	90
Composite C-3	K2407005-019	73	81	88
Composite D-4	K2407005-020	72	79	88
Composite E-5	K2407005-021	72	80	87
Method Blank	KWG0415152-3	66	68	94
Composite A-1MS	KWG0415152-4	71 D	81 D	87 D
Composite A-1DMS	KWG0415152-5	78 D	88 D	93 D
Lab Control Sample	KWG0415152-1	70 D	79 D	92 D
Duplicate Lab Control Sample	KWG0415152-2	75 D	90 D	103 D

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	53-103
Sur2 =	Fluoranthene-d10	56-109
Sur3 =	Terphenyl-d14	50-124

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

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Extracted: 10/05/2004
Date Analyzed: 10/08/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name: Composite A-1
Lab Code: K2407005-017

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415152

Analyte Name	Sample Result	Composite A-1MS KWG0415152-4 Matrix Spike			Composite A-1DMS KWG0415152-5 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Naphthalene	1.6	341	491	69	354	491	72	45-110	4	40
2-Methylnaphthalene	1.2	358	491	73	369	491	75	47-116	3	40
1-Methylnaphthalene	1.1	355	491	72	371	491	75	54-93	5	40
Acenaphthylene	0.41	367	491	75	384	491	78	64-115	4	40
Acenaphthene	0.36	368	491	75	387	491	79	61-117	5	40
Fluorene	0.34	374	491	76	393	491	80	68-116	5	40
Phenanthrene	1.1	377	491	77	386	491	78	67-111	2	40
Anthracene	ND	385	491	78	398	491	81	72-115	3	40
Fluoranthene	1.9	410	491	83	423	491	86	66-123	3	40
Pyrene	2.2	442	491	90	453	491	92	58-114	2	40
Benz(a)anthracene	0.82	460	491	93	479	491	97	50-120	4	40
Chrysene	1.2	458	491	93	480	491	98	58-117	5	40
Benzo(b)fluoranthene	0.71	345	491	70	361	491	73	65-120	4	40
Benzo(k)fluoranthene	0.56	360	491	73	372	491	76	65-124	3	40
Benzo(a)pyrene	ND	374	491	76	396	491	81	65-122	6	40
Indeno(1,2,3-cd)pyrene	0.53	411	491	84	446	491	91	47-136	8	40
Dibenz(a,h)anthracene	0.37	455	491	93	491	491	100	52-134	8	40
Benzo(g,h,i)perylene	0.74	389	491	79	415	491	84	57-115	6	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407005
Date Extracted: 10/05/2004
Date Analyzed: 10/08/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415152

	Lab Control Sample KWG0415152-1 Lab Control Spike			Duplicate Lab Control Sample KWG0415152-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	360	500	72	383	500	77	53-103	6	40
2-Methylnaphthalene	366	500	73	394	500	79	27-138	7	40
1-Methylnaphthalene	361	500	72	389	500	78	28-141	7	40
Acenaphthylene	361	500	72	391	500	78	56-111	8	40
Acenaphthene	360	500	72	389	500	78	57-108	8	40
Fluorene	363	500	73	391	500	78	57-114	8	40
Phenanthrene	362	500	72	394	500	79	56-112	8	40
Anthracene	382	500	76	417	500	83	61-116	9	40
Fluoranthene	395	500	79	443	500	89	59-127	12	40
Pyrene	463	500	93	507	500	101	48-121	9	40
Benz(a)anthracene	478	500	96	543	500	109	43-127	13	40
Chrysene	483	500	97	540	500	108	50-127	11	40
Benzo(b)fluoranthene	395	500	79	438	500	88	59-132	10	40
Benzo(k)fluoranthene	401	500	80	451	500	90	57-141	12	40
Benzo(a)pyrene	413	500	83	470	500	94	55-139	13	40
Indeno(1,2,3-cd)pyrene	428	500	86	519	500	104	48-142	19	40
Dibenz(a,h)anthracene	458	500	92	558	500	112	49-144	20	40
Benzo(g,h,i)perylene	403	500	81	467	500	93	53-130	15	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.

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

Columbia Analytical Services INC.
An Employee - Owned Company

November 2, 2004

Service Request No: K2407003

Bryan Cotter
PPB Environmental Laboratories, Inc.
6821 SW Archer Road
Gainesville, FL 32608

RE: USACE-Port Everglades 2004 Tissues

Dear Bryan:

Enclosed are the results of the sample(s) submitted to our laboratory on September 11, 2004. For your reference, these analyses have been assigned our service request number K2407003.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Harvey Jacky
Project Chemist

HJ/jeb

NELAP Accredited ACIL Seal of Excellence Award

Acronyms

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

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

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

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	PPB Environmental Laboratories, Inc.	**Service Request No.:**	K2407003
Project:	USACE - Port Everglades 2004 Tissues	**Date Received:**	9/11/04
Sample Matrix:	Tissue		

CASE NARRATIVE

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

Sample Receipt

Eight tissue samples were received for analysis at Columbia Analytical Services on 9/11/04. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored frozen at –20°C upon receipt at the laboratory.

General Chemistry Parameters

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

Total Metals

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

Organochlorine Pesticides by EPA Method 8081A

Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for several analytes in the following analytes in Continuing Calibration Verifications (CCV) 1012F111, 1012F130, 1012F148. 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 Endrin and Endosulfan I for sample PE04-Pretest-A-wormsMS, PE04-Pretest-A-wormsDMS 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 bias in this matrix. No further corrective action was appropriate.

The matrix spike recovery of Toxaphene for sample BatchQCMS and BatchQCDMS was 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 bias in this matrix. No further corrective action was appropriate.

The recovery of Chlordane in BatchQCMS and BatchQCDMS were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed are in the range expected for this procedure. No further corrective action was taken.

Approved by AC **Date** 11/3/04

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

The confirmation comparison criteria of 40% difference for Endosulfan I, Endosulfan II, gamma-BHC (Lindane), Aldrin, and/or 4,4'-DDE was exceeded in sample(s) PE04-Pretest-A-worms, PE04-Pretest-A-wormsMS, PE04-Pretest-A-wormsDMS, PE04-Pretest-B-worms, and PE04-Pretest-C-worms. The lower of the two values was reported because of an apparent interference on the alternate column that produced the higher value.

Endoslufan II, and 4,4'-DDT have been reported in sample PE04-Pretest-A-worms from a column using average criteria.

Beta-BHC has been reported in sample PE04-Pretest-B-worms from a column using average criteria.

Endoslufan has been reported in sample PE04-Pretest-C-worms from a column using average criteria.

Beta-BHC, delta-BHC, Endoslufan II, Endosulfan Sulfate and 4,4'-DDT have been reported in samples PE04-Pretest-A-wormsMS/DMS from a column using average criteria.

Elevated Method Reporting Limits:
The reporting limit is elevated for several analytes in nearly all 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.

Laboratory Control Sample (LCS) Exceptions:
The recovery of Chlordane in LCS KWG0415193-3 was outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed are in the range expected for this procedure. No further corrective action was taken.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the following analyte in the replicate matrix spike analyses of PE04-Pretest-A-wormsMS/DMS was outside control criteria: Aldrin. 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 taken.

PCB Aroclors by EPA Method 8082

Elevated Method Reporting Limits:
The detection/reporting limit is elevated for several analytes in samples PE04-Pretest-A-worms, PE04-Pretest-B-worms, and PE04-Pretest-C-worms. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection/reporting limit. The results are flagged to indicate the matrix interference.

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

PCB Congeners by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Congeners 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 PCB 28. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action

Approved by _____ **Date** 11/3/04

Continuing Calibration Verification (CCV) Exceptions:
The primary evaluation criterion was exceeded for PCB 123 and PCB 177 in CCV 1020F017, and CCV 1020F028. 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.

Surrogate Exceptions:
The upper control criterion was exceeded for the Tetrachloro-m-xylene surrogate in all samples:. The control limits are unusually narrow at 34-97%. All surrogate revoveries were below 115%, within CCV criteria, therefore the data quality is not affected.

Elevated Method Reporting Limits:
The reporting limit is elevated for a few analytes in a few 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:
Flag JP: The confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

Organotin Compounds

Matrix Spike Recovery Exceptions:
The recovery of n-Butyltin in PE04-Pretest-B-worms was outside the control limits listed in the results summary. The limits are client specific values. Based on the CAS statistical control limits, the recoveries observed are in the range expected for this procedure. No further corrective action was appropriate.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270C

Initial Calibration (ICAL) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in ICAL ID CAL3848: Naphthalene, 2-Methylnaphthalene, Biphenyl, Acenaphthylene, Dibenzofuran, Dibenzothiophene, Phenanthrene, Pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene. 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 12.6%. 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.

Approved by HG **Date** 11/3/04

Chain of Custody Documentation

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

sample: pretest

CHAIN-OF-CUSTODY RECORD

K2407003

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor: CAS Kelso
		Shipping Method: FedEx P

CLIENT NAME: PPB-USACE-Port Everglades 2004 Tissues

CLIENT PROJECT:

SITE NAME & ADDRESS:

SAMPLERS: *(Signature)*

LAB REPORT GOES TO (Client contact person):

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per SOW

PRESERVATION: CF Chilled-Filtered; SF Sulfuric-Filtered; NF Nitric-Filtered; C Chilled; S Sulfuric; N Nitric; B Basic/NaOH; Z Zinc; T Thiosulfate; H HCL; Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
	9/10/04	1200			PE04-Pretest A-clams		1	1
					B		1	2
					C		1	3
ref					D		1	4
ref					E		1	5
	9/10/04	1200			PE04-Pretest A worms		1	6
					B		1	7
					C		1	8

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Precleaned Containers Relinquished by: *(Signature)*		Received by: *(Signature)*	
[signature]	9/10/04 1730	Tracy Black CAS	9/11/04 1100

Remarks and Observations

Matrix Types S Soil or Sediment; WW Wastewater; T Animal Tissue; SW Surface Water; SL Sludge or Solid Waste; MW Marine Water; GW Ground Water; DW Drinking Water; P Plant Tissue; F Filter; A Air; Ot Other (See Remarks)

Columbia Analytical Services Inc.
Cooler Receipt and Preservation Form

PC Harvey

Project/Client PPB Work Order K240 7003

Cooler received on 9/11/04 and opened on 9/11/04 by TBlack

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: 79133584 6960	Y	N
5.	COC#		
	Temperature of cooler(s) upon receipt: (°C) 0.1 / 0.2		
	Temperature Blank: (°C) n/a / n/a		
	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 loose ice - bags		
8.	**Did all bottles arrive in good condition (unbroken)?**	Y	N
9.	Were all bottle labels complete (i.e analysis, preservation, etc.)?	Y	N
10.	Did all bottle labels and tags agree with custody papers?	Y	N
11.	**Were the correct types of bottles used for the tests indicated?**	Y	N
12.	Were all of the preserved bottles received at the lab with the appropriate pH?	~~Y~~	~~N~~
13.	Were VOA vials checked for absence of air bubbles, and if present, noted below?	~~Y~~	~~N~~
14.	Did the bottles originate from CAS/K or a branch laboratory?	Y	N
15.	**Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?**	~~Y~~	~~N~~
16.	Was C12/Res negative?	~~Y~~	~~N~~

Explain any discrepancies:

RESOLUTION:

Samples that required preservation or received out of temperature:

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

Metals

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 9/10/04
Date Received: 9/11/04

Solids, Total

Prep Method: NONE
Analysis Method: Freeze Dry
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
PE04-Pretest-A-clams	K2407003-001	10/5/04	10.2	
PE04-Pretest-B-clams	K2407003-002	10/5/04	10.9	
PE04-Pretest-C-clams	K2407003-003	10/5/04	11.1	
PE04-Pretest-D-clams	K2407003-004	10/5/04	11.2	
PE04-Pretest-E-clams	K2407003-005	10/5/04	13.0	
PE04-Pretest-A-worms	K2407003-006	10/5/04	15.1	
PE04-Pretest-B-worms	K2407003-007	10/5/04	14.6	
PE04-Pretest-C-worms	K2407003-008	10/5/04	15.1	

Approved By: _____ Date: 10/20/04

1A/052595

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 9/10/04
Date Received: 9/11/04
Date Extracted: NA
Date Analyzed: 10/5/04

Duplicate Summary
Total Metals

Sample Name: PE04-Pretest-B-clams
Lab Code: K2407003-002D
Test Notes:

Units: PERCENT
Basis: Wet

Analyte	Prep Method	Analysis Method	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Solids, Total	NA	Freeze Dry	10.9	10.8	10.8	<1	

Approved By: _____ Date: 10/20/04

DUP/052595

07003ICP.EA1 - DUP 10/13/04

Page No.:

METALS
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INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: PE04-Pretest-A-clams
Lab Code: K2407003-001

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.117		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	25.5		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.414		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.8		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	22.1		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.030		
Mercury	7471A	0.04	0.02	1	10/15/04	10/18/04	0.05		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	3.58		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.305		
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	142		

% Solids: 10.2

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: PE04-Pretest-B-clams
Lab Code: K2407003-002

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.088		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	17.5		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.375		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.6		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	15.2		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.556		
Mercury	7471A	0.04	0.01	1	10/15/04	10/18/04	0.05		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	2.41		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.128		
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	111		

% Solids: 10.9

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: PE04-Pretest-C-clams
Lab Code: K2407003-003

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.089		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	21.1		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.419		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.4	B	
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	13.7		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.643		
Mercury	7471A	0.04	0.01	1	10/15/04	10/18/04	0.05		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	2.55		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.115		
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	135		

% Solids: 11.1

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: PE04-Pretest-D-clams
Lab Code: K2407003-004

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.088		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	20.1		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.300		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.8		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	13.2		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.888		
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.05		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	2.61		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.174		
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	95.2		

% Solids: 11.2

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: PE04-Pretest-E-clams
Lab Code: K2407003-005

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.071		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	17.9		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.402		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.6		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	13.2		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.772		
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.04		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	2.27		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.133		
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	97.8		

% Solids: 13.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: PE04-Pretest-A-worms
Lab Code: K2407003-006

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.012	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	12.2		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.228		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	2.2		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	11.6		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.100		
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.12		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	1.47		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.184		
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	267		

% Solids: 15.1

Comments:

METALS

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INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental

Project No.: NA

Project Name: USACE-Port Everglades 2004 Tissues

Matrix: TISSUE

Service Request: K2407003

Date Collected: 09/10/04

Date Received: 09/11/04

Units: MG/KG

Basis: Dry

Sample Name: PE04-Pretest-B-worms

Lab Code: K2407003-007

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.014	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	11.0		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.236		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	3.0		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	11.4		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.380		
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.12		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	1.77		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.164		
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	82.3		

% Solids: 14.6

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Batch QC
Lab Code: K2407003-008

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.011	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	11.4		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.230		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	2.4		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	10.8		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.982		
Mercury	7471A	0.02	0.01	1	10/15/04	10/18/04	0.12		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	1.49		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.173		
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	78.8		

% Solids: 15.1

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected:
Date Received:
Units: MG/KG
Basis: Dry

Sample Name: Method Blank
Lab Code: K2407003-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.005	U	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	0.03	U	
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.005	U	
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.3	U	
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	0.07	U	
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.007	U	
Mercury	7471A	0.03	0.01	1	10/15/04	10/18/04	0.01	U	
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	0.03	U	
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.004	U	
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	0.06	U	

% Solids: 100.0

Comments:

METALS

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: PPB Environmental

Service Request: K2407003

Project No.:

Project Name: USACE-Port Everglades 2004 Tissues

Sample No.	Lab Sample ID.
PE04-Pretest-A-clams	K2407003-001
PE04-Pretest-B-clams	K2407003-002
PE04-Pretest-B-clamsD	K2407003-002D
PE04-Pretest-B-clamsS	K2407003-002S
PE04-Pretest-C-clams	K2407003-003
PE04-Pretest-D-clams	K2407003-004
PE04-Pretest-E-clams	K2407003-005
PE04-Pretest-A-worms	K2407003-006
PE04-Pretest-B-worms	K2407003-007
PE04-Pretest-C-worms	K2407003-008
PE04-Pretest-C-wormsD	K2407003-008D
PE04-Pretest-C-wormsS	K2407003-008S
Method Blank	K2407003-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:

Date:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: PE04-Pretest-A-clams
Lab Code: K2407003-001

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0051	0.0005	5	10/8/04	10/12/04	0.0120		
Arsenic	200.8	0.051	0.003	5	10/8/04	10/12/04	2.600		
Cadmium	200.8	0.0021	0.0005	5	10/8/04	10/12/04	0.0422		
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.18		
Copper	200.8	0.010	0.007	5	10/8/04	10/12/04	2.260		
Lead	200.8	0.0021	0.0007	5	10/8/04	10/12/04	0.1050		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.005		
Nickel	200.8	0.021	0.003	5	10/8/04	10/12/04	0.365		
Silver	200.8	0.0021	0.0004	5	10/8/04	10/12/04	0.0311		
Zinc	200.8	0.051	0.006	5	10/8/04	10/12/04	14.5		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental

Project No.: NA

Project Name: USACE-Port Everglades 2004 Tissues

Matrix: TISSUE

Service Request: K2407003

Date Collected: 09/10/04

Date Received: 09/11/04

Units: MG/KG

Basis: Wet

Sample Name: PE04-Pretest-B-clams

Lab Code: K2407003-002

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0055	0.0005	5	10/8/04	10/12/04	0.0096		
Arsenic	200.8	0.055	0.003	5	10/8/04	10/12/04	1.910		
Cadmium	200.8	0.0022	0.0005	5	10/8/04	10/12/04	0.0409		
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.06		
Copper	200.8	0.011	0.008	5	10/8/04	10/12/04	1.650		
Lead	200.8	0.0022	0.0008	5	10/8/04	10/12/04	0.0606		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.005		
Nickel	200.8	0.022	0.003	5	10/8/04	10/12/04	0.263		
Silver	200.8	0.0022	0.0004	5	10/8/04	10/12/04	0.0139		
Zinc	200.8	0.055	0.007	5	10/8/04	10/12/04	12.1		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: PE04-Pretest-C-clams
Lab Code: K2407003-003

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0055	0.0006	5	10/8/04	10/12/04	0.0099		
Arsenic	200.8	0.055	0.003	5	10/8/04	10/12/04	2.350		
Cadmium	200.8	0.0022	0.0006	5	10/8/04	10/12/04	0.0465		
Chromium	6010B	0.06	0.03	1	10/8/04	10/13/04	0.05	B	
Copper	200.8	0.011	0.008	5	10/8/04	10/12/04	1.520		
Lead	200.8	0.0022	0.0008	5	10/8/04	10/12/04	0.0713		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.005		
Nickel	200.8	0.022	0.003	5	10/8/04	10/12/04	0.283		
Silver	200.8	0.0022	0.0004	5	10/8/04	10/12/04	0.0128		
Zinc	200.8	0.055	0.007	5	10/8/04	10/12/04	15.0		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental

Project No.: NA

Project Name: USACE-Port Everglades 2004 Tissues

Matrix: TISSUE

Service Request: K2407003

Date Collected: 09/10/04

Date Received: 09/11/04

Units: MG/KG

Basis: Wet

Sample Name: PE04-Pretest-D-clams

Lab Code: K2407003-004

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0056	0.0006	5	10/8/04	10/12/04	0.0099		
Arsenic	200.8	0.056	0.003	5	10/8/04	10/12/04	2.250		
Cadmium	200.8	0.0022	0.0006	5	10/8/04	10/12/04	0.0336		
Chromium	6010B	0.06	0.03	1	10/8/04	10/13/04	0.09		
Copper	200.8	0.011	0.008	5	10/8/04	10/12/04	1.480		
Lead	200.8	0.0022	0.0008	5	10/8/04	10/12/04	0.0995		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.006		
Nickel	200.8	0.022	0.003	5	10/8/04	10/12/04	0.293		
Silver	200.8	0.0022	0.0004	5	10/8/04	10/12/04	0.0195		
Zinc	200.8	0.056	0.007	5	10/8/04	10/12/04	10.7		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental

Project No.: NA

Project Name: USACE-Port Everglades 2004 Tissues

Matrix: TISSUE

Service Request: K2407003

Date Collected: 09/10/04

Date Received: 09/11/04

Units: MG/KG

Basis: Wet

Sample Name: PE04-Pretest-E-clams

Lab Code: K2407003-005

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0065	0.0007	5	10/8/04	10/12/04	0.0092		
Arsenic	200.8	0.065	0.004	5	10/8/04	10/12/04	2.330		
Cadmium	200.8	0.0026	0.0007	5	10/8/04	10/12/04	0.0523		
Chromium	6010B	0.07	0.04	1	10/8/04	10/13/04	0.07		
Copper	200.8	0.013	0.009	5	10/8/04	10/12/04	1.710		
Lead	200.8	0.0026	0.0009	5	10/8/04	10/12/04	0.1000		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.005		
Nickel	200.8	0.026	0.004	5	10/8/04	10/12/04	0.296		
Silver	200.8	0.0026	0.0005	5	10/8/04	10/12/04	0.0173		
Zinc	200.8	0.065	0.008	5	10/8/04	10/12/04	12.7		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental

Project No.: NA

Project Name: USACE-Port Everglades 2004 Tissues

Matrix: TISSUE

Service Request: K2407003

Date Collected: 09/10/04

Date Received: 09/11/04

Units: MG/KG

Basis: Wet

Sample Name: PE04-Pretest-A-worms

Lab Code: K2407003-006

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0075	0.0008	5	10/8/04	10/12/04	0.0018	B	
Arsenic	200.8	0.075	0.005	5	10/8/04	10/12/04	1.840		
Cadmium	200.8	0.0030	0.0008	5	10/8/04	10/12/04	0.0344		
Chromium	6010B	0.08	0.05	1	10/8/04	10/13/04	0.33		
Copper	200.8	0.015	0.011	5	10/8/04	10/12/04	1.750		
Lead	200.8	0.0030	0.0011	5	10/8/04	10/12/04	0.1670		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.018		
Nickel	200.8	0.030	0.005	5	10/8/04	10/12/04	0.221		
Silver	200.8	0.0030	0.0006	5	10/8/04	10/12/04	0.0278		
Zinc	200.8	0.075	0.009	5	10/8/04	10/12/04	40.4		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: PE04-Pretest-B-worms
Lab Code: K2407003-007

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0073	0.0007	5	10/8/04	10/12/04	0.0020	B	
Arsenic	200.8	0.073	0.004	5	10/8/04	10/12/04	1.610		
Cadmium	200.8	0.0029	0.0007	5	10/8/04	10/12/04	0.0344		
Chromium	6010B	0.07	0.04	1	10/8/04	10/13/04	0.44		
Copper	200.8	0.015	0.010	5	10/8/04	10/12/04	1.670		
Lead	200.8	0.0029	0.0010	5	10/8/04	10/12/04	0.2010		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.018		
Nickel	200.8	0.029	0.004	5	10/8/04	10/12/04	0.258		
Silver	200.8	0.0029	0.0006	5	10/8/04	10/12/04	0.0239		
Zinc	200.8	0.073	0.009	5	10/8/04	10/12/04	12.0		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: PE04-Pretest-C-worms
Lab Code: K2407003-008

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0076	0.0008	5	10/8/04	10/12/04	0.0017	B	
Arsenic	200.8	0.076	0.005	5	10/8/04	10/12/04	1.710		
Cadmium	200.8	0.0030	0.0008	5	10/8/04	10/12/04	0.0347		
Chromium	6010B	0.08	0.05	1	10/8/04	10/13/04	0.37		
Copper	200.8	0.015	0.011	5	10/8/04	10/12/04	1.640		
Lead	200.8	0.0030	0.0011	5	10/8/04	10/12/04	0.1480		
Mercury	7471A	0.004	0.001	1	10/15/04	10/18/04	0.019		
Nickel	200.8	0.030	0.005	5	10/8/04	10/12/04	0.224		
Silver	200.8	0.0030	0.0006	5	10/8/04	10/12/04	0.0261		
Zinc	200.8	0.076	0.009	5	10/8/04	10/12/04	11.9		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407003
Date Collected:
Date Received:
Units: MG/KG
Basis: Wet

Sample Name: Method Blank
Lab Code: K2407003-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0050	0.0005	5	10/8/04	10/12/04	0.0005	U	
Arsenic	200.8	0.050	0.003	5	10/8/04	10/12/04	0.003	U	
Cadmium	200.8	0.0020	0.0005	5	10/8/04	10/12/04	0.0005	U	
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.03	U	
Copper	200.8	0.010	0.007	5	10/8/04	10/12/04	0.007	U	
Lead	200.8	0.0020	0.0007	5	10/8/04	10/12/04	0.0007	U	
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.002	U	
Nickel	200.8	0.020	0.003	5	10/8/04	10/12/04	0.003	U	
Silver	200.8	0.0020	0.0004	5	10/8/04	10/12/04	0.0004	U	
Zinc	200.8	0.050	0.006	5	10/8/04	10/12/04	0.006	U	

% Solids: NA

Comments:

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2407003

Project No.:

Project Name: USACE-Port Everglades 2004 T

ICV Source: Inorganic Ventures

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	26.1	105	25.0	25.4	102	24.7	99	200.8
Arsenic	25.0	25.9	104	25.0	24.6	98	26.0	104	200.8
Cadmium	12.5	12.8	102	25.0	24.6	98	24.7	99	200.8
Chromium	500	509	102	500	491	98	501	100	6010B
Copper	12.5	12.8	102	25.0	24.6	98	25.9	104	200.8
Lead	25.0	25.9	104	25.0	25.0	100	24.1	96	200.8
Mercury	5.0	4.84	97	5.0	5.06	101	4.90	98	7471A
Nickel	25.0	25.7	103	25.0	25.0	100	25.6	102	200.8
Silver	12.5	12.8	102	25.0	24.8	99	24.8	99	200.8
Zinc	25.0	25.5	102	25.0	24.8	99	26.3	105	200.8

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2407003

Project No.:

Project Name: USACE-Port Everglades 2004 T

ICV Source:

CCV Source: Various

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony				25.0	24.7	99	24.5	98	200.8
Arsenic				25.0	26.1	105	26.2	105	200.8
Cadmium				25.0	24.4	98	24.1	96	200.8
Chromium				500	501	100	514	103	6010B
Copper				25.0	25.9	104	26.4	106	200.8
Lead				25.0	24.2	97	24.3	97	200.8
Mercury				5.0	5.00	100	4.96	99	7471A
Nickel				25.0	26.0	104	26.1	104	200.8
Silver				25.0	24.5	98	24.5	98	200.8
Zinc				25.0	26.7	107	27.1	108	200.8

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2407003

Project No.:

Project Name: USACE-Port Everglades 2004 T

ICV Source:

CCV Source: Various

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony				25.0	24.4	98	25.0	100	200.8
Arsenic				25.0	26.7	107	28.7	115	200.8
Cadmium				25.0	24.3	97	25.0	100	200.8
Chromium				500	502	100	500	100	6010B
Copper				25.0	26.6	106	27.2	109	200.8
Lead				25.0	24.7	99	23.6	94	200.8
Mercury				5.0	4.94	99	5.04	101	7471A
Nickel				25.0	26.1	104	26.5	106	200.8
Silver				25.0	24.4	98	24.7	99	200.8
Zinc				25.0	27.3	109	28.7	115	200.8

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2407003

Project No.:

Project Name: USACE-Port Everglades 2004 T

ICV Source:

CCV Source: Various

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Mercury				5.0	5.09	102			7471A

Butyltins

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407003

Cover Page - Organic Analysis Data Package
Butyltins (as cation)

Sample Name	Lab Code	Date Collected	Date Received
PE04-Pretest-A-clams	K2407003-001	09/10/2004	09/11/2004
PE04-Pretest-B-clams	K2407003-002	09/10/2004	09/11/2004
PE04-Pretest-C-clams	K2407003-003	09/10/2004	09/11/2004
PE04-Pretest-D-clams	K2407003-004	09/10/2004	09/11/2004
PE04-Pretest-E-clams	K2407003-005	09/10/2004	09/11/2004
PE04-Pretest-A-worms	K2407003-006	09/10/2004	09/11/2004
PE04-Pretest-B-worms	K2407003-007	09/10/2004	09/11/2004
PE04-Pretest-C-worms	K2407003-008	09/10/2004	09/11/2004
PE04-Pretest-B-wormsMS	KWG0415205-1	09/10/2004	09/11/2004
PE04-Pretest-B-wormsDMS	KWG0415205-2	09/10/2004	09/11/2004

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

Signature: _____ Name: _____

Date: 11/1/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	PE04-Pretest-A-clams	**Units:**	ug/Kg
Lab Code:	K2407003-001	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	ND	U	1.0	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	**3.4**		1.0	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	48	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	PE04-Pretest-B-clams	**Units:**	ug/Kg
Lab Code:	K2407003-002	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	**0.42**	J	1.0	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	**1.5**		1.0	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	48	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	PE04-Pretest-C-clams	**Units:**	ug/Kg
Lab Code:	K2407003-003	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	ND	U	0.99	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	**4.4**		0.99	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	**0.53**	J	0.99	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	44	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	PE04-Pretest-D-clams	**Units:**	ug/Kg
Lab Code:	K2407003-004	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	ND	U	1.0	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	**21**		1.0	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	**1.6**		1.0	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	47	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: PE04-Pretest-E-clams
Lab Code: K2407003-005

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	ND	U	0.99	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	**9.5**		0.99	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	**1.3**		0.99	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	47	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	PE04-Pretest-A-worms	**Units:**	ug/Kg
Lab Code:	K2407003-006	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	ND	U	1.0	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	ND	U	1.0	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	47	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	PE04-Pretest-B-worms	**Units:**	ug/Kg
Lab Code:	K2407003-007	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	ND	U	0.99	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	ND	U	0.99	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	ND	U	0.99	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	49	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	PE04-Pretest-C-worms	**Units:**	ug/Kg
Lab Code:	K2407003-008	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	ND	U	1.0	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	ND	U	1.0	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	49	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	NA
Sample Matrix:	Tissue	**Date Received:**	NA

Butyltins (as cation)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG0415205-4	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	
Tri-n-butyltin	ND	U	1.0	0.33	1	10/24/04	10/27/04	KWG0415205	
Di-n-butyltin	ND	U	1.0	0.35	1	10/24/04	10/27/04	KWG0415205	
n-Butyltin	ND	U	1.0	0.38	1	10/24/04	10/27/04	KWG0415205	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	50	26-169	10/27/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003

Surrogate Recovery Summary
Butyltins (as cation)

Extraction Method: METHOD
Analysis Method: GC-FPD

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
PE04-Pretest-A-clams	K2407003-001	48
PE04-Pretest-B-clams	K2407003-002	48
PE04-Pretest-C-clams	K2407003-003	44
PE04-Pretest-D-clams	K2407003-004	47
PE04-Pretest-E-clams	K2407003-005	47
PE04-Pretest-A-worms	K2407003-006	47
PE04-Pretest-B-worms	K2407003-007	49
PE04-Pretest-C-worms	K2407003-008	49
Method Blank	KWG0415205-4	50
PE04-Pretest-B-wormsMS	KWG0415205-1	45
PE04-Pretest-B-wormsDMS	KWG0415205-2	45
Lab Control Sample	KWG0415205-3	49
Duplicate Lab Control Sample	KWG0415205-5	45

Surrogate Recovery Control Limits (%)

Sur1 = Tri-n-propyltin 26-169

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:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Extracted:**	10/24/2004
Sample Matrix:	Tissue	**Date Analyzed:**	10/27/2004

Matrix Spike/Duplicate Matrix Spike Summary
Butyltins (as cation)

Sample Name:	PE04-Pretest-B-worms	**Units:**	ug/Kg
Lab Code:	K2407003-007	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD	**Extraction Lot:**	KWG0415205

		PE04-Pretest-B-wormsMS KWG0415205-1 Matrix Spike			PE04-Pretest-B-wormsDMS KWG0415205-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Tetra-n-butyltin	ND	19.3	50.1	38	19.1	50.2	38	29-120	1	50
Tri-n-butyltin	ND	18.6	51.1	36	17.7	51.2	35	10-155	5	50
Di-n-butyltin	ND	13.9	44.2	31	16.6	44.3	37	30-131	18	50
n-Butyltin	ND	7.19	40.3	18	7.19	40.4	18	10-178	0	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Extracted: 10/24/2004
Date Analyzed: 10/27/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Butyltins (as cation)

Extraction Method: METHOD
Analysis Method: GC-FPD

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415205

	Lab Control Sample KWG0415205-3 Lab Control Spike			Duplicate Lab Control Sample KWG0415205-5 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Tetra-n-butyltin	25.3	25.5	99	23.6	25.5	92	32-134	7	40
Tri-n-butyltin	20.9	26.0	81	19.6	26.0	75	39-146	7	40
Di-n-butyltin	16.2	22.5	72	15.4	22.5	69	42-142	5	40
n-Butyltin	11.7	20.5	57	10.8	20.5	53	28-125	8	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.

Lipids

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 9/10/2004
Date Received: 9/11/2004

Lipids, Total

Prep Method: EPA 3540
Analysis Method: NOAA
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Sample Name	Lab Code	MRL	Date Extracted	Date Analyzed	Result	Result Notes
PE04-Pretest-A-clams	K2407003-001	0.025	10/5/2004	10/14/2004	0.41	
PE04-Pretest-B-clams	K2407003-002	0.025	10/5/2004	10/14/2004	0.59	
PE04-Pretest-C-clams	K2407003-003	0.025	10/5/2004	10/14/2004	0.67	
PE04-Pretest-D-clams	K2407003-004	0.025	10/5/2004	10/14/2004	0.62	
PE04-Pretest-E-clams	K2407003-005	0.025	10/5/2004	10/14/2004	0.68	
PE04-Pretest-A-worms	K2407003-006	0.025	10/5/2004	10/14/2004	0.83	
PE04-Pretest-B-worms	K2407003-007	0.025	10/5/2004	10/14/2004	0.86	
PE04-Pretest-C-worms	K2407003-008	0.025	10/5/2004	10/14/2004	0.93	

Approved By: Carol Jones Date: 10-19-04

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07003SVG.ab1 - Sample 10/18/2004

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 9/10/2004
Date Received: 9/11/2004
Date Extracted: 10/5/2004
Date Analyzed: 10/14/2004

Duplicate Summary
Lipids, Total

Sample Name: PE04-Pretest-C-worms
Lab Code: K2407003-008
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Lab Code	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
K2407003-008	EPA 3540	NOAA	0.025	0.93	1.2	1.1	25	

Approved By: Carl Jones Date: 10-19-04

DUP (22) /091599p

07003SVG.ab1 - DUP 10/18/2004

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 9/10/2004
Date Received: 9/11/2004
Date Extracted: 10/5/2004
Date Analyzed: 10/14/2004

Triplicate Summary
Lipids, Total

Sample Name: PE04-Pretest-C-worms
Lab Code: K2407003-008
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Lab Code	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Triplicate Sample Result	Average	Percent Relative Standard Deviation	Result Notes
K2407003-008	EPA 3540	NOAA	0.025	0.93	1.2	1.2	1.1	14	

Approved By: Carol Jones Date: 10-19-04

DUP/091599p

07003SVG.ab1 - TRP 10/18/2004

Page No.:

Organochlorine Pesticides
EPA Method 8081

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407003

Cover Page - Organic Analysis Data Package
Organochlorine Pesticides

Sample Name	Lab Code	Date Collected	Date Received
PE04-Pretest-A-clams	K2407003-001	09/10/2004	09/11/2004
PE04-Pretest-B-clams	K2407003-002	09/10/2004	09/11/2004
PE04-Pretest-C-clams	K2407003-003	09/10/2004	09/11/2004
PE04-Pretest-D-clams	K2407003-004	09/10/2004	09/11/2004
PE04-Pretest-E-clams	K2407003-005	09/10/2004	09/11/2004
PE04-Pretest-A-worms	K2407003-006	09/10/2004	09/11/2004
PE04-Pretest-B-worms	K2407003-007	09/10/2004	09/11/2004
PE04-Pretest-C-worms	K2407003-008	09/10/2004	09/11/2004
PE04-Pretest-A-wormsMS	KWG0415193-1	09/10/2004	09/11/2004
PE04-Pretest-A-wormsDMS	KWG0415193-2	09/10/2004	09/11/2004

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

Signature: _____ Name: _____

Date: 10/21/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: PE04-Pretest-A-clams
Lab Code: K2407003-001

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/05/04	10/12/04	KWG0415193	
beta-BHC	ND	Ui	1.0	1.0	1	10/05/04	10/12/04	KWG0415193	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/05/04	10/12/04	KWG0415193	
delta-BHC	ND	U	1.0	0.34	1	10/05/04	10/12/04	KWG0415193	
Heptachlor	ND	U	1.0	0.45	1	10/05/04	10/12/04	KWG0415193	
Aldrin	ND	U	1.0	0.20	1	10/05/04	10/12/04	KWG0415193	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/05/04	10/12/04	KWG0415193	
Endosulfan I	ND	U	1.0	0.13	1	10/05/04	10/12/04	KWG0415193	
Dieldrin	ND	Ui	1.0	1.0	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDE	ND	U	1.0	0.12	1	10/05/04	10/12/04	KWG0415193	
Endrin	ND	Ui	1.0	0.45	1	10/05/04	10/12/04	KWG0415193	
Endosulfan II	ND	U	1.0	0.35	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDD	ND	U	1.0	0.13	1	10/05/04	10/12/04	KWG0415193	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/05/04	10/12/04	KWG0415193	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDT	ND	U	1.0	0.38	1	10/05/04	10/12/04	KWG0415193	
Methoxychlor	ND	Ui	1.0	1.0	1	10/05/04	10/12/04	KWG0415193	
Toxaphene	ND	Ui	50	34	1	10/05/04	10/12/04	KWG0415193	
Chlordane	ND	Ui	10	10	1	10/05/04	10/12/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	84	10-171	10/12/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: PE04-Pretest-B-clams
Lab Code: K2407003-002

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/05/04	10/12/04	KWG0415193	
beta-BHC	ND	Ui	1.0	1.0	1	10/05/04	10/12/04	KWG0415193	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/05/04	10/12/04	KWG0415193	
delta-BHC	ND	U	1.0	0.34	1	10/05/04	10/12/04	KWG0415193	
Heptachlor	ND	Ui	1.0	1.0	1	10/05/04	10/12/04	KWG0415193	
Aldrin	ND	U	1.0	0.20	1	10/05/04	10/12/04	KWG0415193	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/05/04	10/12/04	KWG0415193	
Endosulfan I	ND	U	1.0	0.13	1	10/05/04	10/12/04	KWG0415193	
Dieldrin	ND	Ui	1.0	1.0	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDE	ND	U	1.0	0.12	1	10/05/04	10/12/04	KWG0415193	
Endrin	ND	Ui	1.0	0.16	1	10/05/04	10/12/04	KWG0415193	
Endosulfan II	ND	U	1.0	0.35	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDD	ND	U	1.0	0.13	1	10/05/04	10/12/04	KWG0415193	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/05/04	10/12/04	KWG0415193	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDT	ND	U	1.0	0.38	1	10/05/04	10/12/04	KWG0415193	
Methoxychlor	ND	Ui	1.0	1.0	1	10/05/04	10/12/04	KWG0415193	
Toxaphene	ND	Ui	50	12	1	10/05/04	10/12/04	KWG0415193	
Chlordane	ND	Ui	10	5.5	1	10/05/04	10/12/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	75	10-171	10/12/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: PE04-Pretest-C-clams
Lab Code: K2407003-003

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.99	0.16	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
gamma-BHC (Lindane)	ND	U	0.99	0.28	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	U	0.99	0.34	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Aldrin	ND	U	0.99	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	U	0.99	0.15	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	U	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	ND	U	0.99	0.12	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	ND	U	0.99	0.35	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDD	ND	U	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	0.99	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	0.99	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	ND	U	0.99	0.38	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	14	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	U	9.9	2.7	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	83	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: PE04-Pretest-D-clams
Lab Code: K2407003-004

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	ND	U	1.0	0.21	1	10/05/04	10/13/04	KWG0415193	
gamma-BHC (Lindane)	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	U	1.0	0.34	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Aldrin	ND	U	1.0	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	U	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	U	1.0	0.11	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	ND	U	1.0	0.12	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	U	1.0	0.099	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	ND	U	1.0	0.35	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDD	ND	U	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	ND	U	1.0	0.38	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	15	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	U	10	2.7	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	89	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: PE04-Pretest-E-clams
Lab Code: K2407003-005

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	ND	U	1.0	0.21	1	10/05/04	10/13/04	KWG0415193	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	U	1.0	0.34	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Aldrin	ND	U	1.0	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	U	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	U	1.0	0.11	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	ND	Ui	1.0	0.37	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	Ui	1.0	0.11	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	ND	U	1.0	0.35	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDD	ND	U	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	ND	U	1.0	0.38	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	15	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	U	10	2.7	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	87	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: PE04-Pretest-A-worms
Lab Code: K2407003-006

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	0.71	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	ND	Ui	3.9	3.9	1	10/05/04	10/13/04	KWG0415193	
gamma-BHC (Lindane)	ND	Ui	1.1	1.1	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	U	1.0	0.34	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	U	1.0	0.45	1	10/05/04	10/13/04	KWG0415193	
Aldrin	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	Ui	1.0	0.44	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	Ui	1.0	0.29	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	**1.9**	P	1.0	0.35	1	10/05/04	10/13/04	KWG0415193	*
4,4'-DDD	ND	U	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	**0.78**	JP	1.0	0.38	1	10/05/04	10/13/04	KWG0415193	*
Methoxychlor	ND	U	1.0	0.27	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	9.6	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	Ui	10	6.8	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	78	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: PE04-Pretest-B-worms
Lab Code: K2407003-007

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	**4.2**		1.0	0.21	1	10/05/04	10/13/04	KWG0415193	*
gamma-BHC (Lindane)	**1.6**	P	1.0	0.28	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	U	1.0	0.34	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	U	1.0	0.45	1	10/05/04	10/13/04	KWG0415193	
Aldrin	**2.5**	P	1.0	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	ND	Ui	1.0	0.59	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	ND	U	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	Ui	1.0	0.18	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	ND	Ui	1.0	1.0	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	Ui	1.0	0.35	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	**1.3**	P	1.0	0.35	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDD	ND	U	1.0	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	**0.72**	JP	1.0	0.38	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	U	1.0	0.27	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	14	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	Ui	10	9.1	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	77	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: PE04-Pretest-C-worms
Lab Code: K2407003-008

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
beta-BHC	**5.9**		0.99	0.21	1	10/05/04	10/13/04	KWG0415193	
gamma-BHC (Lindane)	**3.8**		0.99	0.28	1	10/05/04	10/13/04	KWG0415193	
delta-BHC	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Heptachlor	ND	U	0.99	0.45	1	10/05/04	10/13/04	KWG0415193	
Aldrin	**1.5**	P	0.99	0.20	1	10/05/04	10/13/04	KWG0415193	
Heptachlor Epoxide	**0.68**	J	0.99	0.15	1	10/05/04	10/13/04	KWG0415193	
Endosulfan I	**1.2**	P	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Dieldrin	ND	U	0.99	0.11	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDE	**5.5**	P	0.99	0.12	1	10/05/04	10/13/04	KWG0415193	
Endrin	ND	Ui	0.99	0.75	1	10/05/04	10/13/04	KWG0415193	
Endosulfan II	**1.5**	P	0.99	0.35	1	10/05/04	10/13/04	KWG0415193	*
4,4'-DDD	ND	U	0.99	0.13	1	10/05/04	10/13/04	KWG0415193	
Endrin Aldehyde	ND	U	0.99	0.17	1	10/05/04	10/13/04	KWG0415193	
Endosulfan Sulfate	ND	U	0.99	0.27	1	10/05/04	10/13/04	KWG0415193	
4,4'-DDT	ND	Ui	0.99	0.99	1	10/05/04	10/13/04	KWG0415193	
Methoxychlor	ND	Ui	0.99	0.31	1	10/05/04	10/13/04	KWG0415193	
Toxaphene	ND	Ui	50	13	1	10/05/04	10/13/04	KWG0415193	
Chlordane	ND	Ui	9.9	6.6	1	10/05/04	10/13/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	71	10-171	10/13/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0415193-4

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.99	0.16	1	10/05/04	10/12/04	KWG0415193	
beta-BHC	ND	U	0.99	0.21	1	10/05/04	10/12/04	KWG0415193	
gamma-BHC (Lindane)	ND	U	0.99	0.28	1	10/05/04	10/12/04	KWG0415193	
delta-BHC	ND	U	0.99	0.34	1	10/05/04	10/12/04	KWG0415193	
Heptachlor	ND	U	0.99	0.45	1	10/05/04	10/12/04	KWG0415193	
Aldrin	ND	U	0.99	0.20	1	10/05/04	10/12/04	KWG0415193	
Heptachlor Epoxide	ND	U	0.99	0.15	1	10/05/04	10/12/04	KWG0415193	
Endosulfan I	ND	U	0.99	0.13	1	10/05/04	10/12/04	KWG0415193	
Dieldrin	ND	U	0.99	0.11	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDE	ND	U	0.99	0.12	1	10/05/04	10/12/04	KWG0415193	
Endrin	ND	U	0.99	0.099	1	10/05/04	10/12/04	KWG0415193	
Endosulfan II	ND	U	0.99	0.35	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDD	ND	U	0.99	0.13	1	10/05/04	10/12/04	KWG0415193	
Endrin Aldehyde	ND	U	0.99	0.17	1	10/05/04	10/12/04	KWG0415193	
Endosulfan Sulfate	ND	U	0.99	0.27	1	10/05/04	10/12/04	KWG0415193	
4,4'-DDT	ND	U	0.99	0.38	1	10/05/04	10/12/04	KWG0415193	
Methoxychlor	ND	U	0.99	0.27	1	10/05/04	10/12/04	KWG0415193	
Toxaphene	ND	U	50	5.8	1	10/05/04	10/12/04	KWG0415193	
Chlordane	ND	U	9.9	2.7	1	10/05/04	10/12/04	KWG0415193	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	10-171	10/12/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
PE04-Pretest-A-clams	K2407003-001	84
PE04-Pretest-B-clams	K2407003-002	75
PE04-Pretest-C-clams	K2407003-003	83
PE04-Pretest-D-clams	K2407003-004	89
PE04-Pretest-E-clams	K2407003-005	87
PE04-Pretest-A-worms	K2407003-006	78
PE04-Pretest-B-worms	K2407003-007	77
PE04-Pretest-C-worms	K2407003-008	71
Method Blank	KWG0415193-4	72
Batch QC	K2407004-038	82
PE04-Pretest-A-wormsMS	KWG0415193-1	75
PE04-Pretest-A-wormsDMS	KWG0415193-2	74
Batch QCMS	KWG0415193-5	73
Batch QCDMS	KWG0415193-6	75
Lab Control Sample	KWG0415193-3	71

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-171

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Extracted: 10/05/2004
Date Analyzed: 10/13/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: PE04-Pretest-A-worms
Lab Code: K2407003-006

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low
Extraction Lot: KWG0415193

Analyte Name	Sample Result	PE04-Pretest-A-wormsMS KWG0415193-1 Matrix Spike			PE04-Pretest-A-wormsDMS KWG0415193-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	ND	14.3	19.8	72	13.6	19.8	69	51-125	5	40
beta-BHC	ND	14.7	19.8	74 #	16.6	19.8	84 #	10-164	12	40
gamma-BHC (Lindane)	ND	13.7	19.8	69 #	13.7	19.8	70 #	46-130	0	40
delta-BHC	ND	11.2	19.8	57	10.8	19.8	55	52-132	4	40
Heptachlor	ND	12.8	19.8	65	12.0	19.8	61	39-132	6	40
Aldrin	ND	13.0	19.8	66	7.38	19.8	37	34-145	55 *	40
Heptachlor Epoxide	ND	11.8	19.8	60	11.7	19.8	59	51-129	1	40
Endosulfan I	ND	10.3	19.8	52	9.15	19.8	46	37-141	11	40
Dieldrin	ND	10.8	19.8	55	11.4	19.8	58	25-156	5	40
4,4'-DDE	ND	11.1	19.8	56	11.4	19.8	58	10-181	3	40
Endrin	ND	11.8	19.8	60	11.4	19.8	58 *	60-131	3	40
Endosulfan II	1.9	12.6	19.8	54	10.8	19.8	45	38-141	15	40
4,4'-DDD	ND	11.0	19.8	56	10.2	19.8	52	11-177	7	40
Endrin Aldehyde	ND	7.50	19.8	38	7.12	19.8	36	10-120	5	40
Endosulfan Sulfate	ND	11.1	19.8	56	11.2	19.8	57	40-134	1	40
4,4'-DDT	0.78	12.8	19.8	61	13.7	19.8	65	14-164	7	40
Methoxychlor	ND	12.8	19.8	65	12.9	19.8	65	32-151	1	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Extracted: 10/05/2004
Date Analyzed: 10/13/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: Batch QC
Lab Code: K2407004-038

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415193

Analyte Name	Sample Result	Batch QCMS KWG0415193-5 Matrix Spike			Batch QCDMS KWG0415193-6 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Toxaphene	ND	131	198	66 *	157	198	79	70-130	18	40
Chlordane	ND	96.5	198	49 *	94.9	198	48 *	70-130	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Extracted: 10/05/2004
Date Analyzed: 10/12/2004

Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415193

Analyte Name	Lab Control Sample KWG0415193-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
alpha-BHC	15.4	19.7	79	54-128
beta-BHC	14.4	19.7	73	54-119
gamma-BHC (Lindane)	14.8	19.7	75	58-125
delta-BHC	16.0	19.7	81	61-131
Heptachlor	14.6	19.7	74	48-117
Aldrin	14.6	19.7	74	56-120
Heptachlor Epoxide	14.9	19.7	76	60-118
Endosulfan I	12.4	19.7	63	55-114
Dieldrin	15.0	19.7	76	61-122
4,4'-DDE	15.1	19.7	77	58-131
Endrin	15.5	19.7	79	62-129
Endosulfan II	12.8	19.7	65	55-115
4,4'-DDD	14.8	19.7	75	47-141
Endrin Aldehyde	11.3	19.7	58	10-109
Endosulfan Sulfate	16.3	19.7	83	57-121
4,4'-DDT	15.4	19.7	78	52-143
Methoxychlor	15.9	19.7	81	60-128
Toxaphene	142	197	72	70-130
Chlordane	118	197	60 *	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.

Polychlorinated Biphenyls
PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407003

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
PE04-Pretest-A-clams	K2407003-001	09/10/2004	09/11/2004
PE04-Pretest-B-clams	K2407003-002	09/10/2004	09/11/2004
PE04-Pretest-C-clams	K2407003-003	09/10/2004	09/11/2004
PE04-Pretest-D-clams	K2407003-004	09/10/2004	09/11/2004
PE04-Pretest-E-clams	K2407003-005	09/10/2004	09/11/2004
PE04-Pretest-A-worms	K2407003-006	09/10/2004	09/11/2004
PE04-Pretest-B-worms	K2407003-007	09/10/2004	09/11/2004
PE04-Pretest-C-worms	K2407003-008	09/10/2004	09/11/2004
PE04-Pretest-C-wormsMS	KWG0415208-1	09/10/2004	09/11/2004
PE04-Pretest-C-wormsDMS	KWG0415208-2	09/10/2004	09/11/2004

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

Signature: _____ Name: _____

Date: 10/20/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: PE04-Pretest-A-clams
Lab Code: K2407003-001

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	U	10	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	10	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	U	10	0.76	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	U	10	1.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	10	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: PE04-Pretest-B-clams
Lab Code: K2407003-002

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	U	10	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	10	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	U	10	0.76	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	U	10	1.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	10	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: PE04-Pretest-C-clams
Lab Code: K2407003-003

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	U	9.9	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	9.9	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	U	9.9	0.76	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	U	9.9	1.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	9.9	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	80	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: PE04-Pretest-D-clams
Lab Code: K2407003-004

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	U	10	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	10	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	U	10	0.76	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	U	10	1.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	10	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	80	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: PE04-Pretest-E-clams
Lab Code: K2407003-005

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	U	10	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	10	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	U	10	0.76	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	U	10	1.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	10	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	81	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: PE04-Pretest-A-worms
Lab Code: K2407003-006

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	Ui	10	10	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	10	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	U	10	0.76	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	Ui	10	7.7	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	**9.9**	JP	10	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	86	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: PE04-Pretest-B-worms
Lab Code: K2407003-007

Units: ug/Kg
Basis: Wet

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	Ui	10	2.9	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	Ui	10	7.8	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	Ui	10	3.7	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	Ui	10	10	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	Ui	10	4.9	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	**11**	P	10	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	86	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: PE04-Pretest-C-worms
Lab Code: K2407003-008

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	Ui	9.9	6.6	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	9.9	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	Ui	9.9	9.9	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	Ui	9.9	7.8	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	**12**	P	9.9	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	91	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0415208-4

Units: ug/Kg
Basis: Wet

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	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1221	ND	U	20	3.1	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1232	ND	U	9.9	2.0	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1242	ND	U	9.9	3.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1248	ND	U	9.9	0.76	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1254	ND	U	9.9	1.5	1	10/05/04	10/10/04	KWG0415208	
Aroclor 1260	ND	U	9.9	4.7	1	10/05/04	10/10/04	KWG0415208	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	79	18-123	10/10/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
PE04-Pretest-A-clams	K2407003-001	82
PE04-Pretest-B-clams	K2407003-002	74
PE04-Pretest-C-clams	K2407003-003	80
PE04-Pretest-D-clams	K2407003-004	80
PE04-Pretest-E-clams	K2407003-005	81
PE04-Pretest-A-worms	K2407003-006	86
PE04-Pretest-B-worms	K2407003-007	86
PE04-Pretest-C-worms	K2407003-008	91
Method Blank	KWG0415208-4	79
PE04-Pretest-C-wormsMS	KWG0415208-1	87
PE04-Pretest-C-wormsDMS	KWG0415208-2	87
Lab Control Sample	KWG0415208-3	74

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 18-123

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Extracted: 10/05/2004
Date Analyzed: 10/10/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: PE04-Pretest-C-worms
Lab Code: K2407003-008

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low
Extraction Lot: KWG0415208

Analyte Name	Sample Result	PE04-Pretest-C-wormsMS KWG0415208-1 Matrix Spike			PE04-Pretest-C-wormsDMS KWG0415208-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Aroclor 1016	ND	184	198	93	173	198	87	27-190	6	50
Aroclor 1260	12	192	198	91	184	198	87	28-130	4	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Extracted: 10/05/2004
Date Analyzed: 10/10/2004

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415208

	Lab Control Sample KWG0415208-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Aroclor 1016	183	197	93	38-150
Aroclor 1260	180	197	91	30-149

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.

Congener Specific PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407003

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Congener Specific PCBs

Sample Name	Lab Code	Date Collected	Date Received
PE04-Pretest-A-clams	K2407003-001	09/10/2004	09/11/2004
PE04-Pretest-B-clams	K2407003-002	09/10/2004	09/11/2004
PE04-Pretest-C-clams	K2407003-003	09/10/2004	09/11/2004
PE04-Pretest-D-clams	K2407003-004	09/10/2004	09/11/2004
PE04-Pretest-E-clams	K2407003-005	09/10/2004	09/11/2004
PE04-Pretest-A-worms	K2407003-006	09/10/2004	09/11/2004
PE04-Pretest-B-worms	K2407003-007	09/10/2004	09/11/2004
PE04-Pretest-C-worms	K2407003-008	09/10/2004	09/11/2004

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

Signature: [signature]

Name: Todd Poyhair

Date: 10/27/04

Title:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: PE04-Pretest-A-clams
Lab Code: K2407003-001

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/20/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/20/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/20/04	KWG0415227	
PCB 44	ND	U	0.50	0.063	1	10/05/04	10/20/04	KWG0415227	
PCB 52	ND	U	0.50	0.080	1	10/05/04	10/20/04	KWG0415227	
PCB 66	ND	U	0.50	0.073	1	10/05/04	10/20/04	KWG0415227	
PCB 101	ND	U	0.50	0.065	1	10/05/04	10/20/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/20/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/20/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/20/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/20/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/20/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/20/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/20/04	KWG0415227	
PCB 118	ND	U	0.50	0.10	1	10/05/04	10/20/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/20/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/20/04	KWG0415227	
PCB 153	ND	U	0.50	0.15	1	10/05/04	10/20/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/20/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/20/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	98	34-97	10/20/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: PE04-Pretest-B-clams
Lab Code: K2407003-002

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/20/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/20/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/20/04	KWG0415227	
PCB 44	ND	U	0.50	0.063	1	10/05/04	10/20/04	KWG0415227	
PCB 52	ND	U	0.50	0.080	1	10/05/04	10/20/04	KWG0415227	
PCB 66	ND	U	0.50	0.073	1	10/05/04	10/20/04	KWG0415227	
PCB 101	ND	U	0.50	0.065	1	10/05/04	10/20/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/20/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/20/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/20/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/20/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/20/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/20/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/20/04	KWG0415227	
PCB 118	ND	U	0.50	0.10	1	10/05/04	10/20/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/20/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/20/04	KWG0415227	
PCB 153	ND	U	0.50	0.15	1	10/05/04	10/20/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/20/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/20/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	96	34-97	10/20/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: PE04-Pretest-C-clams
Lab Code: K2407003-003

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	U	0.50	0.063	1	10/05/04	10/21/04	KWG0415227	
PCB 52	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	U	0.50	0.073	1	10/05/04	10/21/04	KWG0415227	
PCB 101	ND	U	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	ND	U	0.50	0.10	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	ND	U	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	109	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: PE04-Pretest-D-clams
Lab Code: K2407003-004

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	U	0.50	0.063	1	10/05/04	10/21/04	KWG0415227	
PCB 52	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	U	0.50	0.073	1	10/05/04	10/21/04	KWG0415227	
PCB 101	ND	U	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	ND	U	0.50	0.10	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	Ui	0.50	0.096	1	10/05/04	10/21/04	KWG0415227	
PCB 153	ND	U	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	105	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: PE04-Pretest-E-clams
Lab Code: K2407003-005

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	Ui	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 52	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	U	0.50	0.073	1	10/05/04	10/21/04	KWG0415227	
PCB 101	ND	U	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	ND	U	0.50	0.10	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	ND	U	0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	105	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: PE04-Pretest-A-worms
Lab Code: K2407003-006

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	Ui	0.50	0.50	1	10/05/04	10/21/04	KWG0415227	
PCB 52	**0.13**	J	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	Ui	0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 101	**0.36**	J	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	**0.85**	P	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	Ui	0.50	0.37	1	10/05/04	10/21/04	KWG0415227	
PCB 187	**0.73**		0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	**0.21**	J	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	**0.15**	J	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	ND	Ui	0.50	0.26	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	**1.2**		0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	**0.21**	JP	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	101	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: PE04-Pretest-B-worms
Lab Code: K2407003-007

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	Ui	0.50	0.50	1	10/05/04	10/21/04	KWG0415227	
PCB 52	**0.11**	J	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	Ui	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 101	**0.35**	J	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	**0.89**	P	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	ND	Ui	0.50	0.42	1	10/05/04	10/21/04	KWG0415227	
PCB 187	**0.74**		0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	**0.22**	J	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	**0.20**	JP	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	ND	Ui	0.50	0.26	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	**1.2**		0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	**0.22**	JP	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	99	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: PE04-Pretest-C-worms
Lab Code: K2407003-008

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/21/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/21/04	KWG0415227	
PCB 44	ND	Ui	0.50	0.50	1	10/05/04	10/21/04	KWG0415227	
PCB 52	ND	U	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	
PCB 66	ND	Ui	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 101	**0.48**	JP	0.50	0.065	1	10/05/04	10/21/04	KWG0415227	
PCB 138	**0.98**	P	0.50	0.23	1	10/05/04	10/21/04	KWG0415227	
PCB 180	**0.58**		0.50	0.11	1	10/05/04	10/21/04	KWG0415227	
PCB 187	**0.90**		0.50	0.18	1	10/05/04	10/21/04	KWG0415227	
PCB 206	**0.20**	J	0.50	0.077	1	10/05/04	10/21/04	KWG0415227	
PCB 209	**0.17**	J	0.50	0.095	1	10/05/04	10/21/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/21/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/21/04	KWG0415227	
PCB 118	ND	Ui	0.50	0.27	1	10/05/04	10/21/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/21/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/21/04	KWG0415227	
PCB 153	**1.3**		0.50	0.15	1	10/05/04	10/21/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/21/04	KWG0415227	
PCB 170	**0.24**	JP	0.50	0.080	1	10/05/04	10/21/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	108	34-97	10/21/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0415227-4

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/05/04	10/20/04	KWG0415227	
PCB 18	ND	U	0.50	0.11	1	10/05/04	10/20/04	KWG0415227	
PCB 28	ND	U	0.50	0.31	1	10/05/04	10/20/04	KWG0415227	
PCB 44	ND	U	0.50	0.063	1	10/05/04	10/20/04	KWG0415227	
PCB 52	ND	U	0.50	0.080	1	10/05/04	10/20/04	KWG0415227	
PCB 66	ND	U	0.50	0.073	1	10/05/04	10/20/04	KWG0415227	
PCB 101	ND	U	0.50	0.065	1	10/05/04	10/20/04	KWG0415227	
PCB 138	ND	U	0.50	0.23	1	10/05/04	10/20/04	KWG0415227	
PCB 180	ND	U	0.50	0.11	1	10/05/04	10/20/04	KWG0415227	
PCB 187	ND	U	0.50	0.18	1	10/05/04	10/20/04	KWG0415227	
PCB 206	ND	U	0.50	0.077	1	10/05/04	10/20/04	KWG0415227	
PCB 209	ND	U	0.50	0.095	1	10/05/04	10/20/04	KWG0415227	
PCB 77	ND	U	0.50	0.092	1	10/05/04	10/20/04	KWG0415227	
PCB 105	ND	U	0.50	0.21	1	10/05/04	10/20/04	KWG0415227	
PCB 118	ND	U	0.50	0.10	1	10/05/04	10/20/04	KWG0415227	
PCB 126	ND	U	0.50	0.12	1	10/05/04	10/20/04	KWG0415227	
PCB 128	ND	U	0.50	0.091	1	10/05/04	10/20/04	KWG0415227	
PCB 153	ND	U	0.50	0.15	1	10/05/04	10/20/04	KWG0415227	
PCB 169	ND	U	0.50	0.085	1	10/05/04	10/20/04	KWG0415227	
PCB 170	ND	U	0.50	0.080	1	10/05/04	10/20/04	KWG0415227	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	34-97	10/20/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	
PE04-Pretest-A-clams	K2407003-001	98	*
PE04-Pretest-B-clams	K2407003-002	96	
PE04-Pretest-C-clams	K2407003-003	109	*
PE04-Pretest-D-clams	K2407003-004	105	*
PE04-Pretest-E-clams	K2407003-005	105	*
PE04-Pretest-A-worms	K2407003-006	101	*
PE04-Pretest-B-worms	K2407003-007	99	*
PE04-Pretest-C-worms	K2407003-008	108	*
Method Blank	KWG0415227-4	97	
Batch QC	K2407004-034	103	*
Batch QCMS	KWG0415227-1	105	*
Batch QCDMS	KWG0415227-2	109	*
Lab Control Sample	KWG0415227-3	99	*

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 34-97

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

Polynuclear Aromatic Hydrocarbons
EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407003

Cover Page - Organic Analysis Data Package
Polynuclear Aromatic Hydrocarbons

Sample Name	Lab Code	Date Collected	Date Received
PE04-Pretest-A-clams	K2407003-001	09/10/2004	09/11/2004
PE04-Pretest-B-clams	K2407003-002	09/10/2004	09/11/2004
PE04-Pretest-C-clams	K2407003-003	09/10/2004	09/11/2004
PE04-Pretest-D-clams	K2407003-004	09/10/2004	09/11/2004
PE04-Pretest-E-clams	K2407003-005	09/10/2004	09/11/2004
PE04-Pretest-A-worms	K2407003-006	09/10/2004	09/11/2004
PE04-Pretest-B-worms	K2407003-007	09/10/2004	09/11/2004
PE04-Pretest-C-worms	K2407003-008	09/10/2004	09/11/2004

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

Signature: Jerome Peterson

Name: Jerome Peterson

Date: 10-12-4

Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: PE04-Pretest-A-clams
Lab Code: K2407003-001

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	0.96	J	5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	0.54	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	0.45	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	0.37	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	0.19	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	0.44	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	5.5		5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	1.1	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	9.7		5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	11		5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	2.4	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	3.5	J	5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	1.2	J	5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	0.95	J	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	1.9	J	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	1.4	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	0.37	J	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	1.7	J	5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	70	53-103	10/07/04	Acceptable
Fluoranthene-d10	76	56-109	10/07/04	Acceptable
Terphenyl-d14	92	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: PE04-Pretest-B-clams
Lab Code: K2407003-002

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.0**	J	5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**0.60**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**0.41**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**0.16**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.16**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.37**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**1.2**	J	5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**0.40**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**3.1**	J	5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**2.6**	J	5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**0.61**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**1.5**	J	5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	**0.31**	J	5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	**0.32**	J	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	ND	U	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**0.19**	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**0.25**	J	5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	71	53-103	10/07/04	Acceptable
Fluoranthene-d10	77	56-109	10/07/04	Acceptable
Terphenyl-d14	93	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: PE04-Pretest-C-clams
Lab Code: K2407003-003

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.3**	J	5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**0.66**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**0.54**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**0.25**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.21**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.48**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**1.8**	J	5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**0.63**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**4.8**	J	5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**4.2**	J	5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**0.75**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**1.9**	J	5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	**0.36**	J	5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	**0.23**	J	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	ND	U	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**0.24**	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	**0.21**	J	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**0.27**	J	5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	71	53-103	10/07/04	Acceptable
Fluoranthene-d10	80	56-109	10/07/04	Acceptable
Terphenyl-d14	90	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: PE04-Pretest-D-clams
Lab Code: K2407003-004

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.7**	J	5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**0.72**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**0.52**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**1.2**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.31**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.60**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**6.1**		5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**1.7**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**23**		5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**30**		5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**9.7**		5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**13**		5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	**5.6**		5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	**6.2**		5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	**9.1**		5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**8.1**		5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	**0.93**	J	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**8.2**		5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	68	53-103	10/07/04	Acceptable
Fluoranthene-d10	78	56-109	10/07/04	Acceptable
Terphenyl-d14	93	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: PE04-Pretest-E-clams
Lab Code: K2407003-005

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.4**	J	5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**0.92**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**0.66**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**0.17**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.19**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.48**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**1.6**	J	5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**0.33**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**3.5**	J	5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**2.2**	J	5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**0.73**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**1.3**	J	5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	ND	U	5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	ND	U	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	ND	U	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**0.15**	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**0.15**	J	5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	53-103	10/07/04	Acceptable
Fluoranthene-d10	80	56-109	10/07/04	Acceptable
Terphenyl-d14	96	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407003
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name:	PE04-Pretest-A-worms	**Units:**	ug/Kg
Lab Code:	K2407003-006	**Basis:**	Wet
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**4.3**	J	5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**2.0**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**2.2**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**1.0**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.45**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.58**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**4.6**	J	5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**1.9**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**9.8**		5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**12**		5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**3.7**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**5.7**		5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	**2.6**	J	5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	**2.5**	J	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	**4.7**	J	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**3.4**	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	**1.1**	J	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**3.5**	J	5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	71	53-103	10/07/04	Acceptable
Fluoranthene-d10	79	56-109	10/07/04	Acceptable
Terphenyl-d14	85	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: PE04-Pretest-B-worms
Lab Code: K2407003-007

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**5.5**		5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**2.5**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**2.5**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**0.82**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.50**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.80**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**7.2**		5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**1.6**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**11**		5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**12**		5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**3.3**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**4.8**	J	5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	**2.4**	J	5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	**2.0**	J	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	**3.7**	J	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**2.6**	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**4.6**	J	5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	69	53-103	10/07/04	Acceptable
Fluoranthene-d10	78	56-109	10/07/04	Acceptable
Terphenyl-d14	86	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: PE04-Pretest-C-worms
Lab Code: K2407003-008

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**5.9**		5.0	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	**2.7**	J	5.0	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	**2.7**	J	5.0	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	**0.54**	J	5.0	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	**0.30**	J	5.0	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	**0.52**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**1.4**	J	5.0	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	**0.90**	J	5.0	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**1.9**	J	5.0	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**2.1**	J	5.0	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	**0.35**	J	5.0	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	**1.6**	J	5.0	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	**0.57**	J	5.0	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	**0.47**	J	5.0	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	**1.3**	J	5.0	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	**0.41**	J	5.0	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	**1.1**	J	5.0	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	84	53-103	10/07/04	Acceptable
Fluoranthene-d10	92	56-109	10/07/04	Acceptable
Terphenyl-d14	100	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0415153-3

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.57**	J	4.9	0.26	1	10/05/04	10/07/04	KWG0415153	
2-Methylnaphthalene	ND	U	4.9	0.15	1	10/05/04	10/07/04	KWG0415153	
1-Methylnaphthalene	ND	U	4.9	0.13	1	10/05/04	10/07/04	KWG0415153	
Acenaphthylene	ND	U	4.9	0.050	1	10/05/04	10/07/04	KWG0415153	
Acenaphthene	ND	U	4.9	0.074	1	10/05/04	10/07/04	KWG0415153	
Fluorene	ND	U	4.9	0.054	1	10/05/04	10/07/04	KWG0415153	
Phenanthrene	**0.27**	J	4.9	0.066	1	10/05/04	10/07/04	KWG0415153	
Anthracene	ND	U	4.9	0.055	1	10/05/04	10/07/04	KWG0415153	
Fluoranthene	**0.27**	J	4.9	0.053	1	10/05/04	10/07/04	KWG0415153	
Pyrene	**0.18**	J	4.9	0.070	1	10/05/04	10/07/04	KWG0415153	
Benz(a)anthracene	ND	U	4.9	0.054	1	10/05/04	10/07/04	KWG0415153	
Chrysene	ND	U	4.9	0.080	1	10/05/04	10/07/04	KWG0415153	
Benzo(b)fluoranthene	ND	U	4.9	0.045	1	10/05/04	10/07/04	KWG0415153	
Benzo(k)fluoranthene	ND	U	4.9	0.081	1	10/05/04	10/07/04	KWG0415153	
Benzo(a)pyrene	ND	U	4.9	0.076	1	10/05/04	10/07/04	KWG0415153	
Indeno(1,2,3-cd)pyrene	ND	U	4.9	0.073	1	10/05/04	10/07/04	KWG0415153	
Dibenz(a,h)anthracene	ND	U	4.9	0.079	1	10/05/04	10/07/04	KWG0415153	
Benzo(g,h,i)perylene	ND	U	4.9	0.097	1	10/05/04	10/07/04	KWG0415153	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	70	53-103	10/07/04	Acceptable
Fluoranthene-d10	71	56-109	10/07/04	Acceptable
Terphenyl-d14	97	50-124	10/07/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
PE04-Pretest-A-clams	K2407003-001	70	76	92
PE04-Pretest-B-clams	K2407003-002	71	77	93
PE04-Pretest-C-clams	K2407003-003	71	80	90
PE04-Pretest-D-clams	K2407003-004	68	78	93
PE04-Pretest-E-clams	K2407003-005	73	80	96
PE04-Pretest-A-worms	K2407003-006	71	79	85
PE04-Pretest-B-worms	K2407003-007	69	78	86
PE04-Pretest-C-worms	K2407003-008	84	92	100
Method Blank	KWG0415153-3	70	71	97
Batch QC	K2407004-038	69	76	89
Batch QCMS	KWG0415153-4	74 D	82 D	91 D
Batch QCDMS	KWG0415153-5	95 D	106 D	117 D
Lab Control Sample	KWG0415153-1	67 D	73 D	87 D
Duplicate Lab Control Sample	KWG0415153-2	65 D	73 D	86 D

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	53-103
Sur2 =	Fluoranthene-d10	56-109
Sur3 =	Terphenyl-d14	50-124

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Extracted: 10/05/2004
Date Analyzed: 10/07/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name: Batch QC
Lab Code: K2407004-038

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415153

Analyte Name	Sample Result	Batch QCMS KWG0415153-4 Matrix Spike			Batch QCDMS KWG0415153-5 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Naphthalene	1.6	356	489	72	357	488	73	45-110	0	40
2-Methylnaphthalene	1.1	364	489	74	366	488	75	47-116	1	40
1-Methylnaphthalene	0.76	360	489	73	361	488	74	54-93	0	40
Acenaphthylene	0.36	371	489	76	384	488	79	64-115	4	40
Acenaphthene	0.24	380	489	78	391	488	80	61-117	3	40
Fluorene	0.67	383	489	78	395	488	81	68-116	3	40
Phenanthrene	1.6	379	489	77	391	488	80	67-111	3	40
Anthracene	0.92	394	489	80	408	488	83	72-115	4	40
Fluoranthene	5.8	410	489	83	420	488	85	66-123	3	40
Pyrene	8.2	463	489	93	473	488	95	58-114	2	40
Benz(a)anthracene	2.5	457	489	93	463	488	94	50-120	1	40
Chrysene	3.8	476	489	97	482	488	98	58-117	1	40
Benzo(b)fluoranthene	4.4	344	489	69	348	488	70	65-120	1	40
Benzo(k)fluoranthene	3.9	369	489	75	384	488	78	65-124	4	40
Benzo(a)pyrene	3.1	380	489	77	393	488	80	65-122	3	40
Indeno(1,2,3-cd)pyrene	2.0	359	489	73	366	488	74	47-136	2	40
Dibenz(a,h)anthracene	0.57	394	489	80	403	488	82	52-134	2	40
Benzo(g,h,i)perylene	2.2	370	489	75	380	488	77	57-115	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407003
Date Extracted: 10/05/2004
Date Analyzed: 10/07/2004

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415153

	Lab Control Sample KWG0415153-1 Lab Control Spike			Duplicate Lab Control Sample KWG0415153-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	336	500	67	342	500	68	53-103	2	40
2-Methylnaphthalene	336	500	67	340	500	68	27-138	1	40
1-Methylnaphthalene	336	500	67	341	500	68	28-141	1	40
Acenaphthylene	336	500	67	337	500	67	56-111	0	40
Acenaphthene	338	500	68	344	500	69	57-108	2	40
Fluorene	343	500	69	342	500	68	57-114	0	40
Phenanthrene	341	500	68	346	500	69	56-112	2	40
Anthracene	356	500	71	361	500	72	61-116	1	40
Fluoranthene	371	500	74	382	500	76	59-127	3	40
Pyrene	432	500	86	449	500	90	48-121	4	40
Benz(a)anthracene	432	500	86	434	500	87	43-127	0	40
Chrysene	462	500	92	469	500	94	50-127	2	40
Benzo(b)fluoranthene	372	500	74	376	500	75	59-132	1	40
Benzo(k)fluoranthene	401	500	80	422	500	84	57-141	5	40
Benzo(a)pyrene	383	500	77	395	500	79	55-139	3	40
Indeno(1,2,3-cd)pyrene	348	500	70	346	500	69	48-142	1	40
Dibenz(a,h)anthracene	383	500	77	380	500	76	49-144	1	40
Benzo(g,h,i)perylene	364	500	73	368	500	74	53-130	1	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.

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

Columbia Analytical Services INC.
An Employee - Owned Company

October 29, 2004

Service Request No: K2407006

Bryan Cotter
PPB Environmental Laboratories, Inc.
6821 SW Archer Road
Gainesville, FL 32608

RE: USACE-Port Everglades 2004 Tissues

Dear Bryan:

Enclosed are the results of the sample(s) submitted to our laboratory on September 11, 2004. For your reference, these analyses have been assigned our service request number K2407006.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.

Harvey Jacky
Project Chemist

HJ/jeb

NELAP Accredited ACIL Seal of Excellence Award

Acronyms

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

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

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

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	PPB Environmental Laboratories, Inc.	**Service Request No.:**	K2407006
Project:	USACE - Port Everglades 2004 Tissue	**Date Received:**	9/11/04
Sample Matrix:	Tissue		

CASE NARRATIVE

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

Sample Receipt

Fifteen water samples were received for analysis at Columbia Analytical Services on 9/11/04. As instructed, the ten discreet Clam tissue samples were composited at the laboratory to create five composite samples. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored frozen at –20°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 Silver for sample RS-PE04-A-worms was below the lower control limit established for biological tissues analyzed at CAS/Kelso. The recovery of 62% (versus the control limit of 70%) suggest a potential low bias to these samples. The recoveries for Silver in the Standard Reference Materials (SRM) were very good, which indicate the analytical batch was in control. No further corrective action was appropriate.

Organochlorine Pesticides by EPA Method 8081A

Continuing Calibration Verification (CCV) Exceptions:
The primary evaluation criterion was exceeded for a few analytes in CCV 1015F048, and CCV 1015F074. 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 recovery of Chlordane for sample Composite B-2 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed are in the range expected for this procedure. No further corrective action was taken.

Approved by _____ **Date** 11/3/04

Laboratory Control Sample (LCS) Exceptions:
The recovery of Chlordane in LCS KWG0415326-3 was outside control limits. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed are in the range expected for this procedure. No further corrective action was appropriate.

Sample Confirmation Notes:
The confirmation comparison criteria of 40% difference for 4,4-DDE and/or beta-BHC was exceeded in samples RS-PE04-C-worms, RS-PE04-E-worms, Composite Clams-1 and Composite Clams-4 . The higher of the two values is reported because no evidence of matrix interference was observed.

The confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

Elevated Method Reporting Limits:
The reporting limit is elevated for a few analytes in sample in few 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.

The MDL is elevated for Toxaphene in sample Method Blank KWG0415326-7. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the MDL. Note the level of background was relatively low compared to the MDL, so the affect on the results was minimal. The results are flagged to indicate the anomaly.

PCB Aroclors by EPA Method 8082

Elevated Method Reporting Limits:
The reporting limit is elevated for Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, and Aroclor 1260 in samples RS-PE04-A-worms, PE04-B-worms, RS-PE04-C-worms, RS-PE04-D-worms and RS-PE04-E-worms. 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.

PCB Congeners by EPA Method 8082

Second Source Exceptions:
The analysis of PCB Congeners 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 PCB 28. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action

Continuing Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) 1023F003, 1023F016: Tetrachloro-m-xylene, PCB 8, PCB 180, PCB 206, and PCB 209. 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 the following analytes: Tetrachloro-m-xylene in all samples and QC and PCB 206 and PCB 209 in samples RS-PE04-A-worms, RS-PE04-B-worms, RS-PE04-C-worms, RS-PE04-D-worms, RS-PE04-E-worms and QC have been reported from a column using average percent recovery of all analytes in the verification standard.

Approved by HC **Date** 11/3/04

Surrogate Exceptions:
The upper control criterion was exceeded for the following surrogate in sample RS-PE04-A-worms: Tetrachloro-m-xylene. The upper control limit is unusually low at 97%. Surrogate recovery is below 115%, within CCV criteria, therefore the data quality is not affected.

Elevated Method Reporting Limits:
The reporting limit is elevated for a few analytes in a few 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:
Flag JP: The confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

Flag P - The confirmation comparison criteria of 40% difference for PCB 138 was exceeded in samples RS-PE04-A-worms, RS-PE04-B-worms, RS-PE04-D-worms, and RS-PE04-E-worms. The higher of the two values is reported because no evidence of a matrix interference was observed.

Organotin Compounds

Matrix Spike Recovery Exceptions:
The control criteria for matrix spike recovery of Di-n-butyltin for sample Composite B-2 are not applicable. The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery.

Polynuclear Aromatic Hydrocarbons by EPA Method 8270C

Initial Calibration (ICAL) Exceptions:
The primary evaluation criterion was exceeded for the following analytes in ICAL ID CAL3848: Naphthalene, 2-Methylnaphthalene, Biphenyl, Acenaphthylene, Dibenzofuran, Dibenzothiophene, Phenanthrene, Pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene. 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 12.6%. 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.

Approved by HG **Date** 11/3/04

Chain of Custody Documentation

ppb
ENVIRONMENTAL LABORATORIES, INC.
6821 SW Archer Road, Gainesville, FL 32608
(352) 377-2349 · FAX (352) 395-6639

Sample: reference

CHAIN-OF-CUSTODY RECORD

K2407006

LABTROL CLIENT No.	BATCH NO.	FOR LAB USE ONLY
		Subcontractor: CAS Rolo
		Shipping Method: Fed Ex - P

CLIENT NAME: PPB-USACE-Port Everglades 2004
CLIENT PROJECT:
SITE NAME & ADDRESS: Tissues
SAMPLERS: (Signature)
LAB REPORT GOES TO (Client contact person): Bryan Cotter

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: As per SOW

PRESERVATION
CF Chilled-Filtered
SF Sulfuric-Filtered
NF Nitric-Filtered
C Chilled
S Sulfuric
N Nitric
B Basic/NaOH
Z Zinc
T Thiosulfate
H HCL
Ot Other (see Remarks)

NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION / NUMBER	SAMPLE MATRIX	NUMBER OF CONTAINERS	Lab I.D. Number
	9/10/04	1200			RS-PE04-A clams	T	2	1/2
					-B		2	3/4
					-C		2	5/6
					-D		2	7/8
					-E		2	9/10
					RS-PE04-A worms	T	1	11
					B		1	12
					C		1	13
					D		1	14
					E		1	15

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Precleaned Containers Relinquished by: (Signature)			
[signature]	9/10/04 1730	Tracy Black CAS	9/10/04 1100

Remarks and Observations

Matrix Types: S Soil or Sediment, WW Wastewater, T Animal Tissue, SW Surface Water, SL Sludge or Solid Waste, MW Marine Water, GW Ground Water, DW Drinking Water, P Plant Tissue, F Filter, A Air, Ot Other (See Remarks)

Columbia Analytical Services Inc.

Cooler Receipt and Preservation Form

Project/Client PPB Work Order K240 7006

Cooler received on 9/11/04 and opened on 9/11/04 by TBlack

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: 79133584 69160	Y	N
5.	COC#		
	Temperature of cooler(s) upon receipt: (°C) 0.1 / 0.2		
	Temperature Blank: (°C) n/a / n/a		
	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 loose ice - bags		
8.	**Did all bottles arrive in good condition (unbroken)?**	Y	N
9.	Were all bottle labels complete (i.e analysis, preservation, etc.)?	Y	N
10.	Did all bottle labels and tags agree with custody papers?	Y	N
11.	**Were the correct types of bottles used for the tests indicated?**	Y	N
12.	Were all of the preserved bottles received at the lab with the appropriate pH?	~~Y~~	~~N~~
13.	Were VOA vials checked for absence of air bubbles, and if present, noted below?	~~Y~~	~~N~~
14.	Did the bottles originate from CAS/K or a branch laboratory?	Y	N
15.	**Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?**	~~Y~~	~~N~~
16.	Was C12/Res negative?	~~Y~~	~~N~~

Explain any discrepancies:

RESOLUTION:

Samples that required preservation or received out of temperature:

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

Metals

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 9/10/04
Date Received: 9/11/04

Solids, Total

Prep Method: NONE
Analysis Method: Freeze Dry
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
RS-PE04-A-worms	K2407006-011	10/5/04	13.8	
RS-PE04-B-worms	K2407006-012	10/5/04	12.7	
RS-PE04-C-worms	K2407006-013	10/5/04	12.1	
RS-PE04-D-worms	K2407006-014	10/5/04	13.3	
RS-PE04-E-worms	K2407006-015	10/5/04	13.5	
Composite Clams-1	K2407006-016	10/5/04	10.7	
Composite Clams-2	K2407006-017	10/5/04	10.9	
Composite Clams-3	K2407006-018	10/5/04	9.8	
Composite Clams-4	K2407006-019	10/5/04	11.8	
Composite Clams-5	K2407006-020	10/5/04	10.5	

Approved By: _____ Date: 10/20/04

1A/052595

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 9/10/04
Date Received: 9/11/04
Date Extracted: NA
Date Analyzed: 10/5/04

Duplicate Summary
Total Metals

Sample Name: RS-PE04-A-worms
Lab Code: K2407006-011
Test Notes:

Units: PERCENT
Basis: Wet

Analyte	Prep Method	Analysis Method	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Solids, Total	NA	Freeze Dry	13.8	13.9	13.8	<1	

Approved By: _____ Date: 10/20/04

DUP/052595

Columbia Analytical Services

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: RS-PE04-A-worms
Lab Code: K2407006-011

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.017	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	14.7		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.254		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.9		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	9.88		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.445		
Mercury	7471A	0.027	0.011	1	10/15/04	10/18/04	0.093		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	1.42		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.142		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	64.3		

% Solids: 13.8

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: mg/kg
Basis: Dry

Sample Name: RS-PE04-B-worms
Lab Code: K2407006-012

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.014	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	14.6		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.254		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.6		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	8.97		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.392		
Mercury	7471A	0.030	0.012	1	10/15/04	10/18/04	0.099		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	0.88		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.197		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	65.3		

% Solids: 12.7

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: RS-PE04-C-worms
Lab Code: K2407006-013

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.012	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	14.2		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.228		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.7		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	9.58		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.385		
Mercury	7471A	0.032	0.013	1	10/15/04	10/18/04	0.092		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	0.83		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.204		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	249		

% Solids: 12.1

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: RS-PE04-D-worms
Lab Code: K2407006-014

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.018	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	14.6		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.252		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.0		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	10.9		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.446		
Mercury	7471A	0.029	0.012	1	10/15/04	10/18/04	0.085		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	1.09		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.166		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	127		

% Solids: 13.3

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: mg/kg
Basis: Dry

Sample Name: RS-PE04-E-worms
Lab Code: K2407006-015

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.016	B	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	14.4		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.245		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.9		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	9.24		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.399		
Mercury	7471A	0.029	0.011	1	10/15/04	10/18/04	0.077		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	0.91		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.135		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	187		

% Solids: 13.5

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite Clams-1 Lab Code: K2407006-016

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.107		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	22.2		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.285		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.1		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	14.4		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.170		
Mercury	7471A	0.035	0.014	1	10/15/04	10/18/04	0.047		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	3.55		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.161		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	97.9		

% Solids: 10.7

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite Clams-2
Lab Code: K2407006-017

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.087		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	20.3		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.268		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	3.0		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	13.1		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.030		
Mercury	7471A	0.033	0.013	1	10/15/04	10/18/04	0.044		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	3.64		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.147		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	108		

% Solids: 10.9

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite Clams-3
Lab Code: K2407006-018

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.091		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	21.4		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.225		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.7		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	12.5		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.873		
Mercury	7471A	0.039	0.016	1	10/15/04	10/18/04	0.062		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	2.83		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.164		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	90.3		

% Solids: 9.8

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite Clams-4
Lab Code: K2407006-019

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.100		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	20.9		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.259		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	2.0		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	23.3		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.540		
Mercury	7471A	0.033	0.013	1	10/15/04	10/18/04	0.047		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	3.39		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.213		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	98.1		

% Solids: 11.8

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Dry

Sample Name: Composite Clams-5
Lab Code: K2407006-020

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.095		
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	23.9		
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.265		
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	1.2		
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	14.5		
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	1.140		
Mercury	7471A	0.038	0.015	1	10/15/04	10/18/04	0.063		
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	3.47		
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.133		N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	93.6		

% Solids: 10.5

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected:
Date Received:
Units: MG/KG
Basis: Dry

Sample Name: Method Blank
Lab Code: K2407006-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.050	0.005	5	10/8/04	10/12/04	0.005	U	
Arsenic	200.8	0.50	0.03	5	10/8/04	10/12/04	0.07	B	
Cadmium	200.8	0.020	0.005	5	10/8/04	10/12/04	0.005	U	
Chromium	6010B	0.5	0.3	1	10/8/04	10/13/04	0.3	U	
Copper	200.8	0.10	0.07	5	10/8/04	10/12/04	0.07	U	
Lead	200.8	0.020	0.007	5	10/8/04	10/12/04	0.007	U	
Mercury	7471A	0.033	0.013	1	10/15/04	10/18/04	0.013	U	
Nickel	200.8	0.20	0.03	5	10/8/04	10/12/04	0.03	U	
Silver	200.8	0.020	0.004	5	10/8/04	10/12/04	0.004	U	N
Zinc	200.8	0.50	0.06	5	10/8/04	10/12/04	0.15	B	

% Solids: 100.0

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: RS-PE04-A-worms
Lab Code: K2407006-011

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0069	0.0007	5	10/8/04	10/12/04	0.0023	B	
Arsenic	200.8	0.069	0.004	5	10/8/04	10/12/04	2.020		
Cadmium	200.8	0.0028	0.0007	5	10/8/04	10/12/04	0.0350		
Chromium	6010B	0.07	0.04	1	10/8/04	10/13/04	0.27		
Copper	200.8	0.014	0.010	5	10/8/04	10/12/04	1.360		
Lead	200.8	0.0028	0.0010	5	10/8/04	10/12/04	0.0615		
Mercury	7471A	0.004	0.001	1	10/15/04	10/18/04	0.013		
Nickel	200.8	0.028	0.004	5	10/8/04	10/12/04	0.196		
Silver	200.8	0.0028	0.0006	5	10/8/04	10/12/04	0.0197		N
Zinc	200.8	0.069	0.008	5	10/8/04	10/12/04	8.880		

% Solids: NA

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: mg/kg
Basis: Wet

Sample Name: RS-PE04-B-worms
Lab Code: K2407006-012

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0063	0.0006	5	10/8/04	10/12/04	0.0018	B	
Arsenic	200.8	0.063	0.004	5	10/8/04	10/12/04	1.860		
Cadmium	200.8	0.0025	0.0006	5	10/8/04	10/12/04	0.0323		
Chromium	6010B	0.06	0.04	1	10/8/04	10/13/04	0.08		
Copper	200.8	0.013	0.009	5	10/8/04	10/12/04	1.140		
Lead	200.8	0.0025	0.0009	5	10/8/04	10/12/04	0.0498		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.013		
Nickel	200.8	0.025	0.004	5	10/8/04	10/12/04	0.112		
Silver	200.8	0.0025	0.0005	5	10/8/04	10/12/04	0.0250		N
Zinc	200.8	0.063	0.008	5	10/8/04	10/12/04	8.290		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: RS-PE04-C-worms
Lab Code: K2407006-013

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0060	0.0006	5	10/8/04	10/12/04	0.0014	B	
Arsenic	200.8	0.060	0.004	5	10/8/04	10/12/04	1.720		
Cadmium	200.8	0.0024	0.0006	5	10/8/04	10/12/04	0.0276		
Chromium	6010B	0.06	0.04	1	10/8/04	10/13/04	0.08		
Copper	200.8	0.012	0.008	5	10/8/04	10/12/04	1.160		
Lead	200.8	0.0024	0.0008	5	10/8/04	10/12/04	0.0466		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.011		
Nickel	200.8	0.024	0.004	5	10/8/04	10/12/04	0.100		
Silver	200.8	0.0024	0.0005	5	10/8/04	10/12/04	0.0247		N
Zinc	200.8	0.060	0.007	5	10/8/04	10/12/04	30.1		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: RS-PE04-D-worms
Lab Code: K2407006-014

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0066	0.0007	5	10/8/04	10/12/04	0.0024	B	
Arsenic	200.8	0.066	0.004	5	10/8/04	10/12/04	1.940		
Cadmium	200.8	0.0027	0.0007	5	10/8/04	10/12/04	0.0335		
Chromium	6010B	0.07	0.04	1	10/8/04	10/13/04	0.13		
Copper	200.8	0.013	0.009	5	10/8/04	10/12/04	1.450		
Lead	200.8	0.0027	0.0009	5	10/8/04	10/12/04	0.0594		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.011		
Nickel	200.8	0.027	0.004	5	10/8/04	10/12/04	0.145		
Silver	200.8	0.0027	0.0005	5	10/8/04	10/12/04	0.0221		N
Zinc	200.8	0.066	0.008	5	10/8/04	10/12/04	16.9		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: mg/kg
Basis: Wet

Sample Name: RS-PE04-E-worms
Lab Code: K2407006-015

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0067	0.0007	5	10/8/04	10/12/04	0.0021	B	
Arsenic	200.8	0.067	0.004	5	10/8/04	10/12/04	1.940		
Cadmium	200.8	0.0027	0.0007	5	10/8/04	10/12/04	0.0331		
Chromium	6010B	0.07	0.04	1	10/8/04	10/13/04	0.12		
Copper	200.8	0.013	0.009	5	10/8/04	10/12/04	1.250		
Lead	200.8	0.0027	0.0009	5	10/8/04	10/12/04	0.0539		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.010		
Nickel	200.8	0.027	0.004	5	10/8/04	10/12/04	0.123		
Silver	200.8	0.0027	0.0005	5	10/8/04	10/12/04	0.0182		N
Zinc	200.8	0.067	0.008	5	10/8/04	10/12/04	25.2		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite Clams-1
Lab Code: K2407006-016

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0054	0.0005	5	10/8/04	10/12/04	0.0115		
Arsenic	200.8	0.054	0.003	5	10/8/04	10/12/04	2.370		
Cadmium	200.8	0.0022	0.0005	5	10/8/04	10/12/04	0.0305		
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.12		
Copper	200.8	0.011	0.008	5	10/8/04	10/12/04	1.540		
Lead	200.8	0.0022	0.0008	5	10/8/04	10/12/04	0.1250		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.005		
Nickel	200.8	0.022	0.003	5	10/8/04	10/12/04	0.380		
Silver	200.8	0.0022	0.0004	5	10/8/04	10/12/04	0.0172		N
Zinc	200.8	0.054	0.006	5	10/8/04	10/12/04	10.5		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite Clams-2
Lab Code: K2407006-017

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0055	0.0005	5	10/8/04	10/12/04	0.0095		
Arsenic	200.8	0.055	0.003	5	10/8/04	10/12/04	2.210		
Cadmium	200.8	0.0022	0.0005	5	10/8/04	10/12/04	0.0293		
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.33		
Copper	200.8	0.011	0.008	5	10/8/04	10/12/04	1.430		
Lead	200.8	0.0022	0.0008	5	10/8/04	10/12/04	0.1120		
Mercury	7471A	0.004	0.001	1	10/15/04	10/18/04	0.005		
Nickel	200.8	0.022	0.003	5	10/8/04	10/12/04	0.397		
Silver	200.8	0.0022	0.0004	5	10/8/04	10/12/04	0.0160		N
Zinc	200.8	0.055	0.007	5	10/8/04	10/12/04	11.8		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite Clams-3
Lab Code: K2407006-018

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0049	0.0005	5	10/8/04	10/12/04	0.0089		
Arsenic	200.8	0.049	0.003	5	10/8/04	10/12/04	2.100		
Cadmium	200.8	0.0020	0.0005	5	10/8/04	10/12/04	0.0220		
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.16		
Copper	200.8	0.010	0.007	5	10/8/04	10/12/04	1.230		
Lead	200.8	0.0020	0.0007	5	10/8/04	10/12/04	0.0855		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.006		
Nickel	200.8	0.020	0.003	5	10/8/04	10/12/04	0.277		
Silver	200.8	0.0020	0.0004	5	10/8/04	10/12/04	0.0161		N
Zinc	200.8	0.049	0.006	5	10/8/04	10/12/04	8.850		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite Clams-4
Lab Code: K2407006-019

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0059	0.0006	5	10/8/04	10/12/04	0.0118		
Arsenic	200.8	0.059	0.004	5	10/8/04	10/12/04	2.460		
Cadmium	200.8	0.0024	0.0006	5	10/8/04	10/12/04	0.0306		
Chromium	6010B	0.06	0.04	1	10/8/04	10/13/04	0.23		
Copper	200.8	0.012	0.008	5	10/8/04	10/12/04	2.750		
Lead	200.8	0.0024	0.0008	5	10/8/04	10/12/04	0.1810		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.006		
Nickel	200.8	0.024	0.004	5	10/8/04	10/12/04	0.400		
Silver	200.8	0.0024	0.0005	5	10/8/04	10/12/04	0.0251		N
Zinc	200.8	0.059	0.007	5	10/8/04	10/12/04	11.6		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected: 09/10/04
Date Received: 09/11/04
Units: MG/KG
Basis: Wet

Sample Name: Composite Clams-5
Lab Code: K2407006-020

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0052	0.0005	5	10/8/04	10/12/04	0.0099		
Arsenic	200.8	0.052	0.003	5	10/8/04	10/12/04	2.510		
Cadmium	200.8	0.0021	0.0005	5	10/8/04	10/12/04	0.0278		
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.12		
Copper	200.8	0.010	0.007	5	10/8/04	10/12/04	1.520		
Lead	200.8	0.0021	0.0007	5	10/8/04	10/12/04	0.1190		
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.007		
Nickel	200.8	0.021	0.003	5	10/8/04	10/12/04	0.365		
Silver	200.8	0.0021	0.0004	5	10/8/04	10/12/04	0.0140		N
Zinc	200.8	0.052	0.006	5	10/8/04	10/12/04	9.830		

% Solids: NA

Comments:

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

Client: PPB Environmental
Project No.: NA
Project Name: USACE-Port Everglades 2004 Tissues
Matrix: TISSUE

Service Request: K2407006
Date Collected:
Date Received:
Units: MG/KG
Basis: Wet

Sample Name: Method Blank
Lab Code: K2407006-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	200.8	0.0050	0.0005	5	10/8/04	10/12/04	0.0005	U	
Arsenic	200.8	0.050	0.003	5	10/8/04	10/12/04	0.007	B	
Cadmium	200.8	0.0020	0.0005	5	10/8/04	10/12/04	0.0005	U	
Chromium	6010B	0.05	0.03	1	10/8/04	10/13/04	0.03	U	
Copper	200.8	0.010	0.007	5	10/8/04	10/12/04	0.007	U	
Lead	200.8	0.0020	0.0007	5	10/8/04	10/12/04	0.0007	U	
Mercury	7471A	0.004	0.002	1	10/15/04	10/18/04	0.002	U	
Nickel	200.8	0.020	0.003	5	10/8/04	10/12/04	0.003	U	
Silver	200.8	0.0020	0.0004	5	10/8/04	10/12/04	0.0004	U	N
Zinc	200.8	0.050	0.006	5	10/8/04	10/12/04	0.015	B	

% Solids: NA

Comments:

METALS
- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: PPB Environmental

Service Request: K2407006

Project No.:

Project Name: USACE-Port Everglades 2004 T

ICV Source: Inorganic Ventures

CCV Source: Various

Concentration Units: ug/I

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	26.1	105	25.0	25.4	102	24.7	99	200.8
Arsenic	25.0	25.9	104	25.0	24.6	98	26.0	104	200.8
Cadmium	12.5	12.8	102	25.0	24.6	98	24.7	99	200.8
Chromium	500	509	102	500	491	98	501	100	6010B
Copper	12.5	12.8	102	25.0	24.6	98	25.9	104	200.8
Lead	25.0	25.9	104	25.0	25.0	100	24.1	96	200.8
Mercury	5.0	4.84	97	5.0	5.06	101	4.90	98	7471A
Nickel	25.0	25.7	103	25.0	25.0	100	25.6	102	200.8
Silver	12.5	12.8	102	25.0	24.8	99	24.8	99	200.8
Zinc	25.0	25.5	102	25.0	24.8	99	26.3	105	200.8

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
LCS Matrix: Tissue

Service Request: K2407006
Date Collected: NA
Date Received: NA
Date Extracted: 10/8/04
Date Analyzed: 10/12-13/04

Laboratory Control Sample Summary
Total Metals

Sample Name: Laboratory Control Sample
Lab Code: K2407006-LCS
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Source: N.R.C.C. Dorm-2

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	Control Limits	Result Notes
Arsenic	PSEP Tissue	200.8	18	20.5	114	13.5-22.9	
Chromium	PSEP Tissue	6010B	34.7	35.5	102	23.4-48.2	
Copper	PSEP Tissue	200.8	2.34	2.26	97	1.74-3.00	
Lead	PSEP Tissue	200.8	0.065	0.039	60	0.020-0.091	
Nickel	PSEP Tissue	200.8	19.4	19.4	100	13.0-27.0	
Silver	PSEP Tissue	200.8	0.041	0.035	85	0.0224-0.0648	
Zinc	PSEP Tissue	200.8	25.6	27.1	106	20.3-31.0	

Approved By: _____ Date: 10/20/04
LCS/032295

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
LCS Matrix: Tissue

Service Request: K2407006
Date Collected: NA
Date Received: NA
Date Extracted: 10/8/04
Date Analyzed: 10/12-13/04

Laboratory Control Sample Summary
Total Metals

Sample Name: Laboratory Control Sample
Lab Code: K2407006-LCS
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Source: N.R.C.C. Dolt-3

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	Control Limits	Result Notes
Arsenic	PSEP Tissue	200.8	10.2	11.2	110	7.76-12.8	
Cadmium	PSEP Tissue	200.8	19.4	20.7	107	15.0-24.0	
Copper	PSEP Tissue	200.8	31.2	32.5	104	24.2-38.6	
Lead	PSEP Tissue	200.8	0.319	0.294	92	0.219-0.437	
Mercury	METHOD	7471A	3.37	2.61	77	2.58-4.21	
Nickel	PSEP Tissue	200.8	2.72	3.67	135	1.90-3.68	
Silver	PSEP Tissue	200.8	1.2	1.29	108	0.90-1.52	
Zinc	PSEP Tissue	200.8	86.6	99.3	115	67.4-107	

Approved By: _____ Date: 10/20/04
LCS/032295

Lipids

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 9/10/2004
Date Received: 9/11/2004

Lipids, Total

Prep Method: EPA 3540
Analysis Method: NOAA
Test Notes:

Units: PERCENT
Basis: AS RECEIVED

Sample Name	Lab Code	MRL	Date Extracted	Date Analyzed	Result	Result Notes
RS-PE04-A-worms	K2407006-011	0.025	10/6/2004	10/13/2004	1.2	
RS-PE04-B-worms	K2407006-012	0.025	10/6/2004	10/13/2004	1.2	
RS-PE04-C-worms	K2407006-013	0.025	10/6/2004	10/13/2004	1.0	
RS-PE04-D-worms	K2407006-014	0.025	10/6/2004	10/13/2004	1.2	
RS-PE04-E-worms	K2407006-015	0.025	10/6/2004	10/13/2004	1.2	
Composite Clams-1	K2407006-016	0.025	10/6/2004	10/13/2004	0.51	
Composite Clams-2	K2407006-017	0.025	10/6/2004	10/13/2004	0.47	
Composite Clams-3	K2407006-018	0.025	10/6/2004	10/13/2004	0.35	
Composite Clams-4	K2407006-019	0.025	10/6/2004	10/13/2004	0.56	
Composite Clams-5	K2407006-020	0.025	10/6/2004	10/13/2004	0.45	

Approved By: Carl Jones Date: 10-19-04

1A/092099p

Butyltins

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407006

Cover Page - Organic Analysis Data Package
Butyltins (as cation)

Sample Name	Lab Code	Date Collected	Date Received
RS-PE04-A-worms	K2407006-011	09/10/2004	09/11/2004
RS-PE04-B-worms	K2407006-012	09/10/2004	09/11/2004
RS-PE04-C-worms	K2407006-013	09/10/2004	09/11/2004
RS-PE04-D-worms	K2407006-014	09/10/2004	09/11/2004
RS-PE04-E-worms	K2407006-015	09/10/2004	09/11/2004
Composite Clams-1	K2407006-016	09/10/2004	09/11/2004
Composite Clams-2	K2407006-017	09/10/2004	09/11/2004
Composite Clams-3	K2407006-018	09/10/2004	09/11/2004
Composite Clams-4	K2407006-019	09/10/2004	09/11/2004
Composite Clams-5	K2407006-020	09/10/2004	09/11/2004

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

Signature: M. Hendrickson

Name: M. Hendrickson

Date: 10/22/04

Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407006
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	RS-PE04-A-worms	**Units:**	ug/Kg
Lab Code:	K2407006-011	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.98	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	ND	U	0.98	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**8.9**		0.98	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**2.8**		0.98	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	69	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: RS-PE04-B-worms
Lab Code: K2407006-012

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.98	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	ND	U	0.98	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**24**		0.98	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**6.9**		0.98	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	70	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407006
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	RS-PE04-C-worms	**Units:**	ug/Kg
Lab Code:	K2407006-013	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.98	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	ND	U	0.98	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**3.1**		0.98	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**1.5**		0.98	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	72	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: RS-PE04-D-worms
Lab Code: K2407006-014

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.98	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	ND	U	0.98	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**16**		0.98	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**6.0**		0.98	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	69	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407006
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	RS-PE04-E-worms	**Units:**	ug/Kg
Lab Code:	K2407006-015	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.97	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	ND	U	0.97	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**2.2**		0.97	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**0.99**		0.97	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	66	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Butyltins (as cation)

Sample Name: Composite Clams-1
Lab Code: K2407006-016

Units: ug/Kg
Basis: Wet

Extraction Method: METHOD
Analysis Method: GC-FPD

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	**0.76**	**J**	0.99	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**16**		0.99	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**1.7**		0.99	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	61	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407006
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	Composite Clams-2	**Units:**	ug/Kg
Lab Code:	K2407006-017	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	**0.60**	J	1.0	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**9.5**		1.0	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**1.1**		1.0	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	63	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407006
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	Composite Clams-3	**Units:**	ug/Kg
Lab Code:	K2407006-018	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	**0.67**	J	0.99	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**17**		0.99	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**1.5**		0.99	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	68	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407006
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	Composite Clams-4	**Units:**	ug/Kg
Lab Code:	K2407006-019	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.99	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	**1.3**		0.99	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	**14**		0.99	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	**1.4**		0.99	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	66	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407006
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Butyltins (as cation)

Sample Name:	Composite Clams-5	**Units:**	ug/Kg
Lab Code:	K2407006-020	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.98	0.38	1	10/10/04	10/16/04	KWG0415207	
Tri-n-butyltin	**0.72**	J	0.98	0.33	1	10/10/04	10/16/04	KWG0415207	
Di-n-butyltin	**31**		0.98	0.35	1	10/10/04	10/16/04	KWG0415207	
n-Butyltin	**3.1**		0.98	0.38	1	10/10/04	10/16/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	68	26-169	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407006
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	NA
Sample Matrix:	Tissue	**Date Received:**	NA

Butyltins (as cation)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG0415207-4	**Basis:**	Wet
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	GC-FPD		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	1.0	0.38	1	10/10/04	10/15/04	KWG0415207	
Tri-n-butyltin	ND	U	1.0	0.33	1	10/10/04	10/15/04	KWG0415207	
Di-n-butyltin	ND	U	1.0	0.35	1	10/10/04	10/15/04	KWG0415207	
n-Butyltin	ND	U	1.0	0.38	1	10/10/04	10/15/04	KWG0415207	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	77	26-169	10/15/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006

Surrogate Recovery Summary
Butyltins (as cation)

Extraction Method: METHOD
Analysis Method: GC-FPD

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RS-PE04-A-worms	K2407006-011	69
RS-PE04-B-worms	K2407006-012	70
RS-PE04-C-worms	K2407006-013	72
RS-PE04-D-worms	K2407006-014	69
RS-PE04-E-worms	K2407006-015	66
Composite Clams-1	K2407006-016	61
Composite Clams-2	K2407006-017	63
Composite Clams-3	K2407006-018	68
Composite Clams-4	K2407006-019	66
Composite Clams-5	K2407006-020	68
Method Blank	KWG0415207-4	77
Batch QC	K2407005-018	71
Batch QCMS	KWG0415207-1	67
Batch QCDMS	KWG0415207-2	70
Lab Control Sample	KWG0415207-3	71

Surrogate Recovery Control Limits (%)

Sur1 = Tri-n-propyltin 26-169

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/10/2004
Date Analyzed: 10/15/2004

Matrix Spike/Duplicate Matrix Spike Summary
Butyltins (as cation)

Sample Name: Batch QC
Lab Code: K2407005-018

Extraction Method: METHOD
Analysis Method: GC-FPD

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415207

Analyte Name	Sample Result	Batch QCMS KWG0415207-1 Matrix Spike			Batch QCDMS KWG0415207-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Tetra-n-butyltin	ND	23.1	50.3	46	23.9	50.3	47	29-120	3	50
Tri-n-butyltin	11	32.2	51.3	41	35.5	51.3	47	10-155	10	50
Di-n-butyltin	30	47.2E	44.4	40	52.8E	44.4	52	30-131	11	50
n-Butyltin	8.2	23.0	40.4	37	25.8	40.4	44	10-178	11	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/10/2004
Date Analyzed: 10/15/2004

Lab Control Spike Summary
Butyltins (as cation)

Extraction Method: METHOD
Analysis Method: GC-FPD

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415207

Analyte Name	Lab Control Sample KWG0415207-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
Tetra-n-butyltin	34.0	51.0	67	32-134
Tri-n-butyltin	26.0	52.0	50	39-146
Di-n-butyltin	20.4	45.0	45	42-142
n-Butyltin	15.5	41.0	38	28-125

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.

Organochlorine Pesticides
EPA Method 8081

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407006

Cover Page - Organic Analysis Data Package
Organochlorine Pesticides

Sample Name	Lab Code	Date Collected	Date Received
RS-PE04-A-worms	K2407006-011	09/10/2004	09/11/2004
RS-PE04-B-worms	K2407006-012	09/10/2004	09/11/2004
RS-PE04-C-worms	K2407006-013	09/10/2004	09/11/2004
RS-PE04-D-worms	K2407006-014	09/10/2004	09/11/2004
RS-PE04-E-worms	K2407006-015	09/10/2004	09/11/2004
Composite Clams-1	K2407006-016	09/10/2004	09/11/2004
Composite Clams-2	K2407006-017	09/10/2004	09/11/2004
Composite Clams-3	K2407006-018	09/10/2004	09/11/2004
Composite Clams-4	K2407006-019	09/10/2004	09/11/2004
Composite Clams-5	K2407006-020	09/10/2004	09/11/2004

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

Signature: [signature]

Name: Todd Kozhavic

Date: 10/22/04

Title:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: RS-PE04-A-worms
Lab Code: K2407006-011

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	0.82	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	**0.33**	J	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Endrin	ND	U	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	**1.1**		1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	**0.27**	JP	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	**0.94**	J	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	14	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	10	7.6	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	87	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: RS-PE04-B-worms
Lab Code: K2407006-012

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.3	1.3	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	**0.30**	J	1.0	0.20	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	ND	U	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Endrin	ND	U	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	**1.1**	P	1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	**0.26**	JP	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	**0.99**	J	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	14	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	10	8.0	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	92	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: RS-PE04-C-worms
Lab Code: K2407006-013

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	0.44	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	**1.5**	P	1.0	0.21	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	ND	Ui	1.0	0.78	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	**7.1**	P	1.0	0.12	1	10/06/04	10/17/04	KWG0415326	
Endrin	ND	U	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	**0.19**	J	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	**0.67**	J	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	11	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	12	12	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	89	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: RS-PE04-D-worms
Lab Code: K2407006-014

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	0.79	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	**0.62**	J	1.0	0.20	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	**0.28**	J	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Endrin	ND	Ui	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	**0.32**	JP	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	**1.1**	P	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	17	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	13	13	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	90	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: RS-PE04-E-worms
Lab Code: K2407006-015

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.0	0.95	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	Ui	1.0	0.54	1	10/06/04	10/17/04	KWG0415326	
Aldrin	**1.1**	P	1.0	0.20	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	**0.71**	J	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	**2.6**	P	1.0	0.12	1	10/06/04	10/17/04	KWG0415326	
Endrin	ND	U	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	**0.36**	JP	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	**1.6**	P	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	19	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	13	13	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	96	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite Clams-1
Lab Code: K2407006-016

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	**4.1**	P	1.0	0.21	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	ND	U	1.0	0.20	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	Ui	1.0	0.40	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	**0.14**	J	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	ND	Ui	1.0	0.21	1	10/06/04	10/17/04	KWG0415326	
Endrin	**0.26**	J	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	Ui	1.4	1.4	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	**0.30**	J	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	12	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	10	10	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite Clams-2
Lab Code: K2407006-017

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	**2.7**	P	1.0	0.21	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	ND	U	1.0	0.20	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	Ui	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	ND	U	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	ND	U	1.0	0.12	1	10/06/04	10/17/04	KWG0415326	
Endrin	**0.51**	JP	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	ND	U	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	Ui	1.7	1.7	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	28	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	10	6.9	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite Clams-3
Lab Code: K2407006-018

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	ND	Ui	2.6	2.6	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	Ui	1.0	0.24	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	ND	U	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	ND	Ui	1.0	0.82	1	10/06/04	10/17/04	KWG0415326	
Endrin	ND	U	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	ND	U	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	ND	U	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	Ui	1.2	1.2	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	82	82	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	10	5.5	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite Clams-4
Lab Code: K2407006-019

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	**2.8**	P	1.0	0.21	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	ND	U	1.0	0.20	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	**0.37**	JP	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	ND	U	1.0	0.12	1	10/06/04	10/17/04	KWG0415326	
Endrin	**0.50**	J	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	ND	U	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	ND	U	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	Ui	1.2	1.2	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	63	63	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	10	10	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Organochlorine Pesticides

Sample Name: Composite Clams-5
Lab Code: K2407006-020

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/06/04	10/17/04	KWG0415326	
beta-BHC	**2.1**		1.0	0.21	1	10/06/04	10/17/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/17/04	KWG0415326	
delta-BHC	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/17/04	KWG0415326	
Aldrin	ND	U	1.0	0.20	1	10/06/04	10/17/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/17/04	KWG0415326	
Endosulfan I	ND	U	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDE	ND	U	1.0	0.12	1	10/06/04	10/17/04	KWG0415326	
Endrin	**0.36**	J	1.0	0.099	1	10/06/04	10/17/04	KWG0415326	
Endosulfan II	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDD	ND	U	1.0	0.13	1	10/06/04	10/17/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/17/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/17/04	KWG0415326	
4,4'-DDT	ND	U	1.0	0.38	1	10/06/04	10/17/04	KWG0415326	
Methoxychlor	ND	Ui	1.0	1.0	1	10/06/04	10/17/04	KWG0415326	
Toxaphene	ND	Ui	50	40	1	10/06/04	10/17/04	KWG0415326	
Chlordane	ND	Ui	10	10	1	10/06/04	10/17/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	73	10-171	10/17/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0415326-7

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.16	1	10/06/04	10/16/04	KWG0415326	
beta-BHC	ND	U	1.0	0.21	1	10/06/04	10/16/04	KWG0415326	
gamma-BHC (Lindane)	ND	U	1.0	0.28	1	10/06/04	10/16/04	KWG0415326	
delta-BHC	ND	U	1.0	0.34	1	10/06/04	10/16/04	KWG0415326	
Heptachlor	ND	U	1.0	0.45	1	10/06/04	10/16/04	KWG0415326	
Aldrin	ND	U	1.0	0.20	1	10/06/04	10/16/04	KWG0415326	
Heptachlor Epoxide	ND	U	1.0	0.15	1	10/06/04	10/16/04	KWG0415326	
Endosulfan I	ND	U	1.0	0.13	1	10/06/04	10/16/04	KWG0415326	
Dieldrin	ND	U	1.0	0.11	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDE	ND	U	1.0	0.12	1	10/06/04	10/16/04	KWG0415326	
Endrin	ND	U	1.0	0.099	1	10/06/04	10/16/04	KWG0415326	
Endosulfan II	ND	U	1.0	0.35	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDD	ND	U	1.0	0.13	1	10/06/04	10/16/04	KWG0415326	
Endrin Aldehyde	ND	U	1.0	0.17	1	10/06/04	10/16/04	KWG0415326	
Endosulfan Sulfate	ND	U	1.0	0.27	1	10/06/04	10/16/04	KWG0415326	
4,4'-DDT	ND	U	1.0	0.38	1	10/06/04	10/16/04	KWG0415326	
Methoxychlor	**0.39**	J	1.0	0.27	1	10/06/04	10/16/04	KWG0415326	
Toxaphene	ND	Ui	50	6.6	1	10/06/04	10/16/04	KWG0415326	
Chlordane	ND	U	10	2.7	1	10/06/04	10/16/04	KWG0415326	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	10-171	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RS-PE04-A-worms	K2407006-011	87
RS-PE04-B-worms	K2407006-012	92
RS-PE04-C-worms	K2407006-013	89
RS-PE04-D-worms	K2407006-014	90
RS-PE04-E-worms	K2407006-015	96
Composite Clams-1	K2407006-016	74
Composite Clams-2	K2407006-017	72
Composite Clams-3	K2407006-018	82
Composite Clams-4	K2407006-019	72
Composite Clams-5	K2407006-020	73
Method Blank	KWG0415326-7	66
Batch QC	K2407005-017	92
Batch QC	K2407005-018	78
Batch QCMS	KWG0415326-1	71
Batch QCDMS	KWG0415326-2	78
Batch QCMS	KWG0415326-4	67
Batch QCDMS	KWG0415326-5	66
Lab Control Sample	KWG0415326-3	64
Lab Control Sample	KWG0415326-6	66

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 10-171

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: Batch QC
Lab Code: K2407005-017

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8081A

Level: Low
Extraction Lot: KWG0415326

Analyte Name	Sample Result	Batch QCMS KWG0415326-1 Matrix Spike			Batch QCDMS KWG0415326-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	ND	14.4	19.9	72	14.4	20.0	72	51-125	0	40
beta-BHC	ND	16.2	19.9	81	16.0	20.0	80	10-164	1	40
gamma-BHC (Lindane)	ND	14.7	19.9	74	14.5	20.0	73	46-130	2	40
delta-BHC	ND	13.8	19.9	69	13.9	20.0	70	52-132	0	40
Heptachlor	ND	13.4	19.9	67	13.7	20.0	68	39-132	2	40
Aldrin	0.79	13.9	19.9	66	14.4	20.0	68	34-145	3	40
Heptachlor Epoxide	ND	13.7	19.9	69	13.8	20.0	69	51-129	1	40
Endosulfan I	0.47	10.7	19.9	51	10.8	20.0	52	37-141	1	40
Dieldrin	ND	13.3	19.9	67	13.4	20.0	67	25-156	0	40
4,4'-DDE	2.9	13.6	19.9	53	14.0	20.0	56	10-181	3	40
Endrin	ND	14.6	19.9	73	14.6	20.0	73	60-131	0	40
Endosulfan II	1.2	11.7	19.9	52	11.9	20.0	54	38-141	2	40
4,4'-DDD	ND	13.5	19.9	68	13.5	20.0	68	11-177	0	40
Endrin Aldehyde	ND	8.29	19.9	42	9.25	20.0	46	10-120	11	40
Endosulfan Sulfate	ND	12.6	19.9	63	12.8	20.0	64	40-134	1	40
4,4'-DDT	0.74	14.9	19.9	71	15.3	20.0	73	14-164	3	40
Methoxychlor	ND	14.4	19.9	72	15.7	20.0	79	32-151	9	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: Batch QC
Lab Code: K2407005-018

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415326

Analyte Name	Sample Result	Batch QCMS KWG0415326-4 Matrix Spike			Batch QCDMS KWG0415326-5 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Chlordane	ND	116	199	58 *	112	199	56 *	70-130	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415326

Analyte Name	Lab Control Sample KWG0415326-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
alpha-BHC	16.3	20.0	82	54-128
beta-BHC	16.0	20.0	80	54-119
gamma-BHC (Lindane)	15.6	20.0	78	58-125
delta-BHC	17.1	20.0	85	61-131
Heptachlor	15.2	20.0	76	48-117
Aldrin	15.4	20.0	77	56-120
Heptachlor Epoxide	15.1	20.0	76	60-118
Endosulfan I	12.2	20.0	61	55-114
Dieldrin	15.8	20.0	79	61-122
4,4'-DDE	15.4	20.0	77	58-131
Endrin	16.1	20.0	80	62-129
Endosulfan II	12.3	20.0	62	55-115
4,4'-DDD	15.0	20.0	75	47-141
Endrin Aldehyde	14.2	20.0	71	10-109
Endosulfan Sulfate	17.0	20.0	85	57-121
4,4'-DDT	16.3	20.0	81	52-143
Methoxychlor	16.3	20.0	81	60-128

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3540C
Analysis Method: 8081A

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415326

Analyte Name	Lab Control Sample KWG0415326-6 Lab Control Spike Result	Expected	%Rec	%Rec Limits
Chlordane	135	200	68 *	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.

Polychlorinated Biphenyls
PCB's
EPA Method 8082

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407006

Cover Page - Organic Analysis Data Package
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
RS-PE04-A-worms	K2407006-011	09/10/2004	09/11/2004
RS-PE04-B-worms	K2407006-012	09/10/2004	09/11/2004
RS-PE04-C-worms	K2407006-013	09/10/2004	09/11/2004
RS-PE04-D-worms	K2407006-014	09/10/2004	09/11/2004
RS-PE04-E-worms	K2407006-015	09/10/2004	09/11/2004
Composite Clams-1	K2407006-016	09/10/2004	09/11/2004
Composite Clams-2	K2407006-017	09/10/2004	09/11/2004
Composite Clams-3	K2407006-018	09/10/2004	09/11/2004
Composite Clams-4	K2407006-019	09/10/2004	09/11/2004
Composite Clams-5	K2407006-020	09/10/2004	09/11/2004

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

Signature: M. Hendrickson

Name: M. Hendrickson

Date: 10/22/04

Title: Scientist

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: RS-PE04-A-worms
Lab Code: K2407006-011

Units: ug/Kg
Basis: Wet

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	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	20	8.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	10	7.7	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	Ui	10	4.4	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	3.4	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	7.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	77	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: RS-PE04-B-worms
Lab Code: K2407006-012

Units: ug/Kg
Basis: Wet

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	Ui	10	3.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	20	6.2	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	10	9.9	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	11	11	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	4.4	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	7.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: RS-PE04-C-worms
Lab Code: K2407006-013

Units: ug/Kg
Basis: Wet

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	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	20	20	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	14	14	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	U	10	0.76	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	3.3	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	6.2	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	76	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: RS-PE04-D-worms
Lab Code: K2407006-014

Units: ug/Kg
Basis: Wet

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	Ui	10	6.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	20	6.8	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	12	12	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	11	11	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	3.7	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	6.9	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	70	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: RS-PE04-E-worms
Lab Code: K2407006-015

Units: ug/Kg
Basis: Wet

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	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	Ui	20	15	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	Ui	13	13	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	Ui	10	7.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	Ui	10	10	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	Ui	10	4.7	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	Ui	10	7.8	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite Clams-1
Lab Code: K2407006-016

Units: ug/Kg
Basis: Wet

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	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	U	20	3.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	U	10	3.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	U	10	0.76	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	U	10	1.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	U	10	4.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	76	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite Clams-2
Lab Code: K2407006-017

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	U	20	3.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	U	10	3.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	U	10	0.76	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	U	10	1.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	U	10	4.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite Clams-3
Lab Code: K2407006-018

Units: ug/Kg
Basis: Wet

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	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	U	20	3.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	U	10	3.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	U	10	0.76	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	U	10	1.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	U	10	4.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	74	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite Clams-4
Lab Code: K2407006-019

Units: ug/Kg
Basis: Wet

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	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	U	20	3.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	U	10	3.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	U	10	0.76	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	U	10	1.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	U	10	4.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polychlorinated Biphenyls (PCBs)

Sample Name: Composite Clams-5
Lab Code: K2407006-020

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	U	20	3.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	U	10	3.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	U	10	0.76	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	U	10	1.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	U	10	4.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	75	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG0415328-4

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1221	ND	U	20	3.1	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1232	ND	U	10	2.0	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1242	ND	U	10	3.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1248	ND	U	10	0.76	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1254	ND	U	10	1.5	1	10/06/04	10/16/04	KWG0415328	
Aroclor 1260	ND	U	10	4.7	1	10/06/04	10/16/04	KWG0415328	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	83	18-123	10/16/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
RS-PE04-A-worms	K2407006-011	77
RS-PE04-B-worms	K2407006-012	74
RS-PE04-C-worms	K2407006-013	76
RS-PE04-D-worms	K2407006-014	70
RS-PE04-E-worms	K2407006-015	74
Composite Clams-1	K2407006-016	76
Composite Clams-2	K2407006-017	74
Composite Clams-3	K2407006-018	74
Composite Clams-4	K2407006-019	72
Composite Clams-5	K2407006-020	75
Method Blank	KWG0415328-4	83
Batch QC	K2407005-019	76
Batch QCMS	KWG0415328-1	73
Batch QCDMS	KWG0415328-2	70
Lab Control Sample	KWG0415328-3	79

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 18-123

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: Batch QC
Lab Code: K2407005-019

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415328

Analyte Name	Sample Result	Batch QCMS KWG0415328-1 Matrix Spike			Batch QCDMS KWG0415328-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Aroclor 1016	ND	180	200	90	169	200	85	27-190	6	50
Aroclor 1260	ND	203	200	101	166	200	83	28-130	20	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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/06/2004
Date Analyzed: 10/16/2004

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415328

	Lab Control Sample KWG0415328-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Aroclor 1016	164	200	82	38-150
Aroclor 1260	169	200	85	30-149

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.

Congener Specific PCB's
EPA Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407006

Cover Page - Organic Analysis Data Package
Congener Specific PCBs

Sample Name	Lab Code	Date Collected	Date Received
RS-PE04-A-worms	K2407006-011	09/10/2004	09/11/2004
RS-PE04-B-worms	K2407006-012	09/10/2004	09/11/2004
RS-PE04-C-worms	K2407006-013	09/10/2004	09/11/2004
RS-PE04-D-worms	K2407006-014	09/10/2004	09/11/2004
RS-PE04-E-worms	K2407006-015	09/10/2004	09/11/2004
Composite Clams-1	K2407006-016	09/10/2004	09/11/2004
Composite Clams-2	K2407006-017	09/10/2004	09/11/2004
Composite Clams-3	K2407006-018	09/10/2004	09/11/2004
Composite Clams-4	K2407006-019	09/10/2004	09/11/2004
Composite Clams-5	K2407006-020	09/10/2004	09/11/2004

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

Signature: _____ Name: Todd Paylin

Date: 10/29/04 Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: RS-PE04-A-worms
Lab Code: K2407006-011

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	**0.15**	J	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	Ui	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.29**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	**1.1**	P	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.57**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**0.90**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.29**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.22**	J	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	*
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	Ui	0.50	0.24	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.19**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.5**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.27**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	100	34-97	10/23/04	Outside Control Limits

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: RS-PE04-B-worms
Lab Code: K2407006-012

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	ND	U	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	Ui	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.39**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	**1.1**	P	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.60**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**0.89**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.28**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.34**	J	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	*
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	Ui	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.26**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	**0.24**	JP	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.4**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.27**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: RS-PE04-C-worms
Lab Code: K2407006-013

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	**0.17**	J	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	Ui	0.50	0.50	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	Ui	0.50	0.37	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	Ui	0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.32**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	ND	U	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.52**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**0.78**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.24**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.33**	J	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	*
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.16**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.2**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.23**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: RS-PE04-D-worms
Lab Code: K2407006-014

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	**0.14**	J	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	Ui	0.50	0.35	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	Ui	0.50	0.27	1	10/06/04	10/23/04	KWG0415329	
PCB 52	**0.11**	J	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	U	0.50	0.073	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.25**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	**0.96**	P	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.55**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**0.84**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.25**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.22**	J	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	*
PCB 77	ND	Ui	0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.19**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.4**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.27**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	93	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: RS-PE04-E-worms
Lab Code: K2407006-015

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	**0.14**	J	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	Ui	0.50	0.50	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	Ui	0.50	0.50	1	10/06/04	10/23/04	KWG0415329	
PCB 52	**0.13**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	Ui	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 101	**0.30**	J	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	**1.0**	P	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	**0.57**		0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	**0.83**		0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	**0.27**	J	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	*
PCB 209	**0.47**	JP	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	*
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	Ui	0.50	0.22	1	10/06/04	10/23/04	KWG0415329	
PCB 118	**0.22**	J	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	**1.4**		0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	**0.26**	JP	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	91	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite Clams-1
Lab Code: K2407006-016

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	ND	U	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	U	0.50	0.073	1	10/06/04	10/23/04	KWG0415329	
PCB 101	ND	U	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	ND	U	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	ND	U	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	ND	U	0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	ND	U	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	
PCB 209	ND	U	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/23/04	KWG0415329	
PCB 118	ND	U	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	ND	U	0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	94	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite Clams-2
Lab Code: K2407006-017

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	ND	U	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/23/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	U	0.50	0.073	1	10/06/04	10/23/04	KWG0415329	
PCB 101	ND	U	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	ND	U	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	ND	U	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	ND	U	0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	ND	U	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	
PCB 209	ND	U	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/23/04	KWG0415329	
PCB 118	ND	U	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	ND	U	0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	94	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite Clams-3
Lab Code: K2407006-018

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3540C
Analysis Method: 8082

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/23/04	KWG0415329	
PCB 18	ND	U	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/23/04	KWG0415329	
PCB 44	**0.40**	JP	0.50	0.063	1	10/06/04	10/23/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	
PCB 66	ND	U	0.50	0.073	1	10/06/04	10/23/04	KWG0415329	
PCB 101	ND	U	0.50	0.065	1	10/06/04	10/23/04	KWG0415329	
PCB 138	ND	U	0.50	0.23	1	10/06/04	10/23/04	KWG0415329	
PCB 180	ND	U	0.50	0.11	1	10/06/04	10/23/04	KWG0415329	
PCB 187	ND	U	0.50	0.18	1	10/06/04	10/23/04	KWG0415329	
PCB 206	ND	U	0.50	0.077	1	10/06/04	10/23/04	KWG0415329	
PCB 209	ND	U	0.50	0.095	1	10/06/04	10/23/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/23/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/23/04	KWG0415329	
PCB 118	ND	U	0.50	0.10	1	10/06/04	10/23/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/23/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/23/04	KWG0415329	
PCB 153	ND	U	0.50	0.15	1	10/06/04	10/23/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/23/04	KWG0415329	
PCB 170	ND	U	0.50	0.080	1	10/06/04	10/23/04	KWG0415329	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	34-97	10/23/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite Clams-4
Lab Code: K2407006-019

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/24/04	KWG0415329	
PCB 18	ND	U	0.50	0.11	1	10/06/04	10/24/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/24/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/24/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/24/04	KWG0415329	
PCB 66	ND	U	0.50	0.073	1	10/06/04	10/24/04	KWG0415329	
PCB 101	ND	U	0.50	0.065	1	10/06/04	10/24/04	KWG0415329	
PCB 138	ND	U	0.50	0.23	1	10/06/04	10/24/04	KWG0415329	
PCB 180	ND	U	0.50	0.11	1	10/06/04	10/24/04	KWG0415329	
PCB 187	ND	U	0.50	0.18	1	10/06/04	10/24/04	KWG0415329	
PCB 206	ND	U	0.50	0.077	1	10/06/04	10/24/04	KWG0415329	
PCB 209	ND	U	0.50	0.095	1	10/06/04	10/24/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/24/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/24/04	KWG0415329	
PCB 118	ND	U	0.50	0.10	1	10/06/04	10/24/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/24/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/24/04	KWG0415329	
PCB 153	ND	U	0.50	0.15	1	10/06/04	10/24/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/24/04	KWG0415329	
PCB 170	ND	U	0.50	0.080	1	10/06/04	10/24/04	KWG0415329	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	86	34-97	10/24/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Congener Specific PCBs

Sample Name: Composite Clams-5
Lab Code: K2407006-020

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/24/04	KWG0415329	
PCB 18	ND	U	0.50	0.11	1	10/06/04	10/24/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/24/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/24/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/24/04	KWG0415329	
PCB 66	ND	U	0.50	0.073	1	10/06/04	10/24/04	KWG0415329	
PCB 101	ND	U	0.50	0.065	1	10/06/04	10/24/04	KWG0415329	
PCB 138	ND	U	0.50	0.23	1	10/06/04	10/24/04	KWG0415329	
PCB 180	ND	U	0.50	0.11	1	10/06/04	10/24/04	KWG0415329	
PCB 187	ND	U	0.50	0.18	1	10/06/04	10/24/04	KWG0415329	
PCB 206	ND	U	0.50	0.077	1	10/06/04	10/24/04	KWG0415329	
PCB 209	ND	U	0.50	0.095	1	10/06/04	10/24/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/24/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/24/04	KWG0415329	
PCB 118	ND	U	0.50	0.10	1	10/06/04	10/24/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/24/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/24/04	KWG0415329	
PCB 153	ND	U	0.50	0.15	1	10/06/04	10/24/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/24/04	KWG0415329	
PCB 170	ND	U	0.50	0.080	1	10/06/04	10/24/04	KWG0415329	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	34-97	10/24/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: NA
Date Received: NA

Congener Specific PCBs

Sample Name: Method Blank
Lab Code: KWG0415329-4

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PCB 8	ND	U	0.50	0.14	1	10/06/04	10/22/04	KWG0415329	
PCB 18	ND	U	0.50	0.11	1	10/06/04	10/22/04	KWG0415329	
PCB 28	ND	U	0.50	0.31	1	10/06/04	10/22/04	KWG0415329	
PCB 44	ND	U	0.50	0.063	1	10/06/04	10/22/04	KWG0415329	
PCB 52	ND	U	0.50	0.080	1	10/06/04	10/22/04	KWG0415329	
PCB 66	ND	U	0.50	0.073	1	10/06/04	10/22/04	KWG0415329	
PCB 101	ND	U	0.50	0.065	1	10/06/04	10/22/04	KWG0415329	
PCB 138	ND	U	0.50	0.23	1	10/06/04	10/22/04	KWG0415329	
PCB 180	ND	U	0.50	0.11	1	10/06/04	10/22/04	KWG0415329	
PCB 187	ND	U	0.50	0.18	1	10/06/04	10/22/04	KWG0415329	
PCB 206	ND	U	0.50	0.077	1	10/06/04	10/22/04	KWG0415329	
PCB 209	ND	U	0.50	0.095	1	10/06/04	10/22/04	KWG0415329	
PCB 77	ND	U	0.50	0.092	1	10/06/04	10/22/04	KWG0415329	
PCB 105	ND	U	0.50	0.21	1	10/06/04	10/22/04	KWG0415329	
PCB 118	ND	U	0.50	0.10	1	10/06/04	10/22/04	KWG0415329	
PCB 126	ND	U	0.50	0.12	1	10/06/04	10/22/04	KWG0415329	
PCB 128	ND	U	0.50	0.091	1	10/06/04	10/22/04	KWG0415329	
PCB 153	ND	U	0.50	0.15	1	10/06/04	10/22/04	KWG0415329	
PCB 169	ND	U	0.50	0.085	1	10/06/04	10/22/04	KWG0415329	
PCB 170	ND	U	0.50	0.080	1	10/06/04	10/22/04	KWG0415329	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	34-97	10/22/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006

Surrogate Recovery Summary
Congener Specific PCBs

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	
RS-PE04-A-worms	K2407006-011	100	*
RS-PE04-B-worms	K2407006-012	97	
RS-PE04-C-worms	K2407006-013	97	
RS-PE04-D-worms	K2407006-014	93	
RS-PE04-E-worms	K2407006-015	91	
Composite Clams-1	K2407006-016	94	
Composite Clams-2	K2407006-017	94	
Composite Clams-3	K2407006-018	97	
Composite Clams-4	K2407006-019	86	
Composite Clams-5	K2407006-020	97	
Method Blank	KWG0415329-4	97	
Batch QC	K2407005-020	95	
Batch QCMS	KWG0415329-1	93	
Batch QCDMS	KWG0415329-2	86	
Lab Control Sample	KWG0415329-3	96	

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene 34-97

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: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/06/2004
Date Analyzed: 10/23/2004

Matrix Spike/Duplicate Matrix Spike Summary
Congener Specific PCBs

Sample Name: Batch QC
Lab Code: K2407005-020

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet

Level: Low
Extraction Lot: KWG0415329

Analyte Name	Sample Result	Batch QCMS KWG0415329-1 Matrix Spike			Batch QCDMS KWG0415329-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
PCB 8	ND	9.01	9.99	90	8.72	9.98	87	35-140	3	50
PCB 18	0.20	8.19	9.99	80	7.84	9.98	77	28-125	4	50
PCB 28	ND	9.59	9.99	96	9.35	9.98	94	34-149	2	50
PCB 44	ND	8.67	9.99	87	8.59	9.98	86	40-134	1	50
PCB 52	ND	8.25	9.99	83	7.95	9.98	80	44-133	4	50
PCB 66	ND	8.21	9.99	82	7.82	9.98	78	27-138	5	50
PCB 101	0.44	10.1	9.99	96	9.94	9.98	95	43-142	1	50
PCB 138	1.3	9.35	9.99	81	8.85	9.98	76	17-147	6	50
PCB 180	0.73	9.34	9.99	86	9.04	9.98	83	27-142	3	50
PCB 206	0.30	9.53	9.99	92	9.18	9.98	89	31-143	4	50
PCB 209	0.28	8.32	9.99	81	8.19	9.98	79	30-141	2	50
PCB 77	ND	8.13	9.99	81	7.85	9.98	79	15-204	3	50
PCB 105	ND	9.68	9.99	97	7.85	9.98	79	20-159	21	50
PCB 118	0.26	8.51	9.99	83	8.15	9.98	79	26-159	4	50
PCB 126	ND	7.67	9.99	77	7.44	9.98	75	42-141	3	50
PCB 153	1.8	8.86	9.99	71	8.37	9.98	66	25-129	6	50
PCB 169	ND	8.72	9.99	87	8.35	9.98	84	37-154	4	50
PCB 170	0.32	8.46	9.99	81	8.14	9.98	78	30-134	4	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.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Extracted: 10/06/2004
Date Analyzed: 10/23/2004

Lab Control Spike Summary
Congener Specific PCBs

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: ug/Kg
Basis: Wet
Level: Low
Extraction Lot: KWG0415329

Analyte Name	Lab Control Sample KWG0415329-3 Lab Control Spike Result	Expected	%Rec	%Rec Limits
PCB 8	8.51	10.0	85	25-152
PCB 18	7.65	10.0	77	13-134
PCB 28	9.20	10.0	92	13-167
PCB 44	8.37	10.0	84	23-147
PCB 52	7.83	10.0	78	32-136
PCB 66	7.59	10.0	76	23-140
PCB 101	9.78	10.0	98	16-172
PCB 138	7.82	10.0	78	24-140
PCB 180	8.71	10.0	87	28-148
PCB 206	8.97	10.0	90	28-147
PCB 209	8.36	10.0	84	31-143
PCB 77	7.42	10.0	74	14-174
PCB 105	7.56	10.0	76	14-165
PCB 118	8.61	10.0	86	18-171
PCB 126	7.64	10.0	76	46-143
PCB 153	7.09	10.0	71	31-135
PCB 169	8.46	10.0	85	36-154
PCB 170	8.09	10.0	81	27-148

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.

Polynuclear Aromatic Hydrocarbons
EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues

Service Request: K2407006

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Polynuclear Aromatic Hydrocarbons

Sample Name	Lab Code	Date Collected	Date Received
RS-PE04-A-worms	K2407006-011	09/10/2004	09/11/2004
RS-PE04-B-worms	K2407006-012	09/10/2004	09/11/2004
RS-PE04-C-worms	K2407006-013	09/10/2004	09/11/2004
RS-PE04-D-worms	K2407006-014	09/10/2004	09/11/2004
RS-PE04-E-worms	K2407006-015	09/10/2004	09/11/2004
Composite Clams-1	K2407006-016	09/10/2004	09/11/2004
Composite Clams-2	K2407006-017	09/10/2004	09/11/2004
Composite Clams-3	K2407006-018	09/10/2004	09/11/2004
Composite Clams-4	K2407006-019	09/10/2004	09/11/2004
Composite Clams-5	K2407006-020	09/10/2004	09/11/2004

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

Signature: [signature]

Date: 10/12/04

Name: Carl Degner

Title: SVM Supervisor

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: RS-PE04-A-worms
Lab Code: K2407006-011

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.0**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.67**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.68**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.26**	J	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.30**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.34**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**0.97**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.19**	J	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**0.89**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**1.3**	J	5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	ND	U	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	ND	U	5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**0.16**	J	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	**0.18**	J	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	53-103	10/08/04	Acceptable
Fluoranthene-d10	74	56-109	10/08/04	Acceptable
Terphenyl-d14	82	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: RS-PE04-B-worms
Lab Code: K2407006-012

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.4**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.74**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.72**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.26**	J	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.39**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.34**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**1.3**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	ND	U	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**1.1**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**1.6**	J	5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**0.32**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.42**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	ND	U	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	53-103	10/08/04	Acceptable
Fluoranthene-d10	80	56-109	10/08/04	Acceptable
Terphenyl-d14	90	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: RS-PE04-C-worms
Lab Code: K2407006-013

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**2.1**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.79**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.68**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.71**	J	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.36**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.31**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**1.2**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.37**	J	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**10**		5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**14**		5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**5.1**		5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**6.5**		5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	**2.8**	J	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	**3.0**	J	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	**5.8**		5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**4.0**	J	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	**0.47**	J	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	**4.0**	J	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	71	53-103	10/08/04	Acceptable
Fluoranthene-d10	77	56-109	10/08/04	Acceptable
Terphenyl-d14	87	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: RS-PE04-D-worms
Lab Code: K2407006-014

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.1**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.68**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.69**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.30**	J	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.31**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.31**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**1.1**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.24**	J	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**0.99**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**1.0**	J	5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**0.30**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.39**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**0.38**	J	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	**0.23**	J	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	53-103	10/08/04	Acceptable
Fluoranthene-d10	79	56-109	10/08/04	Acceptable
Terphenyl-d14	90	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: RS-PE04-E-worms
Lab Code: K2407006-015

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.2**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.76**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.84**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	**0.29**	J	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.33**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.34**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**1.0**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	ND	U	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**0.73**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**0.84**	J	5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	ND	U	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.46**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	**1.0**	J	5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	ND	U	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	76	53-103	10/08/04	Acceptable
Fluoranthene-d10	84	56-109	10/08/04	Acceptable
Terphenyl-d14	94	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite Clams-1
Lab Code: K2407006-016

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.79**	J	4.9	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.42**	J	4.9	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.36**	J	4.9	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	ND	U	4.9	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.20**	J	4.9	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.37**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**1.2**	J	4.9	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.28**	J	4.9	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**1.8**	J	4.9	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**2.9**	J	4.9	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	ND	U	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.85**	J	4.9	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	**0.38**	J	4.9	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	**0.20**	J	4.9	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	4.9	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**0.30**	J	4.9	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	4.9	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	ND	U	4.9	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	72	53-103	10/08/04	Acceptable
Fluoranthene-d10	80	56-109	10/08/04	Acceptable
Terphenyl-d14	95	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite Clams-2
Lab Code: K2407006-017

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.88**	J	4.9	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.46**	J	4.9	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.32**	J	4.9	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	ND	U	4.9	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.12**	J	4.9	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.31**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**0.98**	J	4.9	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.22**	J	4.9	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**1.2**	J	4.9	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**1.4**	J	4.9	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	ND	U	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.54**	J	4.9	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	4.9	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	4.9	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	4.9	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**0.14**	J	4.9	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	4.9	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	**0.13**	J	4.9	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	71	53-103	10/08/04	Acceptable
Fluoranthene-d10	79	56-109	10/08/04	Acceptable
Terphenyl-d14	90	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	PPB Environmental	**Service Request:**	K2407006
Project:	USACE-Port Everglades 2004 Tissues	**Date Collected:**	09/10/2004
Sample Matrix:	Tissue	**Date Received:**	09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name:	Composite Clams-3	**Units:**	ug/Kg
Lab Code:	K2407006-018	**Basis:**	Wet
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.64**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.32**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.30**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	ND	U	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	ND	U	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.23**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**0.69**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.37**	J	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**2.0**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**2.3**	J	5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**0.60**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.74**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	**0.15**	J	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	68	53-103	10/08/04	Acceptable
Fluoranthene-d10	76	56-109	10/08/04	Acceptable
Terphenyl-d14	91	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite Clams-4
Lab Code: K2407006-019

Units: ug/Kg
Basis: Wet

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.83**	J	4.9	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.50**	J	4.9	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.37**	J	4.9	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	ND	U	4.9	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.13**	J	4.9	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.33**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**1.1**	J	4.9	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.24**	J	4.9	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**1.1**	J	4.9	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**1.6**	J	4.9	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**0.59**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.55**	J	4.9	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	4.9	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	4.9	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	4.9	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	**0.16**	J	4.9	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	4.9	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	**0.15**	J	4.9	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	67	53-103	10/08/04	Acceptable
Fluoranthene-d10	74	56-109	10/08/04	Acceptable
Terphenyl-d14	86	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: 09/10/2004
Date Received: 09/11/2004

Polynuclear Aromatic Hydrocarbons

Sample Name: Composite Clams-5
Lab Code: K2407006-020

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1.3**	J	5.0	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.44**	J	5.0	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	**0.31**	J	5.0	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	ND	U	5.0	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.13**	J	5.0	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.29**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**0.96**	J	5.0	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.22**	J	5.0	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**0.86**	J	5.0	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**1.2**	J	5.0	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	**0.47**	J	5.0	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	**0.46**	J	5.0	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	5.0	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	5.0	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	5.0	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	5.0	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	**0.16**	J	5.0	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	53-103	10/08/04	Acceptable
Fluoranthene-d10	76	56-109	10/08/04	Acceptable
Terphenyl-d14	92	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006
Date Collected: NA
Date Received: NA

Polynuclear Aromatic Hydrocarbons

Sample Name: Method Blank
Lab Code: KWG0415152-3

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: ug/Kg
Basis: Wet

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.34**	J	4.9	0.26	1	10/05/04	10/08/04	KWG0415152	
2-Methylnaphthalene	**0.17**	J	4.9	0.15	1	10/05/04	10/08/04	KWG0415152	
1-Methylnaphthalene	ND	U	4.9	0.13	1	10/05/04	10/08/04	KWG0415152	
Acenaphthylene	ND	U	4.9	0.050	1	10/05/04	10/08/04	KWG0415152	
Acenaphthene	**0.10**	J	4.9	0.074	1	10/05/04	10/08/04	KWG0415152	
Fluorene	**0.14**	J	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Phenanthrene	**0.32**	J	4.9	0.066	1	10/05/04	10/08/04	KWG0415152	
Anthracene	**0.18**	J	4.9	0.055	1	10/05/04	10/08/04	KWG0415152	
Fluoranthene	**0.29**	J	4.9	0.053	1	10/05/04	10/08/04	KWG0415152	
Pyrene	**0.22**	J	4.9	0.070	1	10/05/04	10/08/04	KWG0415152	
Benz(a)anthracene	ND	U	4.9	0.054	1	10/05/04	10/08/04	KWG0415152	
Chrysene	ND	U	4.9	0.080	1	10/05/04	10/08/04	KWG0415152	
Benzo(b)fluoranthene	ND	U	4.9	0.045	1	10/05/04	10/08/04	KWG0415152	
Benzo(k)fluoranthene	ND	U	4.9	0.081	1	10/05/04	10/08/04	KWG0415152	
Benzo(a)pyrene	ND	U	4.9	0.076	1	10/05/04	10/08/04	KWG0415152	
Indeno(1,2,3-cd)pyrene	ND	U	4.9	0.073	1	10/05/04	10/08/04	KWG0415152	
Dibenz(a,h)anthracene	ND	U	4.9	0.079	1	10/05/04	10/08/04	KWG0415152	
Benzo(g,h,i)perylene	ND	U	4.9	0.097	1	10/05/04	10/08/04	KWG0415152	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	53-103	10/08/04	Acceptable
Fluoranthene-d10	68	56-109	10/08/04	Acceptable
Terphenyl-d14	94	50-124	10/08/04	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: PPB Environmental
Project: USACE-Port Everglades 2004 Tissues
Sample Matrix: Tissue

Service Request: K2407006

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
RS-PE04-A-worms	K2407006-011	66	74	82
RS-PE04-B-worms	K2407006-012	74	80	90
RS-PE04-C-worms	K2407006-013	71	77	87
RS-PE04-D-worms	K2407006-014	73	79	90
RS-PE04-E-worms	K2407006-015	76	84	94
Composite Clams-1	K2407006-016	72	80	95
Composite Clams-2	K2407006-017	71	79	90
Composite Clams-3	K2407006-018	68	76	91
Composite Clams-4	K2407006-019	67	74	86
Composite Clams-5	K2407006-020	66	76	92
Method Blank	KWG0415152-3	66	68	94
Batch QC	K2407005-017	62	68	74
Batch QCMS	KWG0415152-4	71 D	81 D	87 D
Batch QCDMS	KWG0415152-5	78 D	88 D	93 D
Lab Control Sample	KWG0415152-1	70 D	79 D	92 D
Duplicate Lab Control Sample	KWG0415152-2	75 D	90 D	103 D

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	53-103
Sur2 =	Fluoranthene-d10	56-109
Sur3 =	Terphenyl-d14	50-124

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

APPENDIX H

ADDAMS – STFATE Modeling Data

Port Everglades 103 Evaluation Elutriate Test

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MODEL:  SHORT-TERM FATE OF DREDGED MATERIAL FROM SPLIT HULL BARGE OR HOPPER DREDGE
              (PC Version 5.01  MAY, 1993)
TITLE:   Port Everglades 103 Evaluation Elutriate Test
FILE:    04-1ELUT.DUE
AREA:    THE PROJECT AREA IS DESCRIBED BY A 32 X 32 GRID.
         THERE ARE 32 GRID POINTS (NMAX) IN THE Z-DIRECTION (FROM LEFT TO RIGHT)
           AND 32 GRID POINTS (MMAX) IN THE X-DIRECTION (FROM TOP TO BOTTOM).
SITE:    THE DISPOSAL SITE IS REPRESENTED AS A RECTANGLE ON THE SITE GRID.
         THE TOPMOST BOUNDARY IS LOCATED AT POINT #23 (MDS1) FROM THE TOP OF THE GRID.
         THE BOTTOMMOST BOUNDARY IS LOCATED AT POINT #29 (MDS2) FROM THE TOP OF THE GRID.
         THE LEFTMOST BOUNDARY IS LOCATED AT POINT # 7 (NDS1) FROM THE LEFT OF THE GRID.
         THE RIGHTMOST BOUNDARY IS LOCATED AT POINT #13 (NDS2) FROM THE LEFT OF THE GRID.
EXECUTION PARAMETERS:
         MODEL COEFFICIENTS SPECIFIED IN INPUT DATA (KEY1 = 1).
         PERFORM COMPLETE ANALYSIS INCLUDING DESCENT, COLLAPSE, AND TRANSPORT-DIFFUSION (KEY2 = 0).
         PERFORM TIER II OCEAN DUMPING INITIAL MIXING EVALUATION
           TO COMPARE WATER QUALITY WITH CRITERIA (KEY3 = 2).
         PRINTING OF CONVECTIVE DESCENT RESULTS NOT REQUESTED (IPCN = 0).
         PRINTING OF CONVECTIVE DESCENT RESULTS NOT REQUESTED (IPCN = 0).
         PRINTING OF DYNAMIC COLLAPSE RESULTS NOT REQUESTED (IPCL = 0).
         QUARTERLY PRINTING OF LONG-TERM TRANSPORT DIFFUSION RESULTS REQUESTED (IPLT = 0).
         LONG-TERM TRANSPORT DIFFUSION RESULTS REQUESTED AT THE FOLLOWING 2 DEPTH(S):
             120.00 FT
             719.00 FT

GRID:    NUMBER OF LONG TERM GRID POINTS IN Z-DIRECTION (NMAX) = 32
         NUMBER OF LONG TERM GRID POINTS IN X-DIRECTION (MMAX) = 32
         GRID SPACING IN Z-DIRECTION (DZ) =  1000.00000 FT
         GRID SPACING IN X-DIRECTION (DX) =  1000.00000 FT
         CONSTANT DEPTH GRID SPECIFIED HAVING A DEPTH (DEPC) OF   720.00000 FT.
DEPTH GRID, FEET:
```

M N = 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
2 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
3 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
4 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
5 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
6 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
7 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
8 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
9 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
10 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
11 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
12 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
13 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
14 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
15 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
16 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
17 720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.

18	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
19	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
20	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
21	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
22	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
23	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
24	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
25	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
26	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
27	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
28	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
29	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
30	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
31	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
32	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.

M N =	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
2	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
3	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
4	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
5	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
6	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
7	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
8	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
9	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
10	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
11	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
12	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
13	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
14	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
15	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
16	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
17	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
18	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
19	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
20	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
21	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
22	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
23	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
24	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
25	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
26	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
27	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
28	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
29	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
30	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
31	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
32	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.

CODED GRID:

RANGE OF N IS 1 TO 32

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 X O W W W W B B B B B B W W W W W W W W W W W W W W W W O X
 X O W W W W B W W W W W B W W W W W W W W W W W W W W W O X
 X O W W W W B W W W W W B W W W W W W W W W W W W W W W O X
 X O W W W W B W W W W W B W W W W W W W W W W W W W W W O X
 X O W W W W B W W W W W B W W W W W W W W W W W W W W W O X
 X O W W W W B D W W W W B W W W W W W W W W W W W W W W O X
 X O W W W W B B B B B B W W W W W W W W W W W W W W W W O X
 X O W W W W W W W W W W W W W W W W W W W W W W W W W W O X
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 X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X
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LEGEND FOR CODED GRID:
- W = WATER POINT
- L = LAND POINT
- O = OPEN BOUNDARY
- B = DISPOSAL SITE BOUNDARY
- D = DUMP LOCATION
- X = DUMMY POINT

NUMBER OF GRID POINTS WITHIN ESTUARY = 784

DISPOSAL LOCATION:

THE DUMP LOCATION IS 0.2700E+05 FT (XBARGE) OR ABOUT GRID POINT #28 FROM THE TOP OF THE GRID AND 7000. FT (ZBARGE) OR ABOUT GRID POINT # 8 FROM THE LEFT EDGE OF THE GRID.

THE BOTTOM SLOPE IN THE X-DIRECTION AT THE DUMP SITE (SLOPEX, POSITIVE IF DEPTH INCREASES FROM TOP OF GRID TO BOTTOM OF GRID) IS 0.00 DEGREES.

THE BOTTOM SLOPE IN THE Z-DIRECTION AT THE DUMP SITE (SLOPEZ, POSITIVE IF DEPTH INCREASES FROM LEFT SIDE OF GRID TO RIGHT SIDE OF GRID) IS 0.00 DEGREES.

THE DISPOSAL LOCATION IS NOT AT A HOLE OR DEPRESSION. (DHOLE = 0.0)

AMBIENT DENSITY PROFILE:

DEPTH (FT)	DENSITY (G/CC)
0.0000E+00	1.0239
60.00	1.0241
120.0	1.0254
720.0	1.0265

COMPUTED DEPTH:

THE DEPTH AT THE DUMP LOCATION WAS INTERPOLATED TO BE 720.0 FT.

VELOCITY DISTRIBUTION:

VERTICALLY AVERAGED X-DIRECTION (VAX = -1.70 FPS) AND
Z-DIRECTION (VAZ = 0.660 FPS) VELOCITIES CONSTRUCTED AT EACH GRID POINT
FROM A SINGLE OBSERVATION AT A DEPTH (D) OF 720. FT.

VELOCITY GRID: X-DIRECTION, FPS

M N=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
2	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
3	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
4	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
5	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
6	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
7	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
8	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
9	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
10	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
11	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
12	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
13	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
14	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
15	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
16	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
17	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
18	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
19	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
20	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
21	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
22	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
23	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
24	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
25	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
26	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
27	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
28	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
29	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
30	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
31	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
32	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700

M N=	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
2	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
3	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
4	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
5	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
6	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
7	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
8	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
9	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
10	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
11	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
12	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700

13	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
14	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
15	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
16	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
17	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
18	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
19	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
20	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
21	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
22	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
23	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
24	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
25	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
26	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
27	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
28	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
29	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
30	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
31	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	
32	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	

VELOCITY GRID: Z-DIRECTION, FPS

M N=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
2	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
3	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
4	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
5	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
6	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
7	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
8	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
9	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
10	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
11	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
12	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
13	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
14	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
15	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
16	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
17	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
18	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
19	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
20	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
21	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
22	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
23	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
24	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
25	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
26	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
27	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
28	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
29	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
30	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660

31	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
32	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660

M N=	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
2	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
3	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
4	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
5	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
6	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
7	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
8	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
9	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
10	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
11	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
12	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
13	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
14	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
15	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
16	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
17	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
18	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
19	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
20	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
21	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
22	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
23	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
24	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
25	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
26	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
27	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
28	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
29	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
30	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
31	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
32	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660

BOTTOM SHEAR STRESS, LBS/SQ FT:

M N=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
3	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
4	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
5	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
6	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
7	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
8	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
9	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
10	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
11	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
12	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
13	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
14	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
15	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075

16	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
17	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
18	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
19	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
20	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
21	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
22	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
23	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
24	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
25	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
26	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
27	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
28	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
29	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
30	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
31	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
32	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075

M N=	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
3	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
4	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
5	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
6	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
7	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
8	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
9	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
10	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
11	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
12	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
13	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
14	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
15	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
16	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
17	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
18	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
19	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
20	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
21	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
22	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
23	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
24	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
25	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
26	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
27	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
28	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
29	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
30	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
31	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
32	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075

TIME PARAMETERS:

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         DURATION OF THE DISPOSAL, TREL =      20.00 SECONDS
         DURATION OF THE SIMULATION, TSTOP =   14400.00 SECONDS
         LONG-TERM TIME STEP USED IN THE SIMULATION, DTL =     600.00 SECONDS
BARGE DESCRIPTION:
         LENGTH OF BARGE, BARGL =  0.20E+03 FT
         WIDTH OF BARGE, BARGW =   50.     FT
         DRAFT OF LOADED BARGE, DREL1 =   17.0     FT
         DRAFT OF UNLOADED BARGE, DREL2 =   5.00     FT
MODEL COEFFICIENTS READ FROM INPUT:
         TURBULENT THERMAL ENTRAINMENT             ALPHA0 =    0.2350
         SETTLING COEFFICIENT                      BETA   =    0.0000
         APPARENT MASS COEFFICIENT                 CM     =    1.0000
         DRAG COEFFICIENT FOR A SPHERE             CD     =    0.5000
         RATIO--CLOUD/AMBIENT DENSITY GRADIENTS    GAMA   =    0.2500
         FORM DRAG FOR COLLAPSING CLOUD            CDRAG  =    1.0000
         SKIN FRICTION FOR COLLAPSING CLOUD        CFRIC  =    0.0100
         DRAG FOR AN ELLIPSOIDAL WEDGE             CD3    =    0.1000
         DRAG FOR A PLATE                          CD4    =    1.0000
         ENTRAINMENT IN COLLAPSE                   ALPHAC =    0.1000
         FRICTION BETWEEN CLOUD AND BOTTOM         FRICTN =    0.0100
         4/3 LAW HORIZ. DIFF. DISSIPATION FACTOR   ALAMDA  =    0.0050
         UNSTRATIFIED WATER VERT. DIFF. COEF.      AKY0    =    0.0250
         STRIPPING COEF. OF FINES DURING CONVERTIVE DESCENT=    0.0030
MATERIAL DESCRIPTION:   2 LAYERS OF DREDGED MATERIAL WITH 4 SOLIDS FRACTIONS
         VOLUMETRIC CONCENTRATIONS OF SOLIDS FRACTIONS DO NOT VARY FROM LAYER TO LAYER.
                              L A Y E R  1
                     SPEC. GRAV.   VOLUMETRIC     FALL    DEPOSITIONAL
         DESCRIPTION  OR DENSITY  CONCENTRATION  VELOCITY   VOID RATIO   CHARACTER
                       (GM/CC)      (VOL/VOL)      (FPS)
           SAND        2.700        0.4745        0.10000    0.6000       NONCOHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =  0.2000E-01 LBS/SQ. FT.
               SEDIMENT FRACTION WILL NOT BE STRIPPED DURING CONVECTIVE DESCENT.
           SILT        2.650        0.6080E-01    0.01000     4.000       COHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =  0.8000E-02 LBS/SQ. FT.
               SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.
           CLAY        2.650        0.6080E-01    0.00200     7.000       COHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =  0.2000E-02 LBS/SQ. FT.
               SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.
           GRAVEL      2.700        0.5400E-01    1.00000    0.5000       NONCOHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =   99.00     LBS/SQ. FT.
               SEDIMENT FRACTION WILL NOT BE STRIPPED DURING CONVECTIVE DESCENT.
WATER QUALITY ANALYSIS DATA:
         CONCENTRATIONS OF COPPER   FOLLOWING INITIAL MIXING OF THE FLUID
           ARE COMPUTED FOR WATER QUALITY EVALUATIONS.
         THE INITIAL CONCENTRATION OF COPPER   IS  0.566000E-02 MG/L
           AND ITS BACKGROUND CONCENTRATION IS  0.0000000E+00 MG/L.


         THE WATER QUALITY CRITERIA FOR COPPER   IS  0.4800000E-02 MG/L.
                     SPEC. GRAV.   VOLUMETRIC
         DESCRIPTION  OR DENSITY  CONCENTRATION
                        (GM/CC)     (VOL/VOL)
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           FLUID       1.026        0.3499
DISCHARGE PARAMETERS:
         VOLUME OF LAYER 1 =    2000.     CU YD
         INITIAL RADIUS OF CLOUD, RB =    29.54236     FT
         INITIAL DEPTH OF CLOUD CENTROID, DREL =    25.21     FT
      INITIAL CLOUD VELOCITIES...
         X-DIRECTION (FROM TOP TO BOTTOM OF GRID), CU(1) =    6.000     FPS
         Y-DIRECTION (FROM SURFACE TO BOTTOM), CV(1) =   0.5731     FPS
         Z-DIRECTION (FROM LEFT TO RIGHT OF GRID), CW(1) =   0.0000E+00 FPS
BULK PARAMETERS:
         BULK DENSITY, ROO =    2.108047     G/CC
         AGGREGATE OR BULK VOIDS RATIO, BVOID =    1.508
CONVECTIVE DESCENT PHASE:
         IN TRIAL #1 THE DESCENT PHASE TIME STEP (DT) WAS   0.57188071E-01 SECONDS.
                     THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS 1161.
                     THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                     THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
         IN TRIAL #2 THE DESCENT PHASE TIME STEP (DT) WAS   0.16598837     SECONDS.
                     THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS  399.
                     THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                     THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
CLOUD COLLAPSE PHASE:
         IN TRIAL #1 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.16598837     SECONDS.
                     THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1199.
                     THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                     THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                     THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
         IN TRIAL #2 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.22131783     SECONDS.
                     THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1187.
                     THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                     THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                     DIFFUSION OF THE DISCHARGE IS GREATER THAN DYNAMIC SPREADING FROM THE COLLAPSE.
    TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
     DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
      (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
    NEW CLOUD CREATED, NTCLD(K) (K =     1) =    1
      250.5      0.2669E+05   7153.       1387.       697.9       22.13      0.2562E+05  0.0000E+00      1187             399
    NOTE -- When all solid material has settled from a cloud, the cloud is erased and
               the remaining clouds for this solids type are renumbered.
    TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
     DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
      (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
    NEW CLOUD CREATED, NTCLD(K) (K =     2) =    1
      29.59      0.2706E+05   7010.       174.1       14.13       290.0       150.7      0.0000E+00       119               1
    NEW CLOUD CREATED, NTCLD(K) (K =     2) =    2

      49.17      0.2703E+05   7023.       244.0       304.1       168.3       40.42      0.0000E+00       237             119
    NEW CLOUD CREATED, NTCLD(K) (K =     2) =    3
      68.76      0.2699E+05   7036.       297.4       472.5       128.4       23.41      0.0000E+00       355             237
    NEW CLOUD CREATED, NTCLD(K) (K =     2) =    4
      92.44      0.2695E+05   7051.       522.0       600.9       99.54       70.47      0.0000E+00       473             399
    NEW CLOUD CREATED, NTCLD(K) (K =     2) =    5
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  118.6      0.2691E+05   7068.       835.3       682.4       37.64       50.48      0.0000E+00       591             473
NEW CLOUD CREATED, NTCLD(K) (K =     2) =    6
  144.7      0.2687E+05   7085.       1038.       710.5       9.530       20.33      0.0000E+00       709             591
NEW CLOUD CREATED, NTCLD(K) (K =     2) =    7
  170.8      0.2682E+05   7102.       1161.       716.2       3.825       9.910      0.0000E+00       827             709
NEW CLOUD CREATED, NTCLD(K) (K =     2) =    8
  196.9      0.2678E+05   7119.       1249.       717.8       2.196       6.312      0.0000E+00       945             827
NEW CLOUD CREATED, NTCLD(K) (K =     2) =    9
  223.0      0.2674E+05   7136.       1322.       718.5       1.533       4.732      0.0000E+00      1063             945
NEW CLOUD CREATED, NTCLD(K) (K =     2) =   10
  249.1      0.2670E+05   7152.       1384.       718.8       1.180       3.851      0.0000E+00      1181            1063
NEW CLOUD CREATED, NTCLD(K) (K =     2) =   11
  250.5      0.2669E+05   7153.       1387.       697.9       22.13       2903.      0.0000E+00      1187            1181
NOTE -- When all solid material has settled from a cloud, the cloud is erased and
          the remaining clouds for this solids type are renumbered.
TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
 DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
  (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    1
  29.59      0.2706E+05   7010.       174.1       14.13       290.0       150.7      0.0000E+00       119               1
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    2
  49.17      0.2703E+05   7023.       244.0       304.1       168.3       40.42      0.0000E+00       237             119
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    3
  68.76      0.2699E+05   7036.       297.4       472.5       128.4       23.41      0.0000E+00       355             237
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    4
  92.44      0.2695E+05   7051.       522.0       600.9       99.54       70.47      0.0000E+00       473             399
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    5
  118.6      0.2691E+05   7068.       835.3       682.4       37.64       50.48      0.0000E+00       591             473
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    6
  144.7      0.2687E+05   7085.       1038.       710.5       9.530       20.33      0.0000E+00       709             591
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    7
  170.8      0.2682E+05   7102.       1161.       716.2       3.825       9.910      0.0000E+00       827             709
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    8
  196.9      0.2678E+05   7119.       1249.       717.8       2.196       6.312      0.0000E+00       945             827
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    9
  223.0      0.2674E+05   7136.       1322.       718.5       1.533       4.732      0.0000E+00      1063             945
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   10
  249.1      0.2670E+05   7152.       1384.       718.8       1.180       3.851      0.0000E+00      1181            1063
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   11
  250.5      0.2669E+05   7153.       1387.       697.9       22.13       2903.      0.0000E+00      1187            1181
NOTE -- When all solid material has settled from a cloud, the cloud is erased and
          the remaining clouds for this solids type are renumbered.
TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
 DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
  (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    1
  92.44      0.2695E+05   7051.       522.0       720.0      0.1000E-02   572.4      0.0000E+00       473             399
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    2
  118.6      0.2691E+05   7068.       835.3       720.0      0.1000E-02   1231.      0.0000E+00       591             473
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    3
  144.7      0.2687E+05   7085.       1038.       720.0      0.1000E-02   755.2      0.0000E+00       709             591
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    4
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      170.8      0.2682E+05   7102.       1161.       720.0      0.1000E-02   266.4      0.0000E+00       827             709
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    5
      196.9      0.2678E+05   7119.       1249.       720.0      0.1000E-02   70.95      0.0000E+00       945             827
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    6
      223.0      0.2674E+05   7136.       1322.       720.0      0.1000E-02   15.97      0.0000E+00      1063             945
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    7
      249.1      0.2670E+05   7152.       1384.       720.0      0.1000E-02   3.175      0.0000E+00      1181            1063
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    8
      250.5      0.2669E+05   7153.       1387.       697.9       22.13      0.6804      0.0000E+00      1187            1181
    NOTE -- When all solid material has settled from a cloud, the cloud is erased and
              the remaining clouds for this solids type are renumbered.
    TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
     DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
      (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (  MG )     (  MG )     WAS CREATED      WAS CREATED
    NEW CLOUD CREATED, NTCLD(K) (K =     5) =    1
      250.5      0.2669E+05   7153.       1387.       697.9       22.13       3028.      0.0000E+00      1187               1
    NOTE -- When all solid material has settled from a cloud, the cloud is erased and
              the remaining clouds for this solids type are renumbered.
MATERIAL DESCRIPTION:   2 LAYERS OF DREDGED MATERIAL WITH 4 SOLIDS FRACTIONS
         VOLUMETRIC CONCENTRATIONS OF SOLIDS FRACTIONS DO NOT VARY FROM LAYER TO LAYER.
                              L A Y E R  2
                     SPEC. GRAV.   VOLUMETRIC     FALL    DEPOSITIONAL
         DESCRIPTION  OR DENSITY  CONCENTRATION  VELOCITY   VOID RATIO   CHARACTER
                       (GM/CC)      (VOL/VOL)      (FPS)
           SAND        2.700        0.4745        0.10000    0.6000       NONCOHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =  0.2000E-01 LBS/SQ. FT.
               SEDIMENT FRACTION WILL NOT BE STRIPPED DURING CONVECTIVE DESCENT.
           SILT        2.650        0.6080E-01    0.01000     4.000       COHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =  0.8000E-02 LBS/SQ. FT.
               SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.
           CLAY        2.650        0.6080E-01    0.00200     7.000       COHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =  0.2000E-02 LBS/SQ. FT.
               SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.
           GRAVEL      2.700        0.5400E-01    1.00000    0.5000       NONCOHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =   99.00     LBS/SQ. FT.
               SEDIMENT FRACTION WILL NOT BE STRIPPED DURING CONVECTIVE DESCENT.
WATER QUALITY ANALYSIS DATA:
         CONCENTRATIONS OF COPPER   FOLLOWING INITIAL MIXING OF THE FLUID
           ARE COMPUTED FOR WATER QUALITY EVALUATIONS.
         THE INITIAL CONCENTRATION OF COPPER   IS  0.566000E-02 MG/L
           AND ITS BACKGROUND CONCENTRATION IS  0.0000000E+00 MG/L.
         THE WATER QUALITY CRITERIA FOR COPPER   IS  0.4800000E-02 MG/L.
                     SPEC. GRAV.   VOLUMETRIC
         DESCRIPTION  OR DENSITY  CONCENTRATION
                        (GM/CC)     (VOL/VOL)
           FLUID       1.026        0.3499
DISCHARGE PARAMETERS:
         VOLUME OF LAYER 2 =    1000.     CU YD
         INITIAL RADIUS OF CLOUD, RB =    23.44779     FT
         INITIAL DEPTH OF CLOUD CENTROID, DREL =    18.63     FT
      INITIAL CLOUD VELOCITIES...
         X-DIRECTION (FROM TOP TO BOTTOM OF GRID), CU(1) =    6.000     FPS
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        Y-DIRECTION (FROM SURFACE TO BOTTOM), CV(1) =   0.2865     FPS
        Z-DIRECTION (FROM LEFT TO RIGHT OF GRID), CW(1) =   0.0000E+00 FPS
BULK PARAMETERS:
        BULK DENSITY, ROO =    2.108047     G/CC
        AGGREGATE OR BULK VOIDS RATIO, BVOID =    1.508
CONVECTIVE DESCENT PHASE:
        IN TRIAL #1 THE DESCENT PHASE TIME STEP (DT) WAS   0.36026224E-01 SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS 1200.
                    THE BOTTOM WAS NOT ENCOUNTERED DURING CONVECTIVE DESCENT.
                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
        IN TRIAL #2 THE DESCENT PHASE TIME STEP (DT) WAS   0.10807867     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS  837.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
        IN TRIAL #3 THE DESCENT PHASE TIME STEP (DT) WAS   0.22615463     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS  399.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
CLOUD COLLAPSE PHASE:
        IN TRIAL #1 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.22615463     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1199.
                    THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
        IN TRIAL #2 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.30153951     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1199.
                    THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
        IN TRIAL #3 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.40205267     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1014.
                    THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    DIFFUSION OF THE DISCHARGE IS GREATER THAN DYNAMIC SPREADING FROM THE COLLAPSE.
    TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
     DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
      (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
    NEW CLOUD CREATED, NTCLD(K) (K =     1) =    2
      356.1      0.2659E+05   7216.       1351.       720.0      0.1000E-02   1860.      0.0000E+00      1011             399
    NEW CLOUD CREATED, NTCLD(K) (K =     1) =    3
      357.3      0.2659E+05   7217.       1352.       698.4       21.58      0.1095E+05  0.0000E+00      1014            1011
    NOTE -- When all solid material has settled from a cloud, the cloud is erased and
              the remaining clouds for this solids type are renumbered.
    TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
     DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
      (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
    NEW CLOUD CREATED, NTCLD(K) (K =     2) =   12
      42.84      0.2711E+05   7013.       157.4       9.837       276.6       83.97      0.0000E+00       102               1
    NEW CLOUD CREATED, NTCLD(K) (K =     2) =   13
      65.68      0.2707E+05   7028.       220.8       286.4       152.8       20.18      0.0000E+00       203             102
    NEW CLOUD CREATED, NTCLD(K) (K =     2) =   14
      88.53      0.2703E+05   7043.       269.1       439.2       116.3       11.65      0.0000E+00       304             203
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NEW CLOUD CREATED, NTCLD(K) (K =     2) =   15
  112.4      0.2699E+05   7058.       325.9       555.5       16.61       11.13      0.0000E+00       405             399
NEW CLOUD CREATED, NTCLD(K) (K =     2) =   16
  153.0      0.2693E+05   7085.       687.2       572.1       107.3       44.65      0.0000E+00       506             405
NEW CLOUD CREATED, NTCLD(K) (K =     2) =   17
  193.6      0.2686E+05   7112.       954.9       679.4       17.06       16.01      0.0000E+00       607             506
NEW CLOUD CREATED, NTCLD(K) (K =     2) =   18
  234.2      0.2679E+05   7138.       1106.       696.4       5.188       6.529      0.0000E+00       708             607
NEW CLOUD CREATED, NTCLD(K) (K =     2) =   19
  274.9      0.2672E+05   7164.       1206.       701.6       2.587       3.713      0.0000E+00       809             708
NEW CLOUD CREATED, NTCLD(K) (K =     2) =   20
  315.5      0.2666E+05   7190.       1284.       704.2       1.699       2.648      0.0000E+00       910             809
NEW CLOUD CREATED, NTCLD(K) (K =     2) =   21
  356.1      0.2659E+05   7216.       1351.       705.9       1.258       2.087      0.0000E+00      1011             910
NEW CLOUD CREATED, NTCLD(K) (K =     2) =   22
  357.3      0.2659E+05   7217.       1352.       698.4       21.58       1439.      0.0000E+00      1014            1011
NOTE -- When all solid material has settled from a cloud, the cloud is erased and
          the remaining clouds for this solids type are renumbered.
TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
 DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
  (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   12
  42.84      0.2711E+05   7013.       157.4       9.837       276.6       83.97      0.0000E+00       102               1
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   13
  65.68      0.2707E+05   7028.       220.8       286.4       152.8       20.18      0.0000E+00       203             102
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   14
  88.53      0.2703E+05   7043.       269.1       439.2       116.3       11.65      0.0000E+00       304             203
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   15
  112.4      0.2699E+05   7058.       325.9       555.5       16.61       11.13      0.0000E+00       405             399
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   16
  153.0      0.2693E+05   7085.       687.2       572.1       107.3       44.65      0.0000E+00       506             405
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   17
  193.6      0.2686E+05   7112.       954.9       679.4       17.06       16.01      0.0000E+00       607             506
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   18
  234.2      0.2679E+05   7138.       1106.       696.4       5.188       6.529      0.0000E+00       708             607
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   19
  274.9      0.2672E+05   7164.       1206.       701.6       2.587       3.713      0.0000E+00       809             708
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   20
  315.5      0.2666E+05   7190.       1284.       704.2       1.699       2.648      0.0000E+00       910             809
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   21
  356.1      0.2659E+05   7216.       1351.       705.9       1.258       2.087      0.0000E+00      1011             910
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   22
  357.3      0.2659E+05   7217.       1352.       698.4       21.58       1439.      0.0000E+00      1014            1011
NOTE -- When all solid material has settled from a cloud, the cloud is erased and
          the remaining clouds for this solids type are renumbered.
TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
 DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
  (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    2
  112.4      0.2699E+05   7058.       325.9       720.0      0.1000E-02   26.49      0.0000E+00       405             399
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    3
  153.0      0.2693E+05   7085.       687.2       720.0      0.1000E-02   788.3      0.0000E+00       506             405
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    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    4
      193.6      0.2686E+05   7112.       954.9       720.0      0.1000E-02   513.1      0.0000E+00       607             506
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    5
      234.2      0.2679E+05   7138.       1106.       720.0      0.1000E-02   114.1      0.0000E+00       708             607
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    6
      274.9      0.2672E+05   7164.       1206.       720.0      0.1000E-02   14.49      0.0000E+00       809             708
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    7
      315.5      0.2666E+05   7190.       1284.       720.0      0.1000E-02   1.348      0.0000E+00       910             809
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    8
      356.1      0.2659E+05   7216.       1351.       720.0      0.1000E-02  0.1007      0.0000E+00      1011             910
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    9
      357.3      0.2659E+05   7217.       1352.       698.4       21.58      0.6663E-02  0.0000E+00      1014            1011
    NOTE -- When all solid material has settled from a cloud, the cloud is erased and
              the remaining clouds for this solids type are renumbered.
    TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
     DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
      (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (  MG )     (  MG )    WAS CREATED      WAS CREATED
    NEW CLOUD CREATED, NTCLD(K) (K =     5) =    2
      357.3      0.2659E+05   7217.       1352.       698.4       21.58       1514.      0.0000E+00      1014               1
    NOTE -- When all solid material has settled from a cloud, the cloud is erased and
              the remaining clouds for this solids type are renumbered.
LONG TERM DIFFUSION RESULTS:
    BEGIN LONG TERM SIMULATION OF FATE OF SAND
SUMMARY OF SAND     DISTRIBUTIONS AFTER     600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =    0.00000E+00
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     38435.
     COMPUTATIONS FOR SAND     TERMINATED AT     600.00  SEC. ELAPSED TIME...MATERIAL SETTLED TO BOTTOM
BOTTOM ACCUMULATION OF SAND     (CU FT/GRID SQUARE) ,    600.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   100.0         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
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24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   . .10 6.4 3.6 .02   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   + 2.6 179  81 .36   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   . 1.2  85  24 .06   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   + .22 .05   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
THICKNESS (FT) OF SAND     ACCUMULATED ON BOTTOM,      600.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY  0.1000E-01     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   0   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   0   + .10 .05   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   . .04 2.8 1.2   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   . .01 1.3 .38   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
    BEGIN LONG TERM SIMULATION OF FATE OF SILT
SUMMARY OF SILT     DISTRIBUTIONS AFTER     600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4914.5
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     10.279
SUMMARY OF SILT     DISTRIBUTIONS AFTER    1200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4902.5
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     22.314
SUMMARY OF SILT     DISTRIBUTIONS AFTER    1800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4895.2
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     29.651
SUMMARY OF SILT     DISTRIBUTIONS AFTER    2400.00 SEC.
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    TOTAL SUSPENDED MATERIAL (CU FT) =     4889.7
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     35.124
SUMMARY OF SILT     DISTRIBUTIONS AFTER    3000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4885.3
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     39.551
SUMMARY OF SILT     DISTRIBUTIONS AFTER    3600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4881.3
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     43.516
CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD   3600.00 SECONDS AFTER DUMP
             120.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 0000   0   0   0   0   0   0   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   0   0   .   + .01   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   0   .   + .04 .29 .22 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 0000   0   0   0   0   .   + .14 .87 .66 .06   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   0   .   + .05 .32 .24 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   0   0   .   + .01 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD   3600.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
```

```
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   .   .   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   .   +   + .04 .12 .10 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   .   + .09 .84 2.3 1.9 .52 .04   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   + .02 .57 5.0  14  12 3.0 .25   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   .   + .03 1.0 9.2  25  21 5.6 .46   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   + .02 .60 5.2  14  12 3.2 .26   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   .   + .10 .94 2.5 2.1 .58 .04   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
BOTTOM ACCUMULATION OF SILT     (CU FT/GRID SQUARE) ,   3600.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   .   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   .   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   .   +   + .02 .06 .05 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   .   + .01 .16 .42 .34 .08   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   .   + .06 .52 1.1 .80 .18 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   .   + .16 1.1 1.8 .90 .14   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   . .01 .40 2.1 2.1 .59 .05   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   + .03 1.0 3.8 1.9 .24 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   + .07 2.7 6.1 1.1 .04   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
```

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27 OOOO   0   0   0   . .10 5.6 4.0 .24   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   . .02 1.8 .63   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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SMALL CLOUDS AT   3600.00 SECONDS ELAPSED TIME FOR SILT

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.2099E+05	9367.	150.7	0.0000E+00	2464.	11.10	296.3	0.340000E-04
2	0.2099E+05	9367.	40.42	0.0000E+00	2551.	301.1	174.6	0.340000E-04
3	0.2099E+05	9366.	23.41	0.0000E+00	2611.	469.4	134.7	0.340000E-04
4	0.2099E+05	9366.	70.47	0.0000E+00	2818.	597.9	105.9	0.340000E-04
5	0.2099E+05	9366.	50.33	0.0000E+00	3044.	679.3	40.68	0.340000E-04
6	0.2099E+05	9366.	20.11	0.0000E+00	3162.	707.4	12.57	0.340000E-04
7	0.2099E+05	9366.	9.692	0.0000E+00	3230.	713.1	6.858	0.340000E-04
8	0.2100E+05	9365.	6.108	0.0000E+00	3260.	714.8	5.225	0.340000E-04
9	0.2100E+05	9364.	4.542	0.0000E+00	3283.	715.4	4.556	0.340000E-04
10	0.2100E+05	9364.	3.673	0.0000E+00	3302.	715.8	4.192	0.340000E-04
11	0.2100E+05	9364.	2870.	0.0000E+00	3303.	695.0	24.99	0.396435E-04
12	0.2106E+05	9360.	83.97	0.0000E+00	2427.	6.817	282.9	0.340000E-04
13	0.2106E+05	9360.	20.18	0.0000E+00	2504.	283.4	159.1	0.340000E-04
14	0.2107E+05	9360.	11.65	0.0000E+00	2557.	436.2	122.5	0.340000E-04
15	0.2107E+05	9360.	11.13	0.0000E+00	2618.	552.5	22.88	0.340000E-04
16	0.2107E+05	9360.	44.65	0.0000E+00	2929.	569.1	113.5	0.340000E-04
17	0.2107E+05	9360.	16.01	0.0000E+00	3084.	676.4	23.31	0.340000E-04
18	0.2107E+05	9359.	6.529	0.0000E+00	3163.	693.4	11.43	0.340000E-04
19	0.2107E+05	9359.	3.713	0.0000E+00	3209.	698.6	8.819	0.340000E-04
20	0.2107E+05	9358.	2.648	0.0000E+00	3235.	701.2	7.914	0.340000E-04
21	0.2107E+05	9357.	2.087	0.0000E+00	3249.	702.9	7.439	0.340000E-04
22	0.2107E+05	9357.	1430.	0.0000E+00	3249.	695.5	24.52	0.340000E-04

```
SUMMARY OF SILT     DISTRIBUTIONS AFTER    4200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4877.4
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     47.375
SUMMARY OF SILT     DISTRIBUTIONS AFTER    4800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4874.0
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     50.817
SUMMARY OF SILT     DISTRIBUTIONS AFTER    5400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4870.6
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     54.178
SUMMARY OF SILT     DISTRIBUTIONS AFTER    6000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4867.3
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     57.466
SUMMARY OF SILT     DISTRIBUTIONS AFTER    6600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4864.1
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     60.684
SUMMARY OF SILT     DISTRIBUTIONS AFTER    7200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4861.0
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     63.835
CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD   7200.00 SECONDS AFTER DUMP
             120.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
```

```
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   0   .   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   .   .   +   + .01 .01   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   .   +   + .02 .07 .08 .04 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   .   + .01 .08 .22 .27 .14 .03   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   .   + .01 .11 .30 .37 .20 .04   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   .   + .01 .06 .18 .22 .12 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   .   +   + .01 .05 .06 .03   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   .   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD   7200.00 SECONDS AFTER DUMP
                 719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   .   .   .   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   .   .   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   .   .   +   + .03 .08 .10 .06 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   .   + .01 .08 .33 .72 .84 .52 .17 .03   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   +   + .04 .37 1.5 3.2 3.7 2.3 .78 .13   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   +   + .11 .89 3.6 7.8 9.1 5.6 1.8 .33   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   + .01 .15 1.1 4.6  10  12 7.2 2.4 .42   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   +   + .10 .79 3.2 6.9 8.1 5.0 1.6 .29   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   +   + .03 .29 1.1 2.5 2.9 1.8 .61 .10   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
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19 0000   0   0   0   0   .   +   + .05 .23 .50 .58 .36 .12 .02   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
BOTTOM ACCUMULATION OF SILT     (CU FT/GRID SQUARE) ,   7200.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 0000   0   0   0   0   0   0   0   0   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 0000   0   0   0   0   0   0   .   .   .   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 0000   0   0   0   0   0   .   .   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 0000   0   0   0   0   0   .   +   +   + .02 .02 .01   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   00000
14 0000   0   0   0   0   .   +   + .01 .05 .10 .11 .06 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   0   00000
15 0000   0   0   0   0   .   +   + .04 .16 .31 .33 .18 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
16 0000   0   0   0   0   .   + .01 .09 .34 .62 .59 .31 .08 .01   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
17 0000   0   0   0   .   .   + .02 .18 .56 .88 .73 .33 .08 .01   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
18 0000   0   0   0   .   +   + .05 .30 .78 1.0 .68 .24 .05   +   +   .   0   0   0   0   0   0   0   0   0   0   0   00000
19 0000   0   0   0   .   +   + .10 .48 1.0 1.0 .51 .14 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   .   + .01 .18 .74 1.2 .89 .32 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   .   + .03 .34 1.0 1.3 .68 .16 .02   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 0000   0   0   0   .   + .07 .61 1.5 1.2 .42 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   .   + .16 1.1 1.9 .99 .19 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   . .01 .40 2.1 2.1 .60 .06   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 0000   0   0   0   + .03 1.0 3.8 1.9 .24 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 0000   0   0   0   + .07 2.7 6.1 1.1 .04   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 0000   0   0   0   . .10 5.6 4.0 .24   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 0000   0   0   0   . .02 1.8 .63   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 0000   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
SMALL CLOUDS AT    7200.00 SECONDS ELAPSED TIME FOR SILT
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL      MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #     TOP OF GRID   LEFT OF GRID   (CU FT)     (CU FT)       (FT)        (FT)         (FT)          (FPS)
  1       0.1487E+05    0.1174E+05   150.7      0.0000E+00   3935.       7.933        302.9      0.340000E-04
  2       0.1487E+05    0.1174E+05   40.42      0.0000E+00   3988.       297.9        181.2      0.340000E-04
```

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  3       0.1487E+05    0.1174E+05   23.41      0.0000E+00   4026.       466.2       141.3       0.340000E-04
  4       0.1487E+05    0.1174E+05   70.47      0.0000E+00   4158.       594.7       112.4       0.340000E-04
  5       0.1487E+05    0.1174E+05   50.19      0.0000E+00   4311.       676.2       43.85       0.340000E-04
  6       0.1487E+05    0.1174E+05   19.94      0.0000E+00   4393.       704.3       15.73       0.340000E-04
  7       0.1487E+05    0.1174E+05   9.555      0.0000E+00   4442.       710.0       10.03       0.340000E-04
  8       0.1488E+05    0.1174E+05   6.000      0.0000E+00   4463.       711.6       8.393       0.340000E-04
  9       0.1488E+05    0.1174E+05   4.453      0.0000E+00   4480.       712.3       7.724       0.340000E-04
 10       0.1488E+05    0.1174E+05   3.596      0.0000E+00   4494.       712.6       7.359       0.340000E-04
 11       0.1488E+05    0.1174E+05   2857.      0.0000E+00   4494.       691.8       28.15       0.340000E-04
 12       0.1494E+05    0.1174E+05   83.97      0.0000E+00   3913.       3.653       289.4       0.340000E-04
 13       0.1494E+05    0.1174E+05   20.18      0.0000E+00   3959.       280.2       165.7       0.340000E-04
 14       0.1495E+05    0.1174E+05   11.65      0.0000E+00   3992.       433.1       129.1       0.340000E-04
 15       0.1495E+05    0.1174E+05   11.13      0.0000E+00   4030.       549.4       29.46       0.340000E-04
 16       0.1495E+05    0.1174E+05   44.65      0.0000E+00   4233.       566.0       120.1       0.340000E-04
 17       0.1495E+05    0.1174E+05   16.01      0.0000E+00   4339.       673.2       29.89       0.340000E-04
 18       0.1495E+05    0.1174E+05   6.529      0.0000E+00   4394.       690.3       18.01       0.340000E-04
 19       0.1495E+05    0.1173E+05   3.713      0.0000E+00   4427.       695.5       15.39       0.340000E-04
 20       0.1495E+05    0.1173E+05   2.648      0.0000E+00   4445.       698.1       14.49       0.340000E-04
 21       0.1495E+05    0.1173E+05   2.087      0.0000E+00   4455.       699.8       14.01       0.340000E-04
 22       0.1495E+05    0.1173E+05   1423.      0.0000E+00   4455.       692.3       27.68       0.340000E-04
SUMMARY OF SILT     DISTRIBUTIONS AFTER    7800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4857.9
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     66.922
SUMMARY OF SILT     DISTRIBUTIONS AFTER    8400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4854.9
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     69.949
SUMMARY OF SILT     DISTRIBUTIONS AFTER    9000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4851.9
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     72.917
SUMMARY OF SILT     DISTRIBUTIONS AFTER    9600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4849.0
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     75.829
SUMMARY OF SILT     DISTRIBUTIONS AFTER   10200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4846.1
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     78.686
SUMMARY OF SILT     DISTRIBUTIONS AFTER   10800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4843.3
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     81.492
    MAX CONC IS 0.00000009 OUTPUT SUPPRESSED AT  120.00 FT
CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD  10800.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   .   .   .   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   .   +   +   + .02 .04 .05 .04 .02   +   +   0   0   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   +   +   + .04 .12 .25 .32 .27 .15 .05 .01   0   0   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   +   + .03 .16 .51 1.0 1.3 1.1 .62 .22 .05   0   0   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   + .01 .09 .44 1.3 2.7 3.5 3.0 1.6 .60 .14   0   0   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   + .02 .16 .77 2.3 4.7 6.2 5.2 2.9 1.0 .24   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   + .02 .18 .88 2.7 5.4 7.0 5.9 3.2 1.1 .27   0   0   0   0   0   0   0   0   0   0   OOOOO
```

```
11 0000   0   0   0   0   0   0   + .01 .13 .64 1.9 3.9 5.1 4.3 2.4 .86 .20   0   0   0   0   0   0   0   0   0   0   00000
12 0000   0   0   0   0   0   0   +   + .06 .30 .95 1.9 2.4 2.0 1.1 .41 .09   0   0   0   0   0   0   0   0   0   0   00000
13 0000   0   0   0   0   0   0   +   + .02 .09 .29 .59 .77 .65 .36 .12 .03   0   0   0   0   0   0   0   0   0   0   00000
14 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
BOTTOM ACCUMULATION OF SILT     (CU FT/GRID SQUARE) ,  10800.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 0000   0   0   0   0   0   0   0   0   0   .   .   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   00000
 4 0000   0   0   0   0   0   0   0   0   .   .   .   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   0   00000
 5 0000   0   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   00000
 6 0000   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   00000
 7 0000   0   0   0   0   0   .   .   +   +   + .01 .03 .04 .03 .01   +   +   +   .   .   0   0   0   0   0   0   0   00000
 8 0000   0   0   0   0   0   .   .   +   + .02 .05 .11 .13 .10 .05 .01   +   +   .   .   0   0   0   0   0   0   0   00000
 9 0000   0   0   0   0   0   .   +   + .01 .05 .14 .25 .29 .22 .11 .03   +   +   +   .   0   0   0   0   0   0   0   00000
10 0000   0   0   0   0   0   .   +   + .02 .09 .25 .43 .47 .34 .16 .05 .01   +   +   .   0   0   0   0   0   0   0   00000
11 0000   0   0   0   0   .   .   +   + .04 .16 .39 .60 .60 .39 .17 .05   +   +   +   .   0   0   0   0   0   0   0   00000
12 0000   0   0   0   0   .   .   + .01 .07 .24 .53 .71 .62 .36 .13 .03   +   +   .   .   0   0   0   0   0   0   0   00000
13 0000   0   0   0   0   .   +   + .02 .11 .35 .66 .76 .57 .27 .09 .02   +   +   .   .   0   0   0   0   0   0   0   00000
14 0000   0   0   0   0   .   +   + .03 .18 .48 .78 .75 .46 .18 .04   +   +   +   .   0   0   0   0   0   0   0   0   00000
15 0000   0   0   0   0   .   +   + .06 .27 .64 .86 .68 .34 .10 .02   +   +   .   .   0   0   0   0   0   0   0   0   00000
16 0000   0   0   0   0   .   + .01 .11 .41 .80 .88 .56 .22 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   00000
17 0000   0   0   0   .   .   + .02 .18 .58 .94 .83 .41 .12 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   00000
18 0000   0   0   0   .   +   + .05 .30 .79 1.0 .70 .26 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
19 0000   0   0   0   .   +   + .10 .48 1.0 1.0 .51 .14 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   .   + .01 .18 .74 1.2 .89 .32 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   .   + .03 .34 1.0 1.3 .68 .16 .02   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 0000   0   0   0   .   + .07 .61 1.5 1.2 .42 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   .   + .16 1.1 1.9 .99 .19 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   . .01 .40 2.1 2.1 .60 .06   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 0000   0   0   0   + .03 1.0 3.8 1.9 .24 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 0000   0   0   0   + .07 2.7 6.1 1.1 .04   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 0000   0   0   0   . .10 5.6 4.0 .24   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 0000   0   0   0   . .02 1.8 .63   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 0000   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
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30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
SMALL CLOUDS AT   10800.00 SECONDS ELAPSED TIME FOR SILT
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID   (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1        8748.        0.1412E+05   150.7      0.0000E+00   4971.       4.770       309.5      0.340000E-04
  2        8750.        0.1412E+05   40.42      0.0000E+00   5013.       294.8       187.8      0.340000E-04
  3        8751.        0.1412E+05   23.41      0.0000E+00   5043.       463.1       147.9      0.340000E-04
  4        8752.        0.1412E+05   70.47      0.0000E+00   5148.       591.6       119.0      0.340000E-04
  5        8752.        0.1412E+05   50.06      0.0000E+00   5271.       673.0       47.02      0.340000E-04
  6        8753.        0.1412E+05   19.81      0.0000E+00   5338.       701.1       18.90      0.340000E-04
  7        8755.        0.1412E+05   9.457      0.0000E+00   5378.       706.8       13.19      0.340000E-04
  8        8756.        0.1412E+05   5.929      0.0000E+00   5395.       708.4       11.56      0.340000E-04
  9        8758.        0.1412E+05   4.396      0.0000E+00   5409.       709.1       10.89      0.340000E-04
 10        8760.        0.1412E+05   3.548      0.0000E+00   5421.       709.5       10.53      0.340000E-04
 11        8760.        0.1412E+05   2845.      0.0000E+00   5421.       688.7       31.32      0.340000E-04
 12        8823.        0.1411E+05   83.97      0.0000E+00   4954.      0.4894       296.0      0.340000E-04
 13        8824.        0.1411E+05   20.18      0.0000E+00   4990.       277.1       172.3      0.340000E-04
 14        8825.        0.1411E+05   11.65      0.0000E+00   5016.       429.9       135.7      0.340000E-04
 15        8825.        0.1411E+05   11.13      0.0000E+00   5046.       546.2       36.03      0.340000E-04
 16        8826.        0.1411E+05   44.65      0.0000E+00   5208.       562.8       126.7      0.340000E-04
 17        8827.        0.1411E+05   16.01      0.0000E+00   5294.       670.1       36.46      0.340000E-04
 18        8828.        0.1411E+05   6.529      0.0000E+00   5339.       687.1       24.58      0.340000E-04
 19        8829.        0.1411E+05   3.713      0.0000E+00   5366.       692.3       21.96      0.340000E-04
 20        8831.        0.1411E+05   2.648      0.0000E+00   5381.       694.9       21.06      0.340000E-04
 21        8834.        0.1411E+05   2.087      0.0000E+00   5389.       696.6       20.58      0.340000E-04
 22        8834.        0.1411E+05   1417.      0.0000E+00   5389.       689.1       30.85      0.340000E-04
SUMMARY OF SILT     DISTRIBUTIONS AFTER   11400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4840.6
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     84.247
SUMMARY OF SILT     DISTRIBUTIONS AFTER   12000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4837.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     86.959
SUMMARY OF SILT     DISTRIBUTIONS AFTER   12600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4835.2
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     89.621
SUMMARY OF SILT     DISTRIBUTIONS AFTER   13200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4832.5
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     92.194
SUMMARY OF SILT     DISTRIBUTIONS AFTER   13800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4830.0
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     94.597
SUMMARY OF SILT     DISTRIBUTIONS AFTER   14400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4827.4
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     96.728
    MAX CONC IS 0.00000006 OUTPUT SUPPRESSED AT  120.00 FT
CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD  14400.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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 3 OOOO   0   0   0   0   0   0   0   +   + .03 .16 .60 1.6 3.1 4.2 4.2 3.0 1.5 .59   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   +   + .03 .17 .64 1.7 3.2 4.5 4.5 3.2 1.6 .62   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   +   + .02 .13 .48 1.2 2.4 3.4 3.4 2.4 1.2 .47   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   +   + .01 .07 .26 .71 1.3 1.8 1.8 1.3 .70 .26   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   .   +   + .02 .10 .28 .54 .74 .74 .53 .27 .10   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   .   +   +   + .03 .08 .15 .21 .21 .15 .07 .02   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
BOTTOM ACCUMULATION OF SILT     (CU FT/GRID SQUARE) ,  14400.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   .   .   +   + .01 .05 .12 .21 .27 .24 .16 .07 .02   +   +   +   .   .   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   .   +   +   + .02 .09 .20 .34 .40 .34 .21 .09 .03   +   +   +   .   .   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   .   +   + .01 .04 .14 .29 .45 .50 .40 .23 .10 .03   +   +   +   .   .   0   0   0   00000
 6 OOOO   0   0   0   0   0   .   .   +   + .01 .07 .20 .39 .54 .54 .39 .21 .08 .02   +   +   +   .   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   .   .   +   + .02 .10 .27 .47 .59 .53 .34 .16 .05 .01   +   +   .   .   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   .   +   +   + .04 .15 .35 .56 .61 .48 .27 .11 .03   +   +   +   .   .   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   .   +   + .01 .07 .22 .45 .63 .60 .40 .19 .07 .01   +   +   .   .   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   .   +   + .02 .11 .31 .55 .67 .55 .32 .13 .03   +   +   +   .   .   0   0   0   0   0   00000
11 OOOO   0   0   0   0   .   .   +   + .04 .17 .41 .65 .68 .48 .23 .08 .02   +   +   .   .   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   .   .   + .01 .07 .25 .53 .73 .65 .38 .15 .04   +   +   +   .   .   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   .   +   + .02 .11 .35 .66 .77 .57 .28 .09 .02   +   +   .   .   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   .   +   + .03 .18 .48 .78 .75 .46 .18 .05   +   +   +   .   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   .   +   + .06 .27 .64 .86 .68 .34 .10 .02   +   +   .   .   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   .   + .01 .11 .41 .80 .88 .56 .22 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   .   .   + .02 .18 .58 .94 .83 .41 .12 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   .   +   + .05 .30 .79 1.0 .70 .26 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   .   +   + .10 .48 1.0 1.0 .51 .14 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   .   + .01 .18 .74 1.2 .89 .32 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   .   + .03 .34 1.0 1.3 .68 .16 .02   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
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22 OOOO   0   0   0   .   + .07 .61 1.5 1.2 .42 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   .   + .16 1.1 1.9 .99 .19 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000

24 OOOO   0   0   0   . .01 .40 2.1 2.1 .60 .06   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   + .03 1.0 3.8 1.9 .24 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   + .07 2.7 6.1 1.1 .04   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   . .10 5.6 4.0 .24   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   . .02 1.8 .63   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
SMALL CLOUDS AT   14400.00 SECONDS ELAPSED TIME FOR SILT
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID    (CU FT)     (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1        2628.         0.1649E+05   150.7      0.0000E+00   5821.       1.606       316.1      0.340000E-04
  2        2630.         0.1649E+05   40.42      0.0000E+00   5856.       291.6       194.4      0.340000E-04
  3        2631.         0.1649E+05   23.41      0.0000E+00   5882.       459.9       154.5      0.340000E-04
  4        2632.         0.1649E+05   70.47      0.0000E+00   5972.       588.4       125.6      0.340000E-04
  5        2632.         0.1649E+05   49.94      0.0000E+00   6078.       669.8       50.18      0.340000E-04
  6        2633.         0.1649E+05   19.69      0.0000E+00   6136.       697.9       22.07      0.340000E-04
  7        2635.         0.1649E+05   9.381      0.0000E+00   6171.       703.6       16.36      0.340000E-04
  8        2636.         0.1649E+05   5.875      0.0000E+00   6186.       705.3       14.73      0.340000E-04
  9        2638.         0.1649E+05   4.354      0.0000E+00   6198.       705.9       14.06      0.340000E-04
 10        2640.         0.1649E+05   3.514      0.0000E+00   6208.       706.3       13.69      0.340000E-04
 11        2640.         0.1649E+05   2835.      0.0000E+00   6208.       685.5       34.49      0.340000E-04
 12        2703.         0.1649E+05   83.97      0.0000E+00   5806.     0.0000E+00    302.6      0.340000E-04
 13        2704.         0.1649E+05   20.18      0.0000E+00   5837.       273.9       178.8      0.340000E-04
 14        2705.         0.1649E+05   11.65      0.0000E+00   5859.       426.7       142.3      0.340000E-04
 15        2705.         0.1649E+05   11.13      0.0000E+00   5885.       543.1       42.60      0.340000E-04
 16        2706.         0.1649E+05   44.65      0.0000E+00   6023.       559.7       133.2      0.340000E-04
 17        2707.         0.1649E+05   16.01      0.0000E+00   6098.       666.9       43.03      0.340000E-04
 18        2708.         0.1649E+05   6.529      0.0000E+00   6136.       684.0       31.15      0.340000E-04
 19        2709.         0.1649E+05   3.713      0.0000E+00   6160.       689.2       28.54      0.340000E-04
 20        2711.         0.1649E+05   2.648      0.0000E+00   6173.       691.8       27.63      0.340000E-04
 21        2714.         0.1649E+05   2.085      0.0000E+00   6180.       693.5       26.51      0.340000E-04
 22        2714.         0.1649E+05   1412.      0.0000E+00   6180.       686.0       34.02      0.340000E-04
BOTTOM ACCUMULATION OF SILT     (CU FT/GRID SQUARE) ,  14400.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   .   .   +   + .01 .05 .12 .21 .27 .24 .16 .07 .02   +   +   +   .   .   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   .   +   +   + .02 .09 .20 .34 .40 .34 .21 .09 .03   +   +   +   .   .   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   .   +   + .01 .04 .14 .29 .45 .50 .40 .23 .10 .03   +   +   +   .   .   0   0   0   00000
 6 OOOO   0   0   0   0   0   .   .   +   + .01 .07 .20 .39 .54 .54 .39 .21 .08 .02   +   +   +   .   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   .   .   +   + .02 .10 .27 .47 .59 .53 .34 .16 .05 .01   +   +   .   .   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   .   +   +   + .04 .15 .35 .56 .61 .48 .27 .11 .03   +   +   +   .   .   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   .   +   + .01 .07 .22 .45 .63 .60 .40 .19 .07 .01   +   +   .   .   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   .   +   + .02 .11 .31 .55 .67 .55 .32 .13 .03   +   +   +   .   .   0   0   0   0   0   00000
11 OOOO   0   0   0   0   .   .   +   + .04 .17 .41 .65 .68 .48 .23 .08 .02   +   +   .   .   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   .   .   + .01 .07 .25 .53 .73 .65 .38 .15 .04   +   +   +   .   .   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   .   +   + .02 .11 .35 .66 .77 .57 .28 .09 .02   +   +   .   .   0   0   0   0   0   0   0   00000
```

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14 OOOO   0   0   0   0   .   +   + .03 .18 .48 .78 .75 .46 .18 .05   +   +   +   .   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   .   +   + .06 .27 .64 .86 .68 .34 .10 .02   +   +   .   .   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   .   + .01 .11 .41 .80 .88 .56 .22 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   .   .   + .02 .18 .58 .94 .83 .41 .12 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   .   +   + .05 .30 .79 1.0 .70 .26 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   .   +   + .10 .48 1.0 1.0 .51 .14 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   .   + .01 .18 .74 1.2 .89 .32 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   .   + .03 .34 1.0 1.3 .68 .16 .02   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   .   + .07 .61 1.5 1.2 .42 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   .   + .16 1.1 1.9 .99 .19 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   . .01 .40 2.1 2.1 .60 .06   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   + .03 1.0 3.8 1.9 .24 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   + .07 2.7 6.1 1.1 .04   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   . .10 5.6 4.0 .24   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   . .02 1.8 .63   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
THICKNESS (FT) OF SILT     ACCUMULATED ON BOTTOM,    14400.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY  0.1000E-04     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   .   .   +   +   + .02 .06 .10 .13 .12 .08 .03 .01   +   +   .   .   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   .   .   +   + .01 .04 .10 .17 .20 .17 .10 .04 .01   +   +   .   .   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   .   +   +   + .02 .07 .14 .22 .25 .20 .11 .05 .01   +   +   .   .   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   .   +   +   + .03 .10 .19 .27 .27 .19 .10 .04 .01   +   +   .   .   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   .   .   +   + .01 .05 .13 .23 .29 .26 .17 .08 .02   +   +   +   .   .   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   .   .   +   + .02 .07 .17 .28 .30 .24 .13 .05 .01   +   +   .   .   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   .   +   +   + .03 .11 .22 .31 .30 .20 .09 .03   +   +   +   .   .   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   .   +   + .01 .05 .15 .27 .33 .27 .16 .06 .01   +   +   .   .   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   .   +   + .02 .08 .20 .32 .34 .24 .11 .04 .01   +   +   .   .   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   .   .   +   + .03 .12 .26 .36 .32 .19 .07 .02   +   +   .   .   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   .   .   + .01 .05 .17 .33 .38 .28 .14 .04 .01   +   +   .   .   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   .   +   + .01 .09 .24 .39 .37 .23 .09 .02   +   +   .   .   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   .   +   + .03 .13 .32 .43 .34 .17 .05 .01   +   +   .   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   .   +   + .05 .20 .40 .44 .28 .11 .02   +   +   .   .   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   .   + .01 .09 .29 .47 .41 .20 .06 .01   +   +   .   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   .   .   + .02 .15 .39 .51 .35 .13 .02   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   .   +   + .05 .24 .50 .50 .25 .07 .01   +   .   .   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   .   +   + .09 .37 .61 .44 .16 .03   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   .   + .01 .17 .54 .66 .34 .08 .01   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   .   + .03 .30 .75 .63 .21 .03   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   .   + .08 .56 .95 .49 .09   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   .   + .20 1.0 1.0 .30 .03   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   . .01 .54 1.9 .98 .12   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   . .03 1.3 3.0 .59 .02   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   . .05 2.8 2.0 .12   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   . .01 .91 .31   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
    BEGIN LONG TERM SIMULATION OF FATE OF CLAY
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SUMMARY OF CLAY     DISTRIBUTIONS AFTER     600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    1200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    1800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    2400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    3000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    3600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
CONCENTRATIONS ABOVE BACKGROUND OF CLAY     (MG/L) IN THE CLOUD   3600.00 SECONDS AFTER DUMP
             120.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   .   + .01   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   .   + .04 .29 .22 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   .   + .14 .87 .66 .06   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   .   + .05 .32 .24 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   0   .   + .01 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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CONCENTRATIONS ABOVE BACKGROUND OF CLAY (MG/L) IN THE CLOUD 3600.00 SECONDS AFTER DUMP
719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	.	.	+	+	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	.	+	+	.04	.12	.10	.02	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	.	+	.09	.84	2.3	1.9	.52	.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	+	.02	.56	4.9	14	12	3.0	.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	.	+	.03	1.0	9.1	25	21	5.6	.46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	+	.02	.59	5.2	14	12	3.2	.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	.	+	.10	.94	2.5	2.1	.57	.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SMALL CLOUDS AT 3600.00 SECONDS ELAPSED TIME FOR CLAY

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.2099E+05	9367.	150.7	0.0000E+00	2464.	10.97	296.3	0.340000E-04
2	0.2099E+05	9367.	40.42	0.0000E+00	2551.	301.0	174.6	0.340000E-04
3	0.2099E+05	9366.	23.41	0.0000E+00	2611.	469.3	134.7	0.340000E-04
4	0.2099E+05	9366.	70.47	0.0000E+00	2818.	597.7	105.9	0.340000E-04
5	0.2099E+05	9366.	50.48	0.0000E+00	3044.	679.2	40.80	0.340000E-04
6	0.2099E+05	9366.	20.33	0.0000E+00	3162.	707.3	12.68	0.340000E-04
7	0.2099E+05	9366.	9.910	0.0000E+00	3230.	713.0	6.973	0.340000E-04
8	0.2100E+05	9365.	6.312	0.0000E+00	3260.	714.7	5.339	0.340000E-04
9	0.2100E+05	9364.	4.732	0.0000E+00	3283.	715.3	4.669	0.340000E-04
10	0.2100E+05	9364.	3.851	0.0000E+00	3302.	715.7	4.304	0.340000E-04
11	0.2100E+05	9364.	2903.	0.0000E+00	3303.	694.7	25.25	0.396598E-04
12	0.2106E+05	9360.	83.97	0.0000E+00	2427.	6.693	282.9	0.340000E-04
13	0.2106E+05	9360.	20.18	0.0000E+00	2504.	283.3	159.1	0.340000E-04
14	0.2107E+05	9360.	11.65	0.0000E+00	2557.	436.1	122.5	0.340000E-04

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 15       0.2107E+05     9360.       11.13      0.0000E+00   2618.       552.4       22.88      0.340000E-04
 16       0.2107E+05     9360.       44.65      0.0000E+00   2929.       569.0       113.5      0.340000E-04
 17       0.2107E+05     9360.       16.01      0.0000E+00   3084.       676.3       23.31      0.340000E-04
 18       0.2107E+05     9359.       6.529      0.0000E+00   3163.       693.3       11.43      0.340000E-04
 19       0.2107E+05     9359.       3.713      0.0000E+00   3209.       698.5       8.819      0.340000E-04
 20       0.2107E+05     9358.       2.648      0.0000E+00   3235.       701.1       7.914      0.340000E-04
 21       0.2107E+05     9357.       2.087      0.0000E+00   3249.       702.8       7.439      0.340000E-04
 22       0.2107E+05     9357.       1439.      0.0000E+00   3249.       695.3       24.67      0.340000E-04
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    4200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    4800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    5400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    6000.00 SEC.


    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    6600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    7200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
CONCENTRATIONS ABOVE BACKGROUND OF CLAY     (MG/L) IN THE CLOUD   7200.00 SECONDS AFTER DUMP
             120.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 0000   0   0   0   0   0   0   0   .   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 0000   0   0   0   0   0   0   .   .   +   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 0000   0   0   0   0   0   .   .   +   + .01 .01   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 0000   0   0   0   0   0   .   +   + .02 .07 .08 .04 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 0000   0   0   0   0   0   .   + .01 .08 .22 .27 .14 .03   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 0000   0   0   0   0   0   .   + .01 .11 .30 .37 .20 .04   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 0000   0   0   0   0   0   .   + .01 .06 .18 .22 .12 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 0000   0   0   0   0   0   .   +   + .01 .05 .06 .03   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 0000   0   0   0   0   0   0   .   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
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22 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
CONCENTRATIONS ABOVE BACKGROUND OF CLAY     (MG/L) IN THE CLOUD   7200.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 0000   0   0   0   0   0   0   .   .   .   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 0000   0   0   0   0   0   .   .   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 0000   0   0   0   0   .   .   +   + .03 .08 .10 .06 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 0000   0   0   0   0   .   + .01 .08 .33 .72 .84 .52 .17 .03   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 0000   0   0   0   0   +   + .04 .37 1.5 3.2 3.7 2.3 .77 .13   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 0000   0   0   0   0   +   + .11 .89 3.6 7.8 9.1 5.6 1.8 .33   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 0000   0   0   0   0   + .01 .15 1.1 4.6  10  12 7.2 2.4 .42   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 0000   0   0   0   0   +   + .10 .79 3.2 6.9 8.0 5.0 1.6 .29   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 0000   0   0   0   0   +   + .03 .29 1.1 2.5 2.9 1.8 .61 .10   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 0000   0   0   0   0   .   +   + .05 .23 .50 .58 .36 .12 .02   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
SMALL CLOUDS AT    7200.00 SECONDS ELAPSED TIME FOR CLAY
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID    (CU FT)     (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1       0.1487E+05    0.1174E+05   150.7      0.0000E+00   3935.       7.681       302.9      0.340000E-04
  2       0.1487E+05    0.1174E+05   40.42      0.0000E+00   3988.       297.7       181.2      0.340000E-04
  3       0.1487E+05    0.1174E+05   23.41      0.0000E+00   4026.       466.0       141.3      0.340000E-04
  4       0.1487E+05    0.1174E+05   70.47      0.0000E+00   4158.       594.4       112.4      0.340000E-04
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  5       0.1487E+05    0.1174E+05   50.48      0.0000E+00   4311.       675.9       44.08       0.340000E-04
  6       0.1487E+05    0.1174E+05   20.33      0.0000E+00   4393.       704.0       15.97       0.340000E-04
  7       0.1487E+05    0.1174E+05   9.910      0.0000E+00   4442.       709.7       10.26       0.340000E-04
  8       0.1488E+05    0.1174E+05   6.312      0.0000E+00   4463.       711.4       8.625       0.340000E-04
  9       0.1488E+05    0.1174E+05   4.732      0.0000E+00   4480.       712.0       7.956       0.340000E-04
 10       0.1488E+05    0.1174E+05   3.851      0.0000E+00   4494.       712.4       7.590       0.340000E-04
 11       0.1488E+05    0.1174E+05   2903.      0.0000E+00   4494.       691.5       28.54       0.340000E-04
 12       0.1494E+05    0.1174E+05   83.97      0.0000E+00   3913.       3.407       289.4       0.340000E-04
 13       0.1494E+05    0.1174E+05   20.18      0.0000E+00   3959.       280.0       165.7       0.340000E-04
 14       0.1495E+05    0.1174E+05   11.65      0.0000E+00   3992.       432.8       129.1       0.340000E-04
 15       0.1495E+05    0.1174E+05   11.13      0.0000E+00   4030.       549.1       29.46       0.340000E-04
 16       0.1495E+05    0.1174E+05   44.65      0.0000E+00   4233.       565.7       120.1       0.340000E-04
 17       0.1495E+05    0.1174E+05   16.01      0.0000E+00   4339.       673.0       29.89       0.340000E-04
 18       0.1495E+05    0.1174E+05   6.529      0.0000E+00   4394.       690.0       18.01       0.340000E-04
 19       0.1495E+05    0.1173E+05   3.713      0.0000E+00   4427.       695.2       15.39       0.340000E-04
 20       0.1495E+05    0.1173E+05   2.648      0.0000E+00   4445.       697.8       14.49       0.340000E-04
 21       0.1495E+05    0.1173E+05   2.087      0.0000E+00   4455.       699.6       14.01       0.340000E-04
 22       0.1495E+05    0.1173E+05   1439.      0.0000E+00   4455.       692.0       27.95       0.340000E-04
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    7800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    8400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    9000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    9600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   10200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   10800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
    MAX CONC IS 0.00000009 OUTPUT SUPPRESSED AT  120.00 FT
CONCENTRATIONS ABOVE BACKGROUND OF CLAY     (MG/L) IN THE CLOUD  10800.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   .   .   .   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   .   +   +   + .02 .04 .05 .04 .02   +   +   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   +   +   + .04 .12 .25 .32 .27 .15 .05 .01   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   +   + .03 .16 .51 1.0 1.3 1.1 .62 .22 .05   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   + .01 .09 .44 1.3 2.7 3.5 3.0 1.6 .60 .14   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   + .02 .16 .77 2.3 4.7 6.2 5.2 2.9 1.0 .24   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   + .02 .18 .88 2.7 5.4 7.0 5.9 3.2 1.1 .27   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   + .01 .13 .64 1.9 3.9 5.1 4.3 2.4 .86 .20   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   +   + .06 .30 .95 1.9 2.4 2.1 1.1 .41 .09   0   0   0   0   0   0   0   0   0   0   00000
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13 OOOO   0   0   0   0   0   0   +   + .02 .09 .29 .59 .77 .65 .36 .12 .03   0   0   0   0   0   0   0   0   0   0    OOOOO
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
SMALL CLOUDS AT   10800.00 SECONDS ELAPSED TIME FOR CLAY
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID    (CU FT)     (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1        8748.        0.1412E+05   150.7      0.0000E+00   4971.       4.395       309.5      0.340000E-04
  2        8750.        0.1412E+05   40.42      0.0000E+00   5013.       294.4       187.8      0.340000E-04
  3        8751.        0.1412E+05   23.41      0.0000E+00   5043.       462.7       147.9      0.340000E-04
  4        8752.        0.1412E+05   70.47      0.0000E+00   5148.       591.2       119.0      0.340000E-04
  5        8752.        0.1412E+05   50.48      0.0000E+00   5271.       672.6       47.37      0.340000E-04
  6        8753.        0.1412E+05   20.33      0.0000E+00   5338.       700.7       19.26      0.340000E-04
  7        8755.        0.1412E+05   9.910      0.0000E+00   5378.       706.5       13.55      0.340000E-04
  8        8756.        0.1412E+05   6.312      0.0000E+00   5395.       708.1       11.91      0.340000E-04
  9        8758.        0.1412E+05   4.732      0.0000E+00   5409.       708.8       11.24      0.340000E-04
 10        8760.        0.1412E+05   3.851      0.0000E+00   5421.       709.1       10.88      0.340000E-04
 11        8760.        0.1412E+05   2903.      0.0000E+00   5421.       688.2       31.82      0.340000E-04
 12        8823.        0.1411E+05   83.97      0.0000E+00   4954.      0.1208       296.0      0.340000E-04
 13        8824.        0.1411E+05   20.18      0.0000E+00   4990.       276.7       172.3      0.340000E-04
 14        8825.        0.1411E+05   11.65      0.0000E+00   5016.       429.5       135.7      0.340000E-04
 15        8825.        0.1411E+05   11.13      0.0000E+00   5046.       545.8       36.03      0.340000E-04
 16        8826.        0.1411E+05   44.65      0.0000E+00   5208.       562.4       126.7      0.340000E-04
 17        8827.        0.1411E+05   16.01      0.0000E+00   5294.       669.7       36.46      0.340000E-04
 18        8828.        0.1411E+05   6.529      0.0000E+00   5339.       686.8       24.58      0.340000E-04
 19        8829.        0.1411E+05   3.713      0.0000E+00   5366.       692.0       21.96      0.340000E-04
 20        8831.        0.1411E+05   2.648      0.0000E+00   5381.       694.6       21.06      0.340000E-04
 21        8834.        0.1411E+05   2.087      0.0000E+00   5389.       696.3       20.58      0.340000E-04
 22        8834.        0.1411E+05   1439.      0.0000E+00   5389.       688.8       31.24      0.340000E-04
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   11400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   12000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   12600.00 SEC.
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    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   13200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   13800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   14400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
    MAX CONC IS 0.00000006 OUTPUT SUPPRESSED AT  120.00 FT
CONCENTRATIONS ABOVE BACKGROUND OF CLAY     (MG/L) IN THE CLOUD  14400.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   +   + .03 .16 .60 1.6 3.1 4.2 4.2 3.0 1.5 .59   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   +   + .03 .17 .64 1.7 3.2 4.5 4.5 3.2 1.6 .62   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   0   +   + .02 .13 .48 1.3 2.4 3.4 3.4 2.4 1.2 .47   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   0   +   + .01 .07 .26 .71 1.3 1.8 1.8 1.3 .70 .26   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   0   .   +   + .02 .10 .28 .54 .74 .74 .53 .27 .10   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   0   .   +   +   + .03 .08 .15 .21 .21 .15 .07 .02   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
SMALL CLOUDS AT   14400.00 SECONDS ELAPSED TIME FOR CLAY
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #     TOP OF GRID   LEFT OF GRID   (CU FT)     (CU FT)      (FT)        (FT)         (FT)          (FPS)
  1        2628.        0.1649E+05   150.7      0.0000E+00   5821.       1.109        316.1      0.340000E-04
  2        2630.        0.1649E+05   40.42      0.0000E+00   5856.       291.1        194.4      0.340000E-04
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3	2631.	0.1649E+05	23.41	0.0000E+00	5882.	459.4	154.5	0.340000E-04
4	2632.	0.1649E+05	70.47	0.0000E+00	5972.	587.9	125.6	0.340000E-04
5	2632.	0.1649E+05	50.48	0.0000E+00	6078.	669.3	50.66	0.340000E-04
6	2633.	0.1649E+05	20.33	0.0000E+00	6136.	697.5	22.54	0.340000E-04
7	2635.	0.1649E+05	9.910	0.0000E+00	6171.	703.2	16.83	0.340000E-04
8	2636.	0.1649E+05	6.312	0.0000E+00	6186.	704.8	15.20	0.340000E-04
9	2638.	0.1649E+05	4.732	0.0000E+00	6198.	705.5	14.53	0.340000E-04
10	2640.	0.1649E+05	3.851	0.0000E+00	6208.	705.8	14.16	0.340000E-04
11	2640.	0.1649E+05	2903.	0.0000E+00	6208.	684.9	35.11	0.340000E-04
12	2703.	0.1649E+05	83.97	0.0000E+00	5806.	0.0000E+00	302.6	0.340000E-04
13	2704.	0.1649E+05	20.18	0.0000E+00	5837.	273.4	178.8	0.340000E-04
14	2705.	0.1649E+05	11.65	0.0000E+00	5859.	426.2	142.3	0.340000E-04
15	2705.	0.1649E+05	11.13	0.0000E+00	5885.	542.5	42.60	0.340000E-04
16	2706.	0.1649E+05	44.65	0.0000E+00	6023.	559.2	133.2	0.340000E-04
17	2707.	0.1649E+05	16.01	0.0000E+00	6098.	666.4	43.03	0.340000E-04
18	2708.	0.1649E+05	6.529	0.0000E+00	6136.	683.5	31.15	0.340000E-04
19	2709.	0.1649E+05	3.713	0.0000E+00	6160.	688.7	28.54	0.340000E-04
20	2711.	0.1649E+05	2.648	0.0000E+00	6173.	691.3	27.63	0.340000E-04
21	2714.	0.1649E+05	2.087	0.0000E+00	6180.	693.0	27.00	0.340000E-04
22	2714.	0.1649E+05	1439.	0.0000E+00	6180.	685.5	34.53	0.340000E-04

BEGIN LONG TERM SIMULATION OF FATE OF GRAVEL
SUMMARY OF GRAVEL DISTRIBUTIONS AFTER 600.00 SEC.
TOTAL SUSPENDED MATERIAL (CU FT) = 0.00000E+00
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 4374.0
COMPUTATIONS FOR GRAVEL TERMINATED AT 600.00 SEC. ELAPSED TIME...MATERIAL SETTLED TO BOTTOM
BOTTOM ACCUMULATION OF GRAVEL (CU FT/GRID SQUARE) , 600.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY 10.00 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
3	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
4	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
5	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
6	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
7	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
8	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
9	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
10	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
11	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
12	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
13	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
14	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
15	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
16	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
17	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
18	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
19	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
20	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
21	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
22	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
23	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
24	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O
25	O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	O	O

```
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   0   0   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   0   0 437   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
THICKNESS (FT) OF GRAVEL   ACCUMULATED ON BOTTOM,      600.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY  0.1000E-02     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   0   0   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   0   0 6.5   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
    BEGIN LONG TERM SIMULATION OF FATE OF COPPER
SUMMARY OF COPPER   DISTRIBUTIONS AFTER     600.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT     600.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)        (MG)        (FT)        (FT)        (FT)         (FPS)
  1       0.2610E+05     7384.       3028.      0.0000E+00   1679.       697.5       22.51      0.000000E+00
  2       0.2617E+05     7377.       1514.      0.0000E+00   1551.       698.1       21.93      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    1200.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    1200.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
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CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1       0.2508E+05     7780.       3028.      0.0000E+00   2128.       696.9       23.06      0.000000E+00
  2       0.2515E+05     7773.       1514.      0.0000E+00   2037.       697.5       22.48      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    1800.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    1800.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1       0.2406E+05     8176.       3028.      0.0000E+00   2482.       696.4       23.61      0.000000E+00
  2       0.2413E+05     8169.       1514.      0.0000E+00   2407.       697.0       23.03      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    2400.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    2400.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1       0.2304E+05     8572.       3028.      0.0000E+00   2786.       695.8       24.16      0.000000E+00
  2       0.2311E+05     8565.       1514.      0.0000E+00   2720.       696.4       23.57      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    3000.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    3000.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1       0.2202E+05     8968.       3028.      0.0000E+00   3057.       695.3       24.70      0.000000E+00
  2       0.2209E+05     8961.       1514.      0.0000E+00   2997.       695.9       24.12      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    3600.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
    MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT  120.00 FT
CONCENTRATIONS ABOVE BACKGROUND OF COPPER   (MG/L) IN THE CLOUD   3600.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY  0.1000E-06     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   0   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   .   .   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
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19 OOOO   0   0   0   0   .   +   + .01 .01   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
20 OOOO   0   0   0   .   + .01 .10 .29 .25 .06   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
21 OOOO   0   0   0   .   + .07 .64 1.7 1.4 .39 .03   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
22 OOOO   0   0   0   .   + .13 1.1 3.2 2.7 .72 .06   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000

23 OOOO   0   0   0   .   + .07 .68 1.8 1.5 .41 .03   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
24 OOOO   0   0   0   .   + .01 .12 .33 .28 .07   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
CONCENTRATIONS ABOVE BACKGROUND OF COPPER   (MG/L) IN THE CLOUD   3600.00 SECONDS AFTER DUMP
THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME
...MULTIPLY DISPLAYED VALUES BY  0.1000E-05     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
18 OOOO   0   0   0   0   0   .   .   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
19 OOOO   0   0   0   0   .   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
20 OOOO   0   0   0   .   +   + .05 .16 .13 .03   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
21 OOOO   0   0   0   .   + .03 .34 .95 .80 .21 .01   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
22 OOOO   0   0   0   .   + .07 .64 1.7 1.4 .39 .03   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
23 OOOO   0   0   0   .   + .04 .37 1.0 .85 .22 .01   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
24 OOOO   0   0   0   .   +   + .06 .18 .15 .04   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
SMALL CLOUDS AT    3600.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
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  1      0.2100E+05    9364.      3028.      0.0000E+00   3303.       694.7      25.25      0.000000E+00
  2      0.2107E+05    9357.      1514.      0.0000E+00   3249.       695.3      24.67      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    4200.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    4200.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)       (FT)        (FT)          (FPS)
  1      0.1998E+05    9760.      3028.      0.0000E+00   3532.       694.2      25.80      0.000000E+00
  2      0.2005E+05    9753.      1514.      0.0000E+00   3481.       694.8      25.22      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    4800.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    4800.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)       (FT)        (FT)          (FPS)
  1      0.1896E+05   0.1016E+05   3028.      0.0000E+00   3745.       693.7      26.35      0.000000E+00
  2      0.1903E+05   0.1015E+05   1514.      0.0000E+00   3698.       694.2      25.76      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    5400.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    5400.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)       (FT)        (FT)          (FPS)
  1      0.1794E+05   0.1055E+05   3028.      0.0000E+00   3946.       693.1      26.89      0.000000E+00
  2      0.1801E+05   0.1055E+05   1514.      0.0000E+00   3902.       693.7      26.31      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    6000.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    6000.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)       (FT)        (FT)          (FPS)
  1      0.1692E+05   0.1095E+05   3028.      0.0000E+00   4137.       692.6      27.44      0.000000E+00
  2      0.1699E+05   0.1094E+05   1514.      0.0000E+00   4095.       693.1      26.86      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    6600.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    6600.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)       (FT)        (FT)          (FPS)
  1      0.1590E+05   0.1134E+05   3028.      0.0000E+00   4320.       692.0      27.99      0.000000E+00
  2      0.1597E+05   0.1134E+05   1514.      0.0000E+00   4279.       692.6      27.41      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    7200.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
    MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT  120.00 FT
CONCENTRATIONS ABOVE BACKGROUND OF COPPER   (MG/L) IN THE CLOUD   7200.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY  0.1000E-06     (LEGEND... + = .LT. .01    . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0OOOO
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0OOOO
```

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 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   .   .   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   .   +   +   + .01 .01   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   .   +   + .01 .04 .09 .11 .06 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   .   +   + .04 .19 .43 .50 .31 .10 .01   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   .   + .01 .11 .48 1.0 1.2 .75 .24 .04   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   .   + .02 .15 .61 1.3 1.5 .96 .32 .05   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   .   + .01 .10 .42 .92 1.0 .66 .22 .03   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   .   +   + .03 .15 .34 .39 .24 .08 .01   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   .   .   +   + .03 .06 .07 .04 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
CONCENTRATIONS ABOVE BACKGROUND OF COPPER   (MG/L) IN THE CLOUD   7200.00 SECONDS AFTER DUMP
THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME
...MULTIPLY DISPLAYED VALUES BY  0.1000E-06     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   .   .   .   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   .   .   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   .   .   +   + .02 .06 .07 .04 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   .   +   + .06 .24 .54 .62 .39 .12 .02   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   .   + .03 .27 1.1 2.4 2.8 1.7 .58 .10   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   +   + .08 .66 2.7 5.8 6.8 4.2 1.4 .24   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   +   + .11 .85 3.4 7.5 8.7 5.4 1.8 .32   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   +   + .07 .59 2.4 5.2 6.0 3.7 1.2 .22   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   .   + .02 .21 .88 1.9 2.2 1.3 .45 .08   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   .   +   + .04 .17 .37 .44 .27 .09 .01   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
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23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
SMALL CLOUDS AT    7200.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1       0.1488E+05    0.1174E+05   3028.      0.0000E+00   4494.       691.5       28.54      0.000000E+00
  2       0.1495E+05    0.1173E+05   1514.      0.0000E+00   4455.       692.0       27.95      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    7800.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    7800.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1       0.1386E+05    0.1214E+05   3028.      0.0000E+00   4662.       690.9       29.08      0.000000E+00
  2       0.1393E+05    0.1213E+05   1514.      0.0000E+00   4624.       691.5       28.50      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    8400.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    8400.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1       0.1284E+05    0.1253E+05   3028.      0.0000E+00   4824.       690.4       29.63      0.000000E+00
  2       0.1291E+05    0.1253E+05   1514.      0.0000E+00   4787.       691.0       29.05      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    9000.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    9000.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1       0.1182E+05    0.1293E+05   3028.      0.0000E+00   4980.       689.8       30.18      0.000000E+00
  2       0.1189E+05    0.1292E+05   1514.      0.0000E+00   4945.       690.4       29.60      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER    9600.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT    9600.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1       0.1080E+05    0.1332E+05   3028.      0.0000E+00   5131.       689.3       30.73      0.000000E+00
  2       0.1087E+05    0.1332E+05   1514.      0.0000E+00   5097.       689.9       30.15      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER   10200.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT   10200.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
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  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)


  1        9780.        0.1372E+05   3028.      0.0000E+00   5278.       688.7       31.28      0.000000E+00
  2        9854.        0.1371E+05   1514.      0.0000E+00   5245.       689.3       30.69      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER   10800.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
    MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT  120.00 FT
    MAX CONC IS 0.00000009 OUTPUT SUPPRESSED AT  719.00 FT
    MAX CONC IS 0.00000007 OUTPUT SUPPRESSED AT  720.00 FT
CONCENTRATIONS ABOVE BACKGROUND OF COPPER   (MG/L) IN THE CLOUD  10800.00 SECONDS AFTER DUMP
THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME
...MULTIPLY DISPLAYED VALUES BY  0.1000E-06     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   .   .   .   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   .   +   +   + .01 .03 .04 .03 .01   +   +   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   .   +   + .03 .09 .19 .25 .21 .11 .04 .01   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   +   + .02 .13 .40 .80 1.0 .88 .48 .17 .04   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   + .01 .07 .34 1.0 2.1 2.7 2.3 1.2 .46 .10   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   + .01 .12 .60 1.8 3.7 4.8 4.0 2.2 .80 .18   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   + .01 .14 .68 2.0 4.1 5.4 4.6 2.5 .91 .21   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   + .01 .10 .50 1.5 3.0 4.0 3.4 1.8 .67 .15   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   +   + .05 .24 .73 1.4 1.9 1.6 .89 .32 .07   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   +   + .01 .07 .23 .46 .60 .50 .28 .10 .02   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
SMALL CLOUDS AT   10800.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1        8760.        0.1412E+05   3028.      0.0000E+00   5421.       688.2       31.82      0.000000E+00
  2        8834.        0.1411E+05   1514.      0.0000E+00   5389.       688.8       31.24      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER   11400.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
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SMALL CLOUDS AT   11400.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1        7740.        0.1451E+05   3028.      0.0000E+00   5560.       687.6       32.37      0.000000E+00
  2        7814.        0.1451E+05   1514.      0.0000E+00   5529.       688.2       31.79      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER   12000.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT   12000.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1        6720.        0.1491E+05   3028.      0.0000E+00   5696.       687.1       32.92      0.000000E+00
  2        6794.        0.1490E+05   1514.      0.0000E+00   5665.       687.7       32.34      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER   12600.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT   12600.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1        5700.        0.1530E+05   3028.      0.0000E+00   5828.       686.5       33.47      0.000000E+00
  2        5774.        0.1530E+05   1514.      0.0000E+00   5798.       687.1       32.88      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER   13200.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT   13200.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1        4680.        0.1570E+05   3028.      0.0000E+00   5958.       686.0       34.01      0.000000E+00
  2        4754.        0.1569E+05   1514.      0.0000E+00   5928.       686.6       33.43      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER   13800.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
SMALL CLOUDS AT   13800.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1        3660.        0.1610E+05   3028.      0.0000E+00   6084.       685.4       34.56      0.000000E+00
  2        3734.        0.1609E+05   1514.      0.0000E+00   6056.       686.0       33.98      0.000000E+00
SUMMARY OF COPPER   DISTRIBUTIONS AFTER   14400.00 SEC
    TOTAL TRACER OR CONTAMINANT IN SOLUTION (MG) =     4542.3
    MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT  120.00 FT
    MAX CONC IS 0.00000007 OUTPUT SUPPRESSED AT  719.00 FT
    MAX CONC IS 0.00000006 OUTPUT SUPPRESSED AT  720.00 FT
CONCENTRATIONS ABOVE BACKGROUND OF COPPER   (MG/L) IN THE CLOUD  14400.00 SECONDS AFTER DUMP
THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME
...MULTIPLY DISPLAYED VALUES BY  0.1000E-06     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   +   + .02 .13 .48 1.2 2.4 3.4 3.4 2.4 1.2 .47   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   +   + .02 .13 .51 1.3 2.6 3.6 3.5 2.5 1.3 .49   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   0   +   + .02 .10 .38 1.0 1.9 2.7 2.7 1.9 1.0 .37   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   0   +   + .01 .05 .21 .56 1.0 1.5 1.5 1.0 .55 .20   0   0   0   0   0   0   0   0   OOOOO
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 7 0000   0   0   0   0   0   0   0   .   +   + .02 .08 .22 .43 .59 .59 .42 .22 .08   0   0   0   0   0   0   0   0   00000
 8 0000   0   0   0   0   0   0   0   .   +   +   + .02 .06 .12 .17 .17 .12 .06 .02   0   0   0   0   0   0   0   0   00000
 9 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
CONCENTRATIONS ABOVE BACKGROUND OF COPPER   (MG/L) IN THE CLOUD  14400.00 SECONDS AFTER DUMP
THESE CONCENTRATIONS ARE THE MAXIMUM THAT EVER OCCURRED IN THE WATER COLUMN DURING THE SIMULATION
...MULTIPLY DISPLAYED VALUES BY  0.1000E-05     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 0000   0   0   0   0   0   0   0   .   +   + .01 .04 .12 .24 .34 .34 .24 .12 .04   0   0   0   0   0   0   0   0   00000
 4 0000   0   0   0   0   0   0   .   .   +   + .02 .07 .17 .30 .37 .35 .25 .13 .04   0   0   0   0   0   0   0   0   00000
 5 0000   0   0   0   0   0   0   .   +   +   + .03 .10 .23 .35 .39 .34 .21 .10 .03   0   0   0   0   0   0   0   0   00000
 6 0000   0   0   0   0   0   0   .   +   + .01 .05 .15 .30 .40 .41 .31 .16 .07 .02   0   0   0   0   0   0   0   0   00000
 7 0000   0   0   0   0   0   0   .   +   + .02 .08 .21 .37 .44 .40 .26 .12 .04 .01   0   0   0   0   0   0   0   0   00000
 8 0000   0   0   0   0   0   .   .   +   + .03 .12 .28 .43 .47 .37 .20 .08 .02   +   0   0   0   0   0   0   0   0   00000
 9 0000   0   0   0   0   0   .   +   + .01 .06 .18 .37 .48 .48 .32 .15 .05 .01   +   0   0   0   0   0   0   0   0   00000
10 0000   0   0   0   0   0   .   +   + .02 .09 .26 .45 .54 .46 .25 .10 .03   +   +   0   0   0   0   0   0   0   0   00000
11 0000   0   0   0   0   0   .   +   + .03 .14 .35 .52 .57 .40 .18 .06 .01   +   0   0   0   0   0   0   0   0   0   00000
12 0000   0   0   0   0   .   .   + .01 .06 .22 .46 .61 .56 .32 .13 .03   +   0   0   0   0   0   0   0   0   0   0   00000
13 0000   0   0   0   0   .   +   + .02 .10 .32 .56 .68 .51 .23 .08 .01   +   0   0   0   0   0   0   0   0   0   0   00000
14 0000   0   0   0   0   .   +   + .03 .17 .44 .69 .70 .41 .16 .04   +   0   0   0   0   0   0   0   0   0   0   0   00000
15 0000   0   0   0   0   .   +   + .06 .27 .58 .81 .65 .29 .10 .02   +   0   0   0   0   0   0   0   0   0   0   0   00000
16 0000   0   0   0   0   .   + .01 .11 .40 .75 .87 .54 .20 .05   +   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 0000   0   0   0   .   .   + .03 .19 .57 .95 .85 .39 .12 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 0000   0   0   0   .   +   + .06 .31 .79 1.1 .73 .26 .06   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 0000   0   0   0   .   + .01 .11 .49 1.0 1.1 .52 .15 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   .   + .02 .20 .77 1.3 1.0 .34 .06   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   .   + .03 .34 1.2 1.5 .73 .18 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 0000   0   0   0   .   + .07 .64 1.7 1.4 .44 .07   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   .   + .16 1.1 2.2 1.0 .22 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   . .01 .36 2.1 2.3 .58 .07   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
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25 OOOO   0   0   0   + .02 .85 3.4 1.7 .25 .01   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   . .05 2.1 4.6 .74 .04   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   . .09 5.8 3.3 .19   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000

28 OOOO   0   0   0   . .01 1.0 .57   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
SMALL CLOUDS AT   14400.00 SECONDS ELAPSED TIME FOR COPPER
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID      (MG)       (MG)        (FT)        (FT)        (FT)          (FPS)
  1        2640.        0.1649E+05   3028.      0.0000E+00   6208.       684.9       35.11      0.000000E+00
  2        2714.        0.1649E+05   1514.      0.0000E+00   6180.       685.5       34.53      0.000000E+00
    FINAL DISTRIBUTIONS OF TOTAL SETTLED MATERIAL FOLLOW.....
TOTAL ACCUMULATED SOLID VOLUME ON BOTTOM (CU FT/GRID SQR),   14400.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   100.0         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 OOOO   0   0   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   .   .   .   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   .   .   .   +   +   +   +   +   +   +   +   +   .   .   .   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   +   .   .   .   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   +   .   .   .   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   .   .   .   +   +   +   +   +   +   +   +   +   .   .   .   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   .   .   .   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   .   +   +   +   +   +   +   +   +   +   .   .   .   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   .   +   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   .   +   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   .   .   +   +   + .01   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   .   .   +   + .01 .01   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   .   +   +   + .01   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   .   +   + .01 .01   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   .   +   + .01 .01   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   .   + .01 .01   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   +   + .02 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   .   + .01 .04 .01   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   . .10 6.4 3.7 .03   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   + 2.6 179  81 .36   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   . 1.2 129  24 .06   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   + .22 .05   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
TOTAL THICKNESS (FT) OF NEW MATERIAL ON BOTTOM,  14400.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY  0.1000E-01     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
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 3 OOOO   0   0   0   0   0   0   0   0   0   0   .   .   .   .   .   .   .   .   .   .   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   .   .   .   .   .   +   .   .   .   .   .   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   .   .   .   .   +   +   +   .   .   .   .   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   .   .   .   .   +   +   .   .   .   .   .   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   .   .   .   .   +   +   +   .   .   .   .   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   .   .   .   .   +   +   +   .   .   .   .   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   .   .   .   +   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   .   .   .   .   +   +   +   .   .   .   .   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   0   .   .   .   +   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   0   .   .   .   +   +   +   .   .   .   .   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   0   .   .   .   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   .   .   .   +   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   .   .   .   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   .   .   .   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   .   .   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   .   .   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   .   .   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   .   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   .   .   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   .   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   .   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   + .16 .09   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   . .06 4.5 2.0   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   . .03 3.2 .61   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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INITIAL MIXING COMPUTATIONS RESULTS FOR SAND :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	120.0	0.000E+00	0.	0.	0.000E+00
2.00	120.0	0.000E+00	0.	0.	0.000E+00
3.00	120.0	0.000E+00	0.	0.	0.000E+00
4.00	120.0	0.000E+00	0.	0.	0.000E+00
1.00	719.0	0.000E+00	0.	0.	0.000E+00
2.00	719.0	0.000E+00	0.	0.	0.000E+00
3.00	719.0	0.000E+00	0.	0.	0.000E+00
4.00	719.0	0.000E+00	0.	0.	0.000E+00

INITIAL MIXING COMPUTATIONS RESULTS FOR SILT :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	120.0	0.877E+00	21000.	9000.	0.877E+00
2.00	120.0	0.374E+00	15000.	12000.	0.374E+00
3.00	120.0	0.234E+00	9000.	14000.	0.234E+00
4.00	120.0	0.158E+00	3000.	16000.	0.158E+00
1.00	719.0	0.252E+02	21000.	9000.	0.252E+02

2.00	719.0	0.118E+02	15000.	12000.	0.118E+02
3.00	719.0	0.704E+01	9000.	14000.	0.704E+01
4.00	719.0	0.453E+01	3000.	16000.	0.453E+01

INITIAL MIXING COMPUTATIONS RESULTS FOR CLAY :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	120.0	0.878E+00	21000.	9000.	0.878E+00
2.00	120.0	0.374E+00	15000.	12000.	0.374E+00
3.00	120.0	0.234E+00	9000.	14000.	0.234E+00
4.00	120.0	0.158E+00	3000.	16000.	0.158E+00
1.00	719.0	0.251E+02	21000.	9000.	0.251E+02
2.00	719.0	0.118E+02	15000.	12000.	0.118E+02
3.00	719.0	0.705E+01	9000.	14000.	0.705E+01
4.00	719.0	0.454E+01	3000.	16000.	0.454E+01

INITIAL MIXING COMPUTATIONS RESULTS FOR GRAVEL :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	120.0	0.000E+00	0.	0.	0.000E+00
2.00	120.0	0.000E+00	0.	0.	0.000E+00
3.00	120.0	0.000E+00	0.	0.	0.000E+00
4.00	120.0	0.000E+00	0.	0.	0.000E+00
1.00	719.0	0.000E+00	0.	0.	0.000E+00
2.00	719.0	0.000E+00	0.	0.	0.000E+00
3.00	719.0	0.000E+00	0.	0.	0.000E+00
4.00	719.0	0.000E+00	0.	0.	0.000E+00

INITIAL MIXING COMPUTATIONS RESULTS FOR COPPER :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	MAX CONC ON GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)	MAX CONC OUTSIDE SITE (MG/L)
0.17	120.0	0.156E-42	0.156E-42	22000.	3000.	0.156E-42	0.156E-42
0.33	120.0	0.925E-43	0.925E-43	20000.	3000.	0.925E-43	0.925E-43
0.50	120.0	0.673E-43	0.673E-43	19000.	3000.	0.673E-43	0.673E-43
0.67	120.0	0.504E-43	0.504E-43	18000.	3000.	0.504E-43	0.504E-43
0.83	120.0	0.378E-43	0.378E-43	17000.	4000.	0.378E-43	0.378E-43
1.00	120.0	0.336E-43	0.336E-43	16000.	4000.	0.336E-43	0.336E-43
1.17	120.0	0.294E-43	0.294E-43	14000.	4000.	0.294E-43	0.294E-43
1.33	120.0	0.252E-43	0.252E-43	13000.	5000.	0.252E-43	0.252E-43
1.50	120.0	0.252E-43	0.252E-43	12000.	5000.	0.252E-43	0.252E-43
1.67	120.0	0.210E-43	0.210E-43	11000.	5000.	0.210E-43	0.210E-43
1.83	120.0	0.168E-43	0.168E-43	10000.	5000.	0.168E-43	0.168E-43
2.00	120.0	0.168E-43	0.168E-43	9000.	6000.	0.168E-43	0.168E-43
2.17	120.0	0.126E-43	0.126E-43	8000.	6000.	0.126E-43	0.126E-43
2.33	120.0	0.126E-43	0.126E-43	7000.	6000.	0.126E-43	0.126E-43
2.50	120.0	0.126E-43	0.126E-43	6000.	7000.	0.126E-43	0.126E-43
2.67	120.0	0.126E-43	0.126E-43	4000.	7000.	0.126E-43	0.126E-43
2.83	120.0	0.126E-43	0.126E-43	3000.	7000.	0.126E-43	0.126E-43
3.00	120.0	0.126E-43	0.126E-43	2000.	8000.	0.126E-43	0.126E-43

3.17	120.0	0.841E-44	0.841E-44	1000.	8000.	0.841E-44	0.841E-44
3.33	120.0	0.841E-44	0.841E-44	1000.	8000.	0.841E-44	0.841E-44
3.50	120.0	0.841E-44	0.841E-44	1000.	9000.	0.841E-44	0.841E-44
3.67	120.0	0.841E-44	0.841E-44	1000.	9000.	0.841E-44	0.841E-44
3.83	120.0	0.841E-44	0.841E-44	1000.	9000.	0.841E-44	0.841E-44
4.00	120.0	0.841E-44	0.841E-44	1000.	9000.	0.841E-44	0.841E-44
0.17	719.0	0.112E-05	0.112E-05	26000.	7000.	0.181E-07	0.181E-07
0.33	719.0	0.882E-06	0.882E-06	25000.	8000.	0.104E-07	0.104E-07
0.50	719.0	0.654E-06	0.654E-06	24000.	8000.	0.729E-08	0.729E-08
0.67	719.0	0.446E-06	0.446E-06	23000.	9000.	0.176E-06	0.176E-06
0.83	719.0	0.418E-06	0.418E-06	22000.	9000.	0.418E-06	0.418E-06
1.00	719.0	0.322E-06	0.322E-06	21000.	9000.	0.322E-06	0.322E-06
1.17	719.0	0.287E-06	0.287E-06	20000.	10000.	0.287E-06	0.287E-06
1.33	719.0	0.253E-06	0.253E-06	19000.	10000.	0.253E-06	0.253E-06
1.50	719.0	0.206E-06	0.206E-06	18000.	11000.	0.206E-06	0.206E-06
1.67	719.0	0.198E-06	0.198E-06	17000.	11000.	0.198E-06	0.198E-06
1.83	719.0	0.170E-06	0.170E-06	16000.	11000.	0.170E-06	0.170E-06
2.00	719.0	0.156E-06	0.156E-06	15000.	12000.	0.156E-06	0.156E-06
2.17	719.0	0.144E-06	0.144E-06	14000.	12000.	0.144E-06	0.144E-06
2.33	719.0	0.124E-06	0.124E-06	13000.	13000.	0.124E-06	0.124E-06
2.50	719.0	0.120E-06	0.120E-06	12000.	13000.	0.120E-06	0.120E-06
2.67	719.0	0.108E-06	0.108E-06	11000.	13000.	0.108E-06	0.108E-06
2.83	719.0	0.100E-06	0.100E-06	10000.	14000.	0.100E-06	0.100E-06
3.00	719.0	0.944E-07	0.944E-07	9000.	14000.	0.944E-07	0.944E-07
3.17	719.0	0.837E-07	0.837E-07	8000.	15000.	0.837E-07	0.837E-07
3.33	719.0	0.818E-07	0.818E-07	7000.	15000.	0.818E-07	0.818E-07
3.50	719.0	0.754E-07	0.754E-07	6000.	15000.	0.754E-07	0.754E-07
3.67	719.0	0.715E-07	0.715E-07	5000.	16000.	0.715E-07	0.715E-07
3.83	719.0	0.715E-07	0.715E-07	4000.	16000.	0.715E-07	0.715E-07
4.00	719.0	0.732E-07	0.732E-07	3000.	16000.	0.732E-07	0.732E-07
0.17	684.9	0.737E-06	0.737E-06	26000.	7000.	0.123E-07	0.123E-07
0.33	684.9	0.589E-06	0.589E-06	25000.	8000.	0.707E-08	0.707E-08
0.50	684.9	0.440E-06	0.440E-06	24000.	8000.	0.504E-08	0.504E-08
0.67	684.9	0.303E-06	0.303E-06	23000.	9000.	0.121E-06	0.121E-06
0.83	684.9	0.287E-06	0.287E-06	22000.	9000.	0.287E-06	0.287E-06
1.00	684.9	0.223E-06	0.223E-06	21000.	9000.	0.223E-06	0.223E-06
1.17	684.9	0.200E-06	0.200E-06	20000.	10000.	0.200E-06	0.200E-06
1.33	684.9	0.177E-06	0.177E-06	19000.	10000.	0.177E-06	0.177E-06
1.50	684.9	0.146E-06	0.146E-06	18000.	11000.	0.146E-06	0.146E-06
1.67	684.9	0.141E-06	0.141E-06	17000.	11000.	0.141E-06	0.141E-06
1.83	684.9	0.122E-06	0.122E-06	16000.	11000.	0.122E-06	0.122E-06
2.00	684.9	0.112E-06	0.112E-06	15000.	12000.	0.112E-06	0.112E-06
2.17	684.9	0.104E-06	0.104E-06	14000.	12000.	0.104E-06	0.104E-06
2.33	684.9	0.903E-07	0.903E-07	13000.	13000.	0.903E-07	0.903E-07
2.50	684.9	0.882E-07	0.882E-07	12000.	13000.	0.882E-07	0.882E-07
2.67	684.9	0.796E-07	0.796E-07	11000.	13000.	0.796E-07	0.796E-07
2.83	684.9	0.744E-07	0.744E-07	10000.	14000.	0.744E-07	0.744E-07
3.00	684.9	0.703E-07	0.703E-07	9000.	14000.	0.703E-07	0.703E-07
3.17	684.9	0.627E-07	0.627E-07	8000.	15000.	0.627E-07	0.627E-07
3.33	684.9	0.616E-07	0.616E-07	7000.	15000.	0.616E-07	0.616E-07
3.50	684.9	0.569E-07	0.569E-07	6000.	15000.	0.569E-07	0.569E-07
3.67	684.9	0.536E-07	0.536E-07	5000.	16000.	0.536E-07	0.536E-07

3.83	684.9	0.513E-07	0.513E-07	4000.	16000.	0.513E-07	0.513E-07
4.00	684.9	0.466E-07	0.466E-07	3000.	16000.	0.466E-07	0.466E-07
0.17	693.7	0.345E-05	0.345E-05	26000.	7000.	0.565E-07	0.565E-07
0.33	693.7	0.275E-05	0.275E-05	25000.	8000.	0.327E-07	0.327E-07
0.50	693.7	0.206E-05	0.206E-05	24000.	8000.	0.232E-07	0.232E-07
0.67	693.7	0.141E-05	0.141E-05	23000.	9000.	0.560E-06	0.560E-06
0.83	693.7	0.134E-05	0.134E-05	22000.	9000.	0.134E-05	0.134E-05
1.00	693.7	0.104E-05	0.104E-05	21000.	9000.	0.104E-05	0.104E-05
1.17	693.7	0.930E-06	0.930E-06	20000.	10000.	0.930E-06	0.930E-06
1.33	693.7	0.825E-06	0.825E-06	19000.	10000.	0.825E-06	0.825E-06
1.50	693.7	0.677E-06	0.677E-06	18000.	11000.	0.677E-06	0.677E-06
1.67	693.7	0.654E-06	0.654E-06	17000.	11000.	0.654E-06	0.654E-06
1.83	693.7	0.565E-06	0.565E-06	16000.	11000.	0.565E-06	0.565E-06
2.00	693.7	0.521E-06	0.521E-06	15000.	12000.	0.521E-06	0.521E-06
2.17	693.7	0.482E-06	0.482E-06	14000.	12000.	0.482E-06	0.482E-06
2.33	693.7	0.418E-06	0.418E-06	13000.	13000.	0.418E-06	0.418E-06
2.50	693.7	0.408E-06	0.408E-06	12000.	13000.	0.408E-06	0.408E-06
2.67	693.7	0.368E-06	0.368E-06	11000.	13000.	0.368E-06	0.368E-06
2.83	693.7	0.344E-06	0.344E-06	10000.	14000.	0.344E-06	0.344E-06
3.00	693.7	0.325E-06	0.325E-06	9000.	14000.	0.325E-06	0.325E-06
3.17	693.7	0.289E-06	0.289E-06	8000.	15000.	0.289E-06	0.289E-06
3.33	693.7	0.284E-06	0.284E-06	7000.	15000.	0.284E-06	0.284E-06
3.50	693.7	0.262E-06	0.262E-06	6000.	15000.	0.262E-06	0.262E-06
3.67	693.7	0.247E-06	0.247E-06	5000.	16000.	0.247E-06	0.247E-06
3.83	693.7	0.236E-06	0.236E-06	4000.	16000.	0.236E-06	0.236E-06
4.00	693.7	0.215E-06	0.215E-06	3000.	16000.	0.215E-06	0.215E-06
0.17	702.4	0.585E-05	0.585E-05	26000.	7000.	0.948E-07	0.948E-07
0.33	702.4	0.466E-05	0.466E-05	25000.	8000.	0.551E-07	0.551E-07
0.50	702.4	0.348E-05	0.348E-05	24000.	8000.	0.389E-07	0.389E-07
0.67	702.4	0.239E-05	0.239E-05	23000.	9000.	0.944E-06	0.944E-06
0.83	702.4	0.226E-05	0.226E-05	22000.	9000.	0.226E-05	0.226E-05
1.00	702.4	0.175E-05	0.175E-05	21000.	9000.	0.175E-05	0.175E-05
1.17	702.4	0.157E-05	0.157E-05	20000.	10000.	0.157E-05	0.157E-05
1.33	702.4	0.139E-05	0.139E-05	19000.	10000.	0.139E-05	0.139E-05
1.50	702.4	0.114E-05	0.114E-05	18000.	11000.	0.114E-05	0.114E-05
1.67	702.4	0.110E-05	0.110E-05	17000.	11000.	0.110E-05	0.110E-05
1.83	702.4	0.953E-06	0.953E-06	16000.	11000.	0.953E-06	0.953E-06
2.00	702.4	0.877E-06	0.877E-06	15000.	12000.	0.877E-06	0.877E-06
2.17	702.4	0.812E-06	0.812E-06	14000.	12000.	0.812E-06	0.812E-06
2.33	702.4	0.704E-06	0.704E-06	13000.	13000.	0.704E-06	0.704E-06
2.50	702.4	0.686E-06	0.686E-06	12000.	13000.	0.686E-06	0.686E-06
2.67	702.4	0.619E-06	0.619E-06	11000.	13000.	0.619E-06	0.619E-06
2.83	702.4	0.578E-06	0.578E-06	10000.	14000.	0.578E-06	0.578E-06
3.00	702.4	0.546E-06	0.546E-06	9000.	14000.	0.546E-06	0.546E-06
3.17	702.4	0.486E-06	0.486E-06	8000.	15000.	0.486E-06	0.486E-06
3.33	702.4	0.477E-06	0.477E-06	7000.	15000.	0.477E-06	0.477E-06
3.50	702.4	0.441E-06	0.441E-06	6000.	15000.	0.441E-06	0.441E-06
3.67	702.4	0.414E-06	0.414E-06	5000.	16000.	0.414E-06	0.414E-06
3.83	702.4	0.396E-06	0.396E-06	4000.	16000.	0.396E-06	0.396E-06
4.00	702.4	0.360E-06	0.360E-06	3000.	16000.	0.360E-06	0.360E-06
0.17	711.2	0.358E-05	0.358E-05	26000.	7000.	0.578E-07	0.578E-07
0.33	711.2	0.285E-05	0.285E-05	25000.	8000.	0.337E-07	0.337E-07

0.50	711.2	0.213E-05	0.213E-05	24000.	8000.	0.237E-07	0.237E-07
0.67	711.2	0.146E-05	0.146E-05	23000.	9000.	0.577E-06	0.577E-06
0.83	711.2	0.138E-05	0.138E-05	22000.	9000.	0.138E-05	0.138E-05
1.00	711.2	0.107E-05	0.107E-05	21000.	9000.	0.107E-05	0.107E-05
1.17	711.2	0.960E-06	0.960E-06	20000.	10000.	0.960E-06	0.960E-06
1.33	711.2	0.851E-06	0.851E-06	19000.	10000.	0.851E-06	0.851E-06
1.50	711.2	0.698E-06	0.698E-06	18000.	11000.	0.698E-06	0.698E-06
1.67	711.2	0.674E-06	0.674E-06	17000.	11000.	0.674E-06	0.674E-06
1.83	711.2	0.582E-06	0.582E-06	16000.	11000.	0.582E-06	0.582E-06
2.00	711.2	0.536E-06	0.536E-06	15000.	12000.	0.536E-06	0.536E-06
2.17	711.2	0.496E-06	0.496E-06	14000.	12000.	0.496E-06	0.496E-06
2.33	711.2	0.430E-06	0.430E-06	13000.	13000.	0.430E-06	0.430E-06
2.50	711.2	0.419E-06	0.419E-06	12000.	13000.	0.419E-06	0.419E-06
2.67	711.2	0.378E-06	0.378E-06	11000.	13000.	0.378E-06	0.378E-06
2.83	711.2	0.353E-06	0.353E-06	10000.	14000.	0.353E-06	0.353E-06
3.00	711.2	0.333E-06	0.333E-06	9000.	14000.	0.333E-06	0.333E-06
3.17	711.2	0.297E-06	0.297E-06	8000.	15000.	0.297E-06	0.297E-06
3.33	711.2	0.291E-06	0.291E-06	7000.	15000.	0.291E-06	0.291E-06
3.50	711.2	0.269E-06	0.269E-06	6000.	15000.	0.269E-06	0.269E-06
3.67	711.2	0.253E-06	0.253E-06	5000.	16000.	0.253E-06	0.253E-06
3.83	711.2	0.242E-06	0.242E-06	4000.	16000.	0.242E-06	0.242E-06
4.00	711.2	0.221E-06	0.221E-06	3000.	16000.	0.221E-06	0.221E-06
0.17	720.0	0.792E-06	0.792E-06	26000.	7000.	0.128E-07	0.128E-07
0.33	720.0	0.631E-06	0.631E-06	25000.	8000.	0.746E-08	0.746E-08
0.50	720.0	0.471E-06	0.471E-06	24000.	8000.	0.526E-08	0.526E-08
0.67	720.0	0.324E-06	0.324E-06	23000.	9000.	0.128E-06	0.128E-06
0.83	720.0	0.306E-06	0.306E-06	22000.	9000.	0.306E-06	0.306E-06
1.00	720.0	0.237E-06	0.237E-06	21000.	9000.	0.237E-06	0.237E-06
1.17	720.0	0.213E-06	0.213E-06	20000.	10000.	0.213E-06	0.213E-06
1.33	720.0	0.188E-06	0.188E-06	19000.	10000.	0.188E-06	0.188E-06
1.50	720.0	0.154E-06	0.154E-06	18000.	11000.	0.154E-06	0.154E-06
1.67	720.0	0.149E-06	0.149E-06	17000.	11000.	0.149E-06	0.149E-06
1.83	720.0	0.129E-06	0.129E-06	16000.	11000.	0.129E-06	0.129E-06
2.00	720.0	0.119E-06	0.119E-06	15000.	12000.	0.119E-06	0.119E-06
2.17	720.0	0.110E-06	0.110E-06	14000.	12000.	0.110E-06	0.110E-06
2.33	720.0	0.952E-07	0.952E-07	13000.	13000.	0.952E-07	0.952E-07
2.50	720.0	0.929E-07	0.929E-07	12000.	13000.	0.929E-07	0.929E-07
2.67	720.0	0.838E-07	0.838E-07	11000.	13000.	0.838E-07	0.838E-07
2.83	720.0	0.782E-07	0.782E-07	10000.	14000.	0.782E-07	0.782E-07
3.00	720.0	0.739E-07	0.739E-07	9000.	14000.	0.739E-07	0.739E-07
3.17	720.0	0.658E-07	0.658E-07	8000.	15000.	0.658E-07	0.658E-07
3.33	720.0	0.646E-07	0.646E-07	7000.	15000.	0.646E-07	0.646E-07
3.50	720.0	0.598E-07	0.598E-07	6000.	15000.	0.598E-07	0.598E-07
3.67	720.0	0.572E-07	0.572E-07	5000.	16000.	0.572E-07	0.572E-07
3.83	720.0	0.590E-07	0.590E-07	4000.	16000.	0.590E-07	0.590E-07
4.00	720.0	0.643E-07	0.643E-07	3000.	16000.	0.643E-07	0.643E-07

RESULT: THE WATER QUALITY CRITERIA FOR THE DISPOSAL SITE WAS NOT VIOLATED.

*** RUN COMPLETED ***

Port Everglades 103 Evaluation Tier III

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 MODEL:  SHORT-TERM FATE OF DREDGED MATERIAL FROM SPLIT HULL BARGE OR HOPPER DREDGE
              (PC Version 5.01  MAY, 1993)
 TITLE:   Port Everglades 103 Evaluation Tier III
 FILE:    04-1TIII.DUE
 AREA:    THE PROJECT AREA IS DESCRIBED BY A 32 X 32 GRID.
          THERE ARE 32 GRID POINTS (NMAX) IN THE Z-DIRECTION (FROM LEFT TO RIGHT)
            AND 32 GRID POINTS (MMAX) IN THE X-DIRECTION (FROM TOP TO BOTTOM).
 SITE:    THE DISPOSAL SITE IS REPRESENTED AS A RECTANGLE ON THE SITE GRID.
          THE TOPMOST BOUNDARY IS LOCATED AT POINT #23 (MDS1) FROM THE TOP OF THE GRID.
          THE BOTTOMMOST BOUNDARY IS LOCATED AT POINT #29 (MDS2) FROM THE TOP OF THE GRID.
          THE LEFTMOST BOUNDARY IS LOCATED AT POINT # 7 (NDS1) FROM THE LEFT OF THE GRID.
          THE RIGHTMOST BOUNDARY IS LOCATED AT POINT #13 (NDS2) FROM THE LEFT OF THE GRID.
 EXECUTION PARAMETERS:
          MODEL COEFFICIENTS SPECIFIED IN INPUT DATA (KEY1 = 1).
          PERFORM COMPLETE ANALYSIS INCLUDING DESCENT, COLLAPSE, AND TRANSPORT-DIFFUSION (KEY2 = 0).
          PERFORM TIER III OCEAN DUMPING INITIAL MIXING EVALUATION
            TO COMPARE WITH TOXICITY CRITERIA (KEY3 = 3).
          PRINTING OF CONVECTIVE DESCENT RESULTS NOT REQUESTED (IPCN = 0).
          PRINTING OF CONVECTIVE DESCENT RESULTS NOT REQUESTED (IPCN = 0).
          PRINTING OF DYNAMIC COLLAPSE RESULTS NOT REQUESTED (IPCL = 0).
          QUARTERLY PRINTING OF LONG-TERM TRANSPORT DIFFUSION RESULTS REQUESTED (IPLT = 0).
          LONG-TERM TRANSPORT DIFFUSION RESULTS REQUESTED AT THE FOLLOWING 2 DEPTH(S):
              120.00 FT
              719.00 FT



 GRID:    NUMBER OF LONG TERM GRID POINTS IN Z-DIRECTION (NMAX) = 32
          NUMBER OF LONG TERM GRID POINTS IN X-DIRECTION (MMAX) = 32
          GRID SPACING IN Z-DIRECTION (DZ) =  1000.00000 FT
          GRID SPACING IN X-DIRECTION (DX) =  1000.00000 FT
          CONSTANT DEPTH GRID SPECIFIED HAVING A DEPTH (DEPC) OF   720.00000 FT.
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DEPTH GRID, FEET:

M N =	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
2	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
3	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
4	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
5	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
6	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
7	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
8	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
9	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
10	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
11	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
12	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
13	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
14	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
15	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
16	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
17	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
18	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
19	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
20	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
21	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
22	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
23	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
24	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
25	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
26	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
27	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
28	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
29	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
30	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
31	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.

32	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.

M N =	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
2	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
3	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
4	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
5	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
6	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
7	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
8	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
9	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
10	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
11	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
12	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
13	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
14	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
15	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
16	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
17	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
18	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
19	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
20	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
21	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
22	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
23	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
24	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
25	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
26	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
27	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
28	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
29	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
30	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.
31	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.

32	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.	720.

CODED GRID:

RANGE OF N IS 1 TO 32

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X O W W W W B W W W W W B W W W W W W W W W W W W W W W W W O X
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X O W W W W B D W W W W B W W W W W W W W W W W W W W W W W O X
X O W W W W B B B B B B B W W W W W W W W W W W W W W W W W O X
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 X O W W W W W W W W W W W W W W W W W W W W W W W W W W O X
 X O O O O O O O O O O O O O O O O O O O O O O O O O O O O X
 X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X
LEGEND FOR CODED GRID:  W = WATER POINT
                        L = LAND POINT
                        O = OPEN BOUNDARY
                        B = DISPOSAL SITE BOUNDARY
                        D = DUMP LOCATION
                        X = DUMMY POINT
NUMBER OF GRID POINTS WITHIN ESTUARY =   784


DISPOSAL LOCATION:
         THE DUMP LOCATION IS  0.2700E+05 FT (XBARGE) OR ABOUT GRID POINT #28 FROM THE TOP OF THE GRID
           AND   7000.     FT (ZBARGE) OR ABOUT GRID POINT # 8 FROM THE LEFT EDGE OF THE GRID.
         THE BOTTOM SLOPE IN THE X-DIRECTION AT THE DUMP SITE (SLOPEX, POSITIVE IF DEPTH INCREASES
           FROM TOP OF GRID TO BOTTOM OF GRID) IS  0.00 DEGREES.
         THE BOTTOM SLOPE IN THE Z-DIRECTION AT THE DUMP SITE (SLOPEZ, POSITIVE IF DEPTH INCREASES
           FROM LEFT SIDE OF GRID TO RIGHT SIDE OF GRID) IS  0.00 DEGREES.
         THE DISPOSAL LOCATION IS NOT AT A HOLE OR DEPRESSION.  (DHOLE = 0.0)
AMBIENT DENSITY PROFILE:
          DEPTH (FT)     DENSITY (G/CC)
          0.0000E+00      1.0239
           60.00          1.0241
           120.0          1.0254
           720.0          1.0265
COMPUTED DEPTH:
         THE DEPTH AT THE DUMP LOCATION WAS INTERPOLATED TO BE   720.0     FT.


VELOCITY DISTRIBUTION:
         VERTICALLY AVERAGED X-DIRECTION (VAX =  -1.70     FPS) AND
           Z-DIRECTION (VAZ =  0.660     FPS) VELOCITIES CONSTRUCTED AT EACH GRID POINT
           FROM A SINGLE OBSERVATION AT A DEPTH (D) OF   720.     FT.
VELOCITY GRID:  X-DIRECTION, FPS
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M N=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
2	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
3	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
4	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
5	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
6	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
7	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
8	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
9	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
10	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
11	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
12	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
13	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
14	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
15	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
16	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
17	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
18	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
19	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
20	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
21	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
22	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
23	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
24	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
25	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
26	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
27	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
28	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
29	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
30	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
31	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
32	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700

M	N= 18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
2	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
3	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
4	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
5	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
6	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
7	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
8	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
9	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
10	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
11	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
12	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
13	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
14	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
15	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
16	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
17	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
18	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
19	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
20	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
21	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
22	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
23	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
24	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
25	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
26	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
27	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
28	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
29	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
30	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
31	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700
32	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700	-1.700

VELOCITY GRID: Z-DIRECTION, FPS

M N=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
2	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
3	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
4	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
5	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
6	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
7	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
8	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
9	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
10	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
11	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
12	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
13	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
14	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
15	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
16	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
17	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
18	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
19	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
20	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
21	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
22	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
23	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
24	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
25	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
26	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
27	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
28	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
29	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
30	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
31	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660

32	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660

M N=	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
2	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
3	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
4	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
5	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
6	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
7	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
8	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
9	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
10	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
11	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
12	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
13	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
14	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
15	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
16	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
17	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
18	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
19	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
20	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
21	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
22	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
23	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
24	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
25	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
26	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
27	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
28	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
29	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
30	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660
31	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660

32	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660	0.660

BOTTOM SHEAR STRESS, LBS/SQ FT:

M N=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
3	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
4	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
5	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
6	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
7	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
8	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
9	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
10	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
11	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
12	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
13	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
14	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
15	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
16	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
17	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
18	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
19	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
20	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
21	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
22	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
23	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
24	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
25	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
26	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
27	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
28	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
29	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
30	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075

31	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
32	0.0000	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075

M	N= 18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
3	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
4	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
5	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
6	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
7	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
8	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
9	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
10	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
11	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
12	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
13	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
14	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
15	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
16	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
17	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
18	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
19	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
20	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
21	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
22	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
23	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
24	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
25	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
26	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
27	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
28	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
29	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075
30	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075	0.0075

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31  0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075
32  0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075


TIME PARAMETERS:
         DURATION OF THE DISPOSAL, TREL =      20.00 SECONDS
         DURATION OF THE SIMULATION, TSTOP =   14400.00 SECONDS
         LONG-TERM TIME STEP USED IN THE SIMULATION, DTL =     600.00 SECONDS
BARGE DESCRIPTION:
         LENGTH OF BARGE, BARGL =  0.20E+03 FT
         WIDTH OF BARGE, BARGW =   50.     FT
         DRAFT OF LOADED BARGE, DREL1 =   17.0     FT
         DRAFT OF UNLOADED BARGE, DREL2 =   5.00     FT


MODEL COEFFICIENTS READ FROM INPUT:
         TURBULENT THERMAL ENTRAINMENT             ALPHA0 =    0.2350
         SETTLING COEFFICIENT                      BETA   =    0.0000
         APPARENT MASS COEFFICIENT                 CM     =    1.0000
         DRAG COEFFICIENT FOR A SPHERE             CD     =    0.5000
         RATIO--CLOUD/AMBIENT DENSITY GRADIENTS    GAMA   =    0.2500
         FORM DRAG FOR COLLAPSING CLOUD            CDRAG  =    1.0000
         SKIN FRICTION FOR COLLAPSING CLOUD        CFRIC  =    0.0100
         DRAG FOR AN ELLIPSOIDAL WEDGE             CD3    =    0.1000
         DRAG FOR A PLATE                          CD4    =    1.0000
         ENTRAINMENT IN COLLAPSE                   ALPHAC =    0.1000
         FRICTION BETWEEN CLOUD AND BOTTOM         FRICTN =    0.0100
         4/3 LAW HORIZ. DIFF. DISSIPATION FACTOR   ALAMDA  =    0.0050
         UNSTRATIFIED WATER VERT. DIFF. COEF.      AKY0    =    0.0250
         STRIPPING COEF. OF FINES DURING CONVERTIVE DESCENT=    0.0030


MATERIAL DESCRIPTION:   2 LAYERS OF DREDGED MATERIAL WITH 4 SOLIDS FRACTIONS
         VOLUMETRIC CONCENTRATIONS OF SOLIDS FRACTIONS DO NOT VARY FROM LAYER TO LAYER.
                              L A Y E R  1
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                    SPEC. GRAV.   VOLUMETRIC     FALL    DEPOSITIONAL
        DESCRIPTION  OR DENSITY  CONCENTRATION  VELOCITY   VOID RATIO   CHARACTER
                      (GM/CC)      (VOL/VOL)      (FPS)
          SAND        2.700        0.4745        0.10000    0.6000       NONCOHESIVE
              CRITICAL SHEAR STRESS FOR DEPOSITION =  0.2000E-01 LBS/SQ. FT.
              SEDIMENT FRACTION WILL NOT BE STRIPPED DURING CONVECTIVE DESCENT.
          SILT        2.650        0.6080E-01    0.01000     4.000       COHESIVE
              CRITICAL SHEAR STRESS FOR DEPOSITION =  0.8000E-02 LBS/SQ. FT.
              SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.
          CLAY        2.650        0.6080E-01    0.00200     7.000       COHESIVE
              CRITICAL SHEAR STRESS FOR DEPOSITION =  0.2000E-02 LBS/SQ. FT.
              SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.
          GRAVEL      2.700        0.5400E-01    1.00000    0.5000       NONCOHESIVE
              CRITICAL SHEAR STRESS FOR DEPOSITION =   99.00     LBS/SQ. FT.
              SEDIMENT FRACTION WILL NOT BE STRIPPED DURING CONVECTIVE DESCENT.
TOXICITY ANALYSIS DATA:
        CONCENTRATIONS OF FLUID    IN TERMS OF PERCENT OF THE DREDGED MATERIAL
          FOLLOWING INITIAL MIXING ARE COMPUTED FOR WATER QUALITY EVALUATIONS.
        THE INITIAL CONCENTRATION OF FLUID    IS  100.     PERCENT
          AND ITS BACKGROUND CONCENTRATION IS 0.000E+00 PERCENT.
        THE DILUTION REQUIRED TO MEET TOXICITY CRITERIA IS   1.00000     PERCENT.
          (TYPICALLY, 1 PERCENT OF THE LC50)
                    SPEC. GRAV.   VOLUMETRIC
        DESCRIPTION  OR DENSITY  CONCENTRATION
                       (GM/CC)     (VOL/VOL)
          FLUID       1.026        0.3499

DISCHARGE PARAMETERS:
        VOLUME OF LAYER 1 =    2000.     CU YD
        INITIAL RADIUS OF CLOUD, RB =    29.54236     FT
        INITIAL DEPTH OF CLOUD CENTROID, DREL =    25.21     FT
      INITIAL CLOUD VELOCITIES...
        X-DIRECTION (FROM TOP TO BOTTOM OF GRID), CU(1) =    6.000     FPS
        Y-DIRECTION (FROM SURFACE TO BOTTOM), CV(1) =   0.5731     FPS
        Z-DIRECTION (FROM LEFT TO RIGHT OF GRID), CW(1) =   0.0000E+00 FPS
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BULK PARAMETERS:
         BULK DENSITY, ROO =    2.108047     G/CC
         AGGREGATE OR BULK VOIDS RATIO, BVOID =    1.508


CONVECTIVE DESCENT PHASE:
         IN TRIAL #1 THE DESCENT PHASE TIME STEP (DT) WAS   0.57188071E-01 SECONDS.
                     THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS 1161.
                     THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                     THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
         IN TRIAL #2 THE DESCENT PHASE TIME STEP (DT) WAS   0.16598837     SECONDS.
                     THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS  399.
                     THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                     THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.


CLOUD COLLAPSE PHASE:
         IN TRIAL #1 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.16598837     SECONDS.
                     THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1199.
                     THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                     THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                     THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
         IN TRIAL #2 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.22131783     SECONDS.
                     THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1187.
                     THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                     THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                     DIFFUSION OF THE DISCHARGE IS GREATER THAN DYNAMIC SPREADING FROM THE COLLAPSE.


    TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
     DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
      (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
    NEW CLOUD CREATED, NTCLD(K) (K =     1) =    1
      250.5      0.2669E+05   7153.       1387.       697.9       22.13      0.2562E+05  0.0000E+00      1187             399
    NOTE -- When all solid material has settled from a cloud, the cloud is erased and
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the remaining clouds for this solids type are renumbered.

TIME FROM DISPOSAL (SEC)	CLOUD CENTROID X-LOCATION (FT)	CLOUD CENTROID Z-LOCATION (FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	T O T A L M A S S (CU FT)	ENTRAINED MASS (CU FT)	TIME STEP WHEN THIS CLOUD WAS CREATED	TIME STEP WHEN PREVIOUS CLOUD WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 1									
29.59	0.2706E+05	7010.	174.1	14.13	290.0	150.7	0.0000E+00	119	1
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 2									
49.17	0.2703E+05	7023.	244.0	304.1	168.3	40.42	0.0000E+00	237	119
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 3									
68.76	0.2699E+05	7036.	297.4	472.5	128.4	23.41	0.0000E+00	355	237
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 4									
92.44	0.2695E+05	7051.	522.0	600.9	99.54	70.47	0.0000E+00	473	399
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 5									
118.6	0.2691E+05	7068.	835.3	682.4	37.64	50.48	0.0000E+00	591	473
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 6									
144.7	0.2687E+05	7085.	1038.	710.5	9.530	20.33	0.0000E+00	709	591
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 7									
170.8	0.2682E+05	7102.	1161.	716.2	3.825	9.910	0.0000E+00	827	709
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 8									
196.9	0.2678E+05	7119.	1249.	717.8	2.196	6.312	0.0000E+00	945	827
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 9									
223.0	0.2674E+05	7136.	1322.	718.5	1.533	4.732	0.0000E+00	1063	945
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 10									
249.1	0.2670E+05	7152.	1384.	718.8	1.180	3.851	0.0000E+00	1181	1063
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 11									
250.5	0.2669E+05	7153.	1387.	697.9	22.13	2903.	0.0000E+00	1187	1181

NOTE -- When all solid material has settled from a cloud, the cloud is erased and
the remaining clouds for this solids type are renumbered.

TIME FROM DISPOSAL (SEC)	CLOUD CENTROID X-LOCATION (FT)	CLOUD CENTROID Z-LOCATION (FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	T O T A L M A S S (CU FT)	ENTRAINED MASS (CU FT)	TIME STEP WHEN THIS CLOUD WAS CREATED	TIME STEP WHEN PREVIOUS CLOUD WAS CREATED

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NEW CLOUD CREATED, NTCLD(K) (K =     3) =    1
  29.59      0.2706E+05   7010.       174.1       14.13       290.0       150.7      0.0000E+00       119              1
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    2
  49.17      0.2703E+05   7023.       244.0       304.1       168.3       40.42      0.0000E+00       237            119
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    3
  68.76      0.2699E+05   7036.       297.4       472.5       128.4       23.41      0.0000E+00       355            237
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    4
  92.44      0.2695E+05   7051.       522.0       600.9       99.54       70.47      0.0000E+00       473            399
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    5
  118.6      0.2691E+05   7068.       835.3       682.4       37.64       50.48      0.0000E+00       591            473
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    6
  144.7      0.2687E+05   7085.       1038.       710.5       9.530       20.33      0.0000E+00       709            591
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    7
  170.8      0.2682E+05   7102.       1161.       716.2       3.825       9.910      0.0000E+00       827            709
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    8
  196.9      0.2678E+05   7119.       1249.       717.8       2.196       6.312      0.0000E+00       945            827
NEW CLOUD CREATED, NTCLD(K) (K =     3) =    9
  223.0      0.2674E+05   7136.       1322.       718.5       1.533       4.732      0.0000E+00      1063            945
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   10
  249.1      0.2670E+05   7152.       1384.       718.8       1.180       3.851      0.0000E+00      1181           1063
NEW CLOUD CREATED, NTCLD(K) (K =     3) =   11
  250.5      0.2669E+05   7153.       1387.       697.9       22.13       2903.      0.0000E+00      1187           1181
NOTE -- When all solid material has settled from a cloud, the cloud is erased and
          the remaining clouds for this solids type are renumbered.


TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
 DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
  (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    1
  92.44      0.2695E+05   7051.       522.0       720.0      0.1000E-02   572.4      0.0000E+00       473            399
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    2
  118.6      0.2691E+05   7068.       835.3       720.0      0.1000E-02   1231.      0.0000E+00       591            473
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    3
  144.7      0.2687E+05   7085.       1038.       720.0      0.1000E-02   755.2      0.0000E+00       709            591
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NEW CLOUD CREATED, NTCLD(K) (K =     4) =    4
  170.8      0.2682E+05   7102.       1161.       720.0      0.1000E-02   266.4      0.0000E+00       827             709
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    5
  196.9      0.2678E+05   7119.       1249.       720.0      0.1000E-02   70.95      0.0000E+00       945             827
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    6
  223.0      0.2674E+05   7136.       1322.       720.0      0.1000E-02   15.97      0.0000E+00      1063             945
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    7
  249.1      0.2670E+05   7152.       1384.       720.0      0.1000E-02   3.175      0.0000E+00      1181            1063
NEW CLOUD CREATED, NTCLD(K) (K =     4) =    8
  250.5      0.2669E+05   7153.       1387.       697.9       22.13      0.6804      0.0000E+00      1187            1181
NOTE -- When all solid material has settled from a cloud, the cloud is erased and
          the remaining clouds for this solids type are renumbered.


TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
 DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
  (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K =     5) =    1
  250.5      0.2669E+05   7153.       1387.       697.9       22.13      0.1889E+05  0.0000E+00      1187               1
NOTE -- When all solid material has settled from a cloud, the cloud is erased and
          the remaining clouds for this solids type are renumbered.


MATERIAL DESCRIPTION:   2 LAYERS OF DREDGED MATERIAL WITH 4 SOLIDS FRACTIONS
         VOLUMETRIC CONCENTRATIONS OF SOLIDS FRACTIONS DO NOT VARY FROM LAYER TO LAYER.
                              L A Y E R  2
                     SPEC. GRAV.   VOLUMETRIC     FALL    DEPOSITIONAL
         DESCRIPTION  OR DENSITY  CONCENTRATION  VELOCITY   VOID RATIO   CHARACTER
                       (GM/CC)      (VOL/VOL)      (FPS)
           SAND        2.700        0.4745        0.10000    0.6000       NONCOHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =  0.2000E-01 LBS/SQ. FT.
               SEDIMENT FRACTION WILL NOT BE STRIPPED DURING CONVECTIVE DESCENT.
           SILT        2.650        0.6080E-01    0.01000     4.000       COHESIVE
               CRITICAL SHEAR STRESS FOR DEPOSITION =  0.8000E-02 LBS/SQ. FT.
               SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.
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          CLAY        2.650        0.6080E-01    0.00200     7.000       COHESIVE
              CRITICAL SHEAR STRESS FOR DEPOSITION =  0.2000E-02 LBS/SQ. FT.
              SEDIMENT FRACTION WILL BE STRIPPED DURING CONVECTIVE DESCENT.
          GRAVEL      2.700        0.5400E-01    1.00000    0.5000       NONCOHESIVE
              CRITICAL SHEAR STRESS FOR DEPOSITION =   99.00     LBS/SQ. FT.
              SEDIMENT FRACTION WILL NOT BE STRIPPED DURING CONVECTIVE DESCENT.
TOXICITY ANALYSIS DATA:
        CONCENTRATIONS OF FLUID    IN TERMS OF PERCENT OF THE DREDGED MATERIAL
          FOLLOWING INITIAL MIXING ARE COMPUTED FOR WATER QUALITY EVALUATIONS.
        THE INITIAL CONCENTRATION OF FLUID    IS  100.     PERCENT
          AND ITS BACKGROUND CONCENTRATION IS 0.000E+00 PERCENT.
        THE DILUTION REQUIRED TO MEET TOXICITY CRITERIA IS   1.00000     PERCENT.
          (TYPICALLY, 1 PERCENT OF THE LC50)
                     SPEC. GRAV.   VOLUMETRIC
        DESCRIPTION  OR DENSITY  CONCENTRATION
                       (GM/CC)     (VOL/VOL)
          FLUID       1.026        0.3499

DISCHARGE PARAMETERS:
        VOLUME OF LAYER 2 =    1000.     CU YD
        INITIAL RADIUS OF CLOUD, RB =    23.44779     FT
        INITIAL DEPTH OF CLOUD CENTROID, DREL =    18.63     FT
      INITIAL CLOUD VELOCITIES...
        X-DIRECTION (FROM TOP TO BOTTOM OF GRID), CU(1) =    6.000     FPS
        Y-DIRECTION (FROM SURFACE TO BOTTOM), CV(1) =   0.2865     FPS
        Z-DIRECTION (FROM LEFT TO RIGHT OF GRID), CW(1) =   0.0000E+00 FPS
BULK PARAMETERS:
        BULK DENSITY, ROO =    2.108047     G/CC
        AGGREGATE OR BULK VOIDS RATIO, BVOID =    1.508


CONVECTIVE DESCENT PHASE:
        IN TRIAL #1 THE DESCENT PHASE TIME STEP (DT) WAS   0.36026224E-01 SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS 1200.
                    THE BOTTOM WAS NOT ENCOUNTERED DURING CONVECTIVE DESCENT.
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                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
        IN TRIAL #2 THE DESCENT PHASE TIME STEP (DT) WAS   0.10807867     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS  837.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
        IN TRIAL #3 THE DESCENT PHASE TIME STEP (DT) WAS   0.22615463     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) WAS  399.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.


CLOUD COLLAPSE PHASE:
        IN TRIAL #1 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.22615463     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1199.
                    THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
        IN TRIAL #2 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.30153951     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1199.
                    THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    THE DISCHARGE DID NOT OBTAIN A NEUTRALLY BUOYANT CONDITION DURING CONVECTIVE DESCENT.
        IN TRIAL #3 THE COLLAPSE PHASE TIME STEP (DT) WAS  0.40205267     SECONDS.
                    THE TOTAL NUMBER OF INTEGRATION TIME STEPS (ISTEP) FOR CONVECTIVE DESCENT AND COLAPSE WAS 1014.
                    THE INTEGRATION TIME STEP NUMBER WHEN THE BED WAS ENCOUNTERED (IBED) WAS  399.
                    THE BOTTOM WAS ENCOUNTERED DURING CONVECTIVE DESCENT.
                    DIFFUSION OF THE DISCHARGE IS GREATER THAN DYNAMIC SPREADING FROM THE COLLAPSE.


   TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
    DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
     (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
   NEW CLOUD CREATED, NTCLD(K) (K =     1) =    2
     356.1      0.2659E+05   7216.       1351.       720.0      0.1000E-02   1860.      0.0000E+00      1011             399
   NEW CLOUD CREATED, NTCLD(K) (K =     1) =    3
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357.3	0.2659E+05	7217.	1352.	698.4	21.58	0.1095E+05	0.0000E+00	1014	1011

NOTE -- When all solid material has settled from a cloud, the cloud is erased and
the remaining clouds for this solids type are renumbered.

TIME FROM DISPOSAL (SEC)	CLOUD CENTROID X-LOCATION (FT)	CLOUD CENTROID Z-LOCATION (FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	T O T A L M A S S (CU FT)	ENTRAINED MASS (CU FT)	TIME STEP WHEN THIS CLOUD WAS CREATED	TIME STEP WHEN PREVIOUS CLOUD WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 12									
42.84	0.2711E+05	7013.	157.4	9.837	276.6	83.97	0.0000E+00	102	1
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 13									
65.68	0.2707E+05	7028.	220.8	286.4	152.8	20.18	0.0000E+00	203	102
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 14									
88.53	0.2703E+05	7043.	269.1	439.2	116.3	11.65	0.0000E+00	304	203
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 15									
112.4	0.2699E+05	7058.	325.9	555.5	16.61	11.13	0.0000E+00	405	399
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 16									
153.0	0.2693E+05	7085.	687.2	572.1	107.3	44.65	0.0000E+00	506	405
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 17									
193.6	0.2686E+05	7112.	954.9	679.4	17.06	16.01	0.0000E+00	607	506
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 18									
234.2	0.2679E+05	7138.	1106.	696.4	5.188	6.529	0.0000E+00	708	607
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 19									
274.9	0.2672E+05	7164.	1206.	701.6	2.587	3.713	0.0000E+00	809	708
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 20									
315.5	0.2666E+05	7190.	1284.	704.2	1.699	2.648	0.0000E+00	910	809
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 21									
356.1	0.2659E+05	7216.	1351.	705.9	1.258	2.087	0.0000E+00	1011	910
NEW CLOUD CREATED, NTCLD(K) (K = 2) = 22									
357.3	0.2659E+05	7217.	1352.	698.4	21.58	1439.	0.0000E+00	1014	1011

NOTE -- When all solid material has settled from a cloud, the cloud is erased and
the remaining clouds for this solids type are renumbered.

TIME FROM	CLOUD CENTROID	CLOUD X-Z	DEPTH OF	CLOUD VERT.	T O T A L	ENTRAINED	TIME STEP WHEN	TIME STEP WHEN

DISPOSAL (SEC)	X-LOCATION (FT)	Z-LOCATION (FT)	DIAMETER (FT)	TOP OF CLOUD (FT)	THICKNESS (FT)	M A S S (CU FT)	MASS (CU FT)	THIS CLOUD WAS CREATED	PREVIOUS CLOUD WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 12									
42.84	0.2711E+05	7013.	157.4	9.837	276.6	83.97	0.0000E+00	102	1
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 13									
65.68	0.2707E+05	7028.	220.8	286.4	152.8	20.18	0.0000E+00	203	102
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 14									
88.53	0.2703E+05	7043.	269.1	439.2	116.3	11.65	0.0000E+00	304	203
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 15									
112.4	0.2699E+05	7058.	325.9	555.5	16.61	11.13	0.0000E+00	405	399
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 16									
153.0	0.2693E+05	7085.	687.2	572.1	107.3	44.65	0.0000E+00	506	405
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 17									
193.6	0.2686E+05	7112.	954.9	679.4	17.06	16.01	0.0000E+00	607	506
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 18									
234.2	0.2679E+05	7138.	1106.	696.4	5.188	6.529	0.0000E+00	708	607
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 19									
274.9	0.2672E+05	7164.	1206.	701.6	2.587	3.713	0.0000E+00	809	708
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 20									
315.5	0.2666E+05	7190.	1284.	704.2	1.699	2.648	0.0000E+00	910	809
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 21									
356.1	0.2659E+05	7216.	1351.	705.9	1.258	2.087	0.0000E+00	1011	910
NEW CLOUD CREATED, NTCLD(K) (K = 3) = 22									
357.3	0.2659E+05	7217.	1352.	698.4	21.58	1439.	0.0000E+00	1014	1011

NOTE -- When all solid material has settled from a cloud, the cloud is erased and the remaining clouds for this solids type are renumbered.

TIME FROM DISPOSAL (SEC)	CLOUD CENTROID X-LOCATION (FT)	CLOUD CENTROID Z-LOCATION (FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	T O T A L M A S S (CU FT)	ENTRAINED MASS (CU FT)	TIME STEP WHEN THIS CLOUD WAS CREATED	TIME STEP WHEN PREVIOUS CLOUD WAS CREATED
NEW CLOUD CREATED, NTCLD(K) (K = 4) = 2									
112.4	0.2699E+05	7058.	325.9	720.0	0.1000E-02	26.49	0.0000E+00	405	399
NEW CLOUD CREATED, NTCLD(K) (K = 4) = 3									
153.0	0.2693E+05	7085.	687.2	720.0	0.1000E-02	788.3	0.0000E+00	506	405

```
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    4
      193.6      0.2686E+05   7112.       954.9       720.0      0.1000E-02   513.1      0.0000E+00       607             506
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    5
      234.2      0.2679E+05   7138.       1106.       720.0      0.1000E-02   114.1      0.0000E+00       708             607
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    6
      274.9      0.2672E+05   7164.       1206.       720.0      0.1000E-02   14.49      0.0000E+00       809             708
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    7
      315.5      0.2666E+05   7190.       1284.       720.0      0.1000E-02   1.348      0.0000E+00       910             809
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    8
      356.1      0.2659E+05   7216.       1351.       720.0      0.1000E-02  0.1007      0.0000E+00      1011             910
    NEW CLOUD CREATED, NTCLD(K) (K =     4) =    9
      357.3      0.2659E+05   7217.       1352.       698.4       21.58      0.6663E-02  0.0000E+00      1014            1011
    NOTE -- When all solid material has settled from a cloud, the cloud is erased and
              the remaining clouds for this solids type are renumbered.


    TIME FROM       CLOUD CENTROID      CLOUD X-Z   DEPTH OF   CLOUD VERT.  T O T A L  ENTRAINED   TIME STEP WHEN   TIME STEP WHEN
     DISPOSAL   X-LOCATION  Z-LOCATION   DIAMETER  TOP OF CLOUD THICKNESS     M A S S      MASS       THIS CLOUD     PREVIOUS CLOUD
      (SEC)        (FT)        (FT)        (FT)        (FT)        (FT)      (CU FT)     (CU FT)     WAS CREATED      WAS CREATED
    NEW CLOUD CREATED, NTCLD(K) (K =     5) =    2
      357.3      0.2659E+05   7217.       1352.       698.4       21.58       9447.      0.0000E+00      1014               1
    NOTE -- When all solid material has settled from a cloud, the cloud is erased and
              the remaining clouds for this solids type are renumbered.


LONG TERM DIFFUSION RESULTS:
    BEGIN LONG TERM SIMULATION OF FATE OF SAND
SUMMARY OF SAND     DISTRIBUTIONS AFTER     600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =    0.00000E+00
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     38435.
     COMPUTATIONS FOR SAND     TERMINATED AT     600.00  SEC. ELAPSED TIME...MATERIAL SETTLED TO BOTTOM


BOTTOM ACCUMULATION OF SAND     (CU FT/GRID SQUARE) ,    600.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   100.0         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
```

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
19	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
25	0000	0	0	0	0	.	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
26	0000	0	0	0	.	.10	6.4	3.6	.02	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
27	0000	0	0	0	+	2.6	179	81	.36	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
28	0000	0	0	0	.	1.2	85	24	.06	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
29	0000	0	0	0	0	+	.22	.05	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
30	0000	0	0	0	0	0	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
31	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													

THICKNESS (FT) OF SAND ACCUMULATED ON BOTTOM, 600.00 SECONDS AFTER DUMP

...MULTIPLY DISPLAYED VALUES BY 0.1000E-01 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
17	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
18	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
19	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
25	0000	0	0	0	0	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
26	0000	0	0	0	0	+	.10	.05	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
27	0000	0	0	0	.	.04	2.8	1.2	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
28	0000	0	0	0	.	.01	1.3	.38	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
29	0000	0	0	0	0	.	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
30	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
31	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													

BEGIN LONG TERM SIMULATION OF FATE OF SILT

```
SUMMARY OF SILT     DISTRIBUTIONS AFTER     600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4914.5
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     10.279
SUMMARY OF SILT     DISTRIBUTIONS AFTER    1200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4902.5
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     22.314
SUMMARY OF SILT     DISTRIBUTIONS AFTER    1800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4895.2

    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     29.651
SUMMARY OF SILT     DISTRIBUTIONS AFTER    2400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4889.7
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     35.124
SUMMARY OF SILT     DISTRIBUTIONS AFTER    3000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4885.3
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     39.551
SUMMARY OF SILT     DISTRIBUTIONS AFTER    3600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4881.3
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     43.516


CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD   3600.00 SECONDS AFTER DUMP
             120.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
```

```
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   .   + .01   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   .   + .04 .29 .22 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   .   + .14 .87 .66 .06   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   .   + .05 .32 .24 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   0   .   + .01 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD   3600.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
```

```
11 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 0000   0   0   0   0   0   0   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 0000   0   0   0   0   .   .   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 0000   0   0   0   .   +   + .04 .12 .10 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 0000   0   0   0   .   + .09 .84 2.3 1.9 .52 .04   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 0000   0   0   0   + .02 .57 5.0  14  12 3.0 .25   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 0000   0   0   .   + .03 1.0 9.2  25  21 5.6 .46   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 0000   0   0   0   + .02 .60 5.2  14  12 3.2 .26   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 0000   0   0   0   .   + .10 .94 2.5 2.1 .58 .04   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
```

BOTTOM ACCUMULATION OF SILT (CU FT/GRID SQUARE) , 3600.00 SECONDS AFTER DUMP

...MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

```
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 0000   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
```

11	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
12	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
13	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
14	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
15	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
16	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
17	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
18	OOOO	0	0	0	0	0	.	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
19	OOOO	0	0	0	0	.	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
20	OOOO	0	0	0	.	+	+	.02	.06	.05	.01	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
21	OOOO	0	0	0	.	+	.01	.16	.42	.34	.08	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
22	OOOO	0	0	0	.	+	.06	.52	1.1	.80	.18	.01	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
23	OOOO	0	0	0	.	+	.16	1.1	1.8	.90	.14	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
24	OOOO	0	0	0	.	.01	.40	2.1	2.1	.59	.05	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
25	OOOO	0	0	0	+	.03	1.0	3.8	1.9	.24	.01	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
26	OOOO	0	0	0	+	.07	2.7	6.1	1.1	.04	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
27	OOOO	0	0	0	.	.10	5.6	4.0	.24	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
28	OOOO	0	0	0	.	.02	1.8	.63	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
29	OOOO	0	0	0	0	.	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
30	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	OOOOO
31	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO																												

SMALL CLOUDS AT 3600.00 SECONDS ELAPSED TIME FOR SILT

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.2099E+05	9367.	150.7	0.0000E+00	2464.	11.10	296.3	0.340000E-04
2	0.2099E+05	9367.	40.42	0.0000E+00	2551.	301.1	174.6	0.340000E-04
3	0.2099E+05	9366.	23.41	0.0000E+00	2611.	469.4	134.7	0.340000E-04
4	0.2099E+05	9366.	70.47	0.0000E+00	2818.	597.9	105.9	0.340000E-04
5	0.2099E+05	9366.	50.33	0.0000E+00	3044.	679.3	40.68	0.340000E-04
6	0.2099E+05	9366.	20.11	0.0000E+00	3162.	707.4	12.57	0.340000E-04
7	0.2099E+05	9366.	9.692	0.0000E+00	3230.	713.1	6.858	0.340000E-04
8	0.2100E+05	9365.	6.108	0.0000E+00	3260.	714.8	5.225	0.340000E-04

9	0.2100E+05	9364.	4.542	0.0000E+00	3283.	715.4	4.556	0.340000E-04
10	0.2100E+05	9364.	3.673	0.0000E+00	3302.	715.8	4.192	0.340000E-04
11	0.2100E+05	9364.	2870.	0.0000E+00	3303.	695.0	24.99	0.396435E-04
12	0.2106E+05	9360.	83.97	0.0000E+00	2427.	6.817	282.9	0.340000E-04
13	0.2106E+05	9360.	20.18	0.0000E+00	2504.	283.4	159.1	0.340000E-04
14	0.2107E+05	9360.	11.65	0.0000E+00	2557.	436.2	122.5	0.340000E-04
15	0.2107E+05	9360.	11.13	0.0000E+00	2618.	552.5	22.88	0.340000E-04
16	0.2107E+05	9360.	44.65	0.0000E+00	2929.	569.1	113.5	0.340000E-04
17	0.2107E+05	9360.	16.01	0.0000E+00	3084.	676.4	23.31	0.340000E-04
18	0.2107E+05	9359.	6.529	0.0000E+00	3163.	693.4	11.43	0.340000E-04
19	0.2107E+05	9359.	3.713	0.0000E+00	3209.	698.6	8.819	0.340000E-04
20	0.2107E+05	9358.	2.648	0.0000E+00	3235.	701.2	7.914	0.340000E-04
21	0.2107E+05	9357.	2.087	0.0000E+00	3249.	702.9	7.439	0.340000E-04
22	0.2107E+05	9357.	1430.	0.0000E+00	3249.	695.5	24.52	0.340000E-04

SUMMARY OF SILT DISTRIBUTIONS AFTER 4200.00 SEC.
TOTAL SUSPENDED MATERIAL (CU FT) = 4877.4
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 47.375
SUMMARY OF SILT DISTRIBUTIONS AFTER 4800.00 SEC.
TOTAL SUSPENDED MATERIAL (CU FT) = 4874.0
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 50.817
SUMMARY OF SILT DISTRIBUTIONS AFTER 5400.00 SEC.
TOTAL SUSPENDED MATERIAL (CU FT) = 4870.6
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 54.178
SUMMARY OF SILT DISTRIBUTIONS AFTER 6000.00 SEC.
TOTAL SUSPENDED MATERIAL (CU FT) = 4867.3
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 57.466
SUMMARY OF SILT DISTRIBUTIONS AFTER 6600.00 SEC.
TOTAL SUSPENDED MATERIAL (CU FT) = 4864.1
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 60.684
SUMMARY OF SILT DISTRIBUTIONS AFTER 7200.00 SEC.
TOTAL SUSPENDED MATERIAL (CU FT) = 4861.0
TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 63.835

CONCENTRATIONS ABOVE BACKGROUND OF SILT (MG/L) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

120.00 FT BELOW THE WATER SURFACE

...MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
11	0000	0	0	0	0	0	0	0	.	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
12	0000	0	0	0	0	0	0	.	.	+	+	+	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
13	0000	0	0	0	0	0	.	.	+	+	.01	.01	+	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
14	0000	0	0	0	0	0	.	+	+	.02	.07	.08	.04	.01	+	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
15	0000	0	0	0	0	0	.	+	.01	.08	.22	.27	.14	.03	+	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
16	0000	0	0	0	0	0	.	+	.01	.11	.30	.37	.20	.04	+	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
17	0000	0	0	0	0	0	.	+	.01	.06	.18	.22	.12	.02	+	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
18	0000	0	0	0	0	0	.	+	+	.01	.05	.06	.03	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
19	0000	0	0	0	0	0	0	.	+	+	+	+	+	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
29	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
30	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
31	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													

CONCENTRATIONS ABOVE BACKGROUND OF SILT (MG/L) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

719.00 FT BELOW THE WATER SURFACE

...MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
10	0000	0	0	0	0	0	0	.	.	.	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
11	0000	0	0	0	0	0	.	.	+	+	+	+	+	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
12	0000	0	0	0	0	.	.	+	+	.03	.08	.10	.06	.02	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
13	0000	0	0	0	0	.	+	.01	.08	.33	.72	.84	.52	.17	.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
14	0000	0	0	0	0	+	+	.04	.37	1.5	3.2	3.7	2.3	.78	.13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
15	0000	0	0	0	0	+	+	.11	.89	3.6	7.8	9.1	5.6	1.8	.33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
16	0000	0	0	0	0	+	.01	.15	1.1	4.6	10	12	7.2	2.4	.42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
17	0000	0	0	0	0	+	+	.10	.79	3.2	6.9	8.1	5.0	1.6	.29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
18	0000	0	0	0	0	+	+	.03	.29	1.1	2.5	2.9	1.8	.61	.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
19	0000	0	0	0	0	.	+	+	.05	.23	.50	.58	.36	.12	.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
29	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
30	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
31	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													

BOTTOM ACCUMULATION OF SILT (CU FT/GRID SQUARE) , 7200.00 SECONDS AFTER DUMP

...MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
10	0000	0	0	0	0	0	0	0	0	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
11	0000	0	0	0	0	0	0	.	.	.	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
12	0000	0	0	0	0	0	.	.	+	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
13	0000	0	0	0	0	0	.	+	+	+	.02	.02	.01	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	00000
14	0000	0	0	0	0	.	+	+	.01	.05	.10	.11	.06	.02	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	00000
15	0000	0	0	0	0	.	+	+	.04	.16	.31	.33	.18	.05	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	00000
16	0000	0	0	0	0	.	+	.01	.09	.34	.62	.59	.31	.08	.01	+	.	.	0	0	0	0	0	0	0	0	0	0	0	00000
17	0000	0	0	0	.	.	+	.02	.18	.56	.88	.73	.33	.08	.01	+	.	.	0	0	0	0	0	0	0	0	0	0	0	00000
18	0000	0	0	0	.	+	+	.05	.30	.78	1.0	.68	.24	.05	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	00000
19	0000	0	0	0	.	+	+	.10	.48	1.0	1.0	.51	.14	.02	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	00000
20	0000	0	0	0	.	+	.01	.18	.74	1.2	.89	.32	.06	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
21	0000	0	0	0	.	+	.03	.34	1.0	1.3	.68	.16	.02	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
22	0000	0	0	0	.	+	.07	.61	1.5	1.2	.42	.06	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
23	0000	0	0	0	.	+	.16	1.1	1.9	.99	.19	.01	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
24	0000	0	0	0	.	.01	.40	2.1	2.1	.60	.06	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
25	0000	0	0	0	+	.03	1.0	3.8	1.9	.24	.01	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
26	0000	0	0	0	+	.07	2.7	6.1	1.1	.04	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
27	0000	0	0	0	.	.10	5.6	4.0	.24	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
28	0000	0	0	0	.	.02	1.8	.63	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
29	0000	0	0	0	0	.	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
30	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
31	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													

SMALL CLOUDS AT 7200.00 SECONDS ELAPSED TIME FOR SILT

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.1487E+05	0.1174E+05	150.7	0.0000E+00	3935.	7.933	302.9	0.340000E-04
2	0.1487E+05	0.1174E+05	40.42	0.0000E+00	3988.	297.9	181.2	0.340000E-04
3	0.1487E+05	0.1174E+05	23.41	0.0000E+00	4026.	466.2	141.3	0.340000E-04
4	0.1487E+05	0.1174E+05	70.47	0.0000E+00	4158.	594.7	112.4	0.340000E-04
5	0.1487E+05	0.1174E+05	50.19	0.0000E+00	4311.	676.2	43.85	0.340000E-04
6	0.1487E+05	0.1174E+05	19.94	0.0000E+00	4393.	704.3	15.73	0.340000E-04
7	0.1487E+05	0.1174E+05	9.555	0.0000E+00	4442.	710.0	10.03	0.340000E-04
8	0.1488E+05	0.1174E+05	6.000	0.0000E+00	4463.	711.6	8.393	0.340000E-04
9	0.1488E+05	0.1174E+05	4.453	0.0000E+00	4480.	712.3	7.724	0.340000E-04
10	0.1488E+05	0.1174E+05	3.596	0.0000E+00	4494.	712.6	7.359	0.340000E-04
11	0.1488E+05	0.1174E+05	2857.	0.0000E+00	4494.	691.8	28.15	0.340000E-04
12	0.1494E+05	0.1174E+05	83.97	0.0000E+00	3913.	3.653	289.4	0.340000E-04
13	0.1494E+05	0.1174E+05	20.18	0.0000E+00	3959.	280.2	165.7	0.340000E-04
14	0.1495E+05	0.1174E+05	11.65	0.0000E+00	3992.	433.1	129.1	0.340000E-04
15	0.1495E+05	0.1174E+05	11.13	0.0000E+00	4030.	549.4	29.46	0.340000E-04
16	0.1495E+05	0.1174E+05	44.65	0.0000E+00	4233.	566.0	120.1	0.340000E-04
17	0.1495E+05	0.1174E+05	16.01	0.0000E+00	4339.	673.2	29.89	0.340000E-04
18	0.1495E+05	0.1174E+05	6.529	0.0000E+00	4394.	690.3	18.01	0.340000E-04
19	0.1495E+05	0.1173E+05	3.713	0.0000E+00	4427.	695.5	15.39	0.340000E-04
20	0.1495E+05	0.1173E+05	2.648	0.0000E+00	4445.	698.1	14.49	0.340000E-04
21	0.1495E+05	0.1173E+05	2.087	0.0000E+00	4455.	699.8	14.01	0.340000E-04
22	0.1495E+05	0.1173E+05	1423.	0.0000E+00	4455.	692.3	27.68	0.340000E-04

SUMMARY OF SILT DISTRIBUTIONS AFTER 7800.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 4857.9

TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 66.922

SUMMARY OF SILT DISTRIBUTIONS AFTER 8400.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 4854.9

TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 69.949

SUMMARY OF SILT DISTRIBUTIONS AFTER 9000.00 SEC.

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    TOTAL SUSPENDED MATERIAL (CU FT) =     4851.9
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     72.917
SUMMARY OF SILT     DISTRIBUTIONS AFTER    9600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4849.0
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     75.829
SUMMARY OF SILT     DISTRIBUTIONS AFTER   10200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4846.1
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     78.686
SUMMARY OF SILT     DISTRIBUTIONS AFTER   10800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4843.3
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     81.492
    MAX CONC IS 0.00000009 OUTPUT SUPPRESSED AT  120.00 FT


CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD  10800.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   .   .   .   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   .   +   +   + .02 .04 .05 .04 .02   +   +   0   0   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   +   +   + .04 .12 .25 .32 .27 .15 .05 .01   0   0   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   +   + .03 .16 .51 1.0 1.3 1.1 .62 .22 .05   0   0   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   + .01 .09 .44 1.3 2.7 3.5 3.0 1.6 .60 .14   0   0   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   + .02 .16 .77 2.3 4.7 6.2 5.2 2.9 1.0 .24   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   + .02 .18 .88 2.7 5.4 7.0 5.9 3.2 1.1 .27   0   0   0   0   0   0   0   0   0   0   OOOOO
11 OOOO   0   0   0   0   0   0   + .01 .13 .64 1.9 3.9 5.1 4.3 2.4 .86 .20   0   0   0   0   0   0   0   0   0   0   OOOOO
12 OOOO   0   0   0   0   0   0   +   + .06 .30 .95 1.9 2.4 2.0 1.1 .41 .09   0   0   0   0   0   0   0   0   0   0   OOOOO
13 OOOO   0   0   0   0   0   0   +   + .02 .09 .29 .59 .77 .65 .36 .12 .03   0   0   0   0   0   0   0   0   0   0   OOOOO
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO

15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
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18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


BOTTOM ACCUMULATION OF SILT     (CU FT/GRID SQUARE) ,  10800.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   .   .   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   .   .   .   +   +   +   .   .   .   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   .   .   +   +   + .01 .03 .04 .03 .01   +   +   +   .   .   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   .   .   +   + .02 .05 .11 .13 .10 .05 .01   +   +   .   .   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   .   +   + .01 .05 .14 .25 .29 .22 .11 .03   +   +   +   .   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   .   +   + .02 .09 .25 .43 .47 .34 .16 .05 .01   +   +   .   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   .   .   +   + .04 .16 .39 .60 .60 .39 .17 .05   +   +   +   .   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   .   .   + .01 .07 .24 .53 .71 .62 .36 .13 .03   +   +   .   .   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   .   +   + .02 .11 .35 .66 .76 .57 .27 .09 .02   +   +   .   .   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   .   +   + .03 .18 .48 .78 .75 .46 .18 .04   +   +   +   .   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   .   +   + .06 .27 .64 .86 .68 .34 .10 .02   +   +   .   .   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   .   + .01 .11 .41 .80 .88 .56 .22 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   .   .   + .02 .18 .58 .94 .83 .41 .12 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   00000
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18 OOOO   0   0   0   .   +   + .05 .30 .79 1.0 .70 .26 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   0   OOOOO
19 OOOO   0   0   0   .   +   + .10 .48 1.0 1.0 .51 .14 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   0   OOOOO
20 OOOO   0   0   0   .   + .01 .18 .74 1.2 .89 .32 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   .   + .03 .34 1.0 1.3 .68 .16 .02   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   0   .   + .07 .61 1.5 1.2 .42 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   .   + .16 1.1 1.9 .99 .19 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
24 OOOO   0   0   0   . .01 .40 2.1 2.1 .60 .06   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   + .03 1.0 3.8 1.9 .24 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   + .07 2.7 6.1 1.1 .04   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   . .10 5.6 4.0 .24   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   . .02 1.8 .63   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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SMALL CLOUDS AT 10800.00 SECONDS ELAPSED TIME FOR SILT

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	8748.	0.1412E+05	150.7	0.0000E+00	4971.	4.770	309.5	0.340000E-04
2	8750.	0.1412E+05	40.42	0.0000E+00	5013.	294.8	187.8	0.340000E-04
3	8751.	0.1412E+05	23.41	0.0000E+00	5043.	463.1	147.9	0.340000E-04
4	8752.	0.1412E+05	70.47	0.0000E+00	5148.	591.6	119.0	0.340000E-04
5	8752.	0.1412E+05	50.06	0.0000E+00	5271.	673.0	47.02	0.340000E-04
6	8753.	0.1412E+05	19.81	0.0000E+00	5338.	701.1	18.90	0.340000E-04
7	8755.	0.1412E+05	9.457	0.0000E+00	5378.	706.8	13.19	0.340000E-04
8	8756.	0.1412E+05	5.929	0.0000E+00	5395.	708.4	11.56	0.340000E-04
9	8758.	0.1412E+05	4.396	0.0000E+00	5409.	709.1	10.89	0.340000E-04
10	8760.	0.1412E+05	3.548	0.0000E+00	5421.	709.5	10.53	0.340000E-04
11	8760.	0.1412E+05	2845.	0.0000E+00	5421.	688.7	31.32	0.340000E-04
12	8823.	0.1411E+05	83.97	0.0000E+00	4954.	0.4894	296.0	0.340000E-04
13	8824.	0.1411E+05	20.18	0.0000E+00	4990.	277.1	172.3	0.340000E-04
14	8825.	0.1411E+05	11.65	0.0000E+00	5016.	429.9	135.7	0.340000E-04
15	8825.	0.1411E+05	11.13	0.0000E+00	5046.	546.2	36.03	0.340000E-04

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 16        8826.        0.1411E+05   44.65      0.0000E+00   5208.       562.8       126.7      0.340000E-04
 17        8827.        0.1411E+05   16.01      0.0000E+00   5294.       670.1       36.46      0.340000E-04
 18        8828.        0.1411E+05   6.529      0.0000E+00   5339.       687.1       24.58      0.340000E-04
 19        8829.        0.1411E+05   3.713      0.0000E+00   5366.       692.3       21.96      0.340000E-04
 20        8831.        0.1411E+05   2.648      0.0000E+00   5381.       694.9       21.06      0.340000E-04
 21        8834.        0.1411E+05   2.087      0.0000E+00   5389.       696.6       20.58      0.340000E-04
 22        8834.        0.1411E+05   1417.      0.0000E+00   5389.       689.1       30.85      0.340000E-04
SUMMARY OF SILT     DISTRIBUTIONS AFTER   11400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4840.6
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     84.247
SUMMARY OF SILT     DISTRIBUTIONS AFTER   12000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4837.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     86.959
SUMMARY OF SILT     DISTRIBUTIONS AFTER   12600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4835.2
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     89.621
SUMMARY OF SILT     DISTRIBUTIONS AFTER   13200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4832.5
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     92.194
SUMMARY OF SILT     DISTRIBUTIONS AFTER   13800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4830.0
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     94.597
SUMMARY OF SILT     DISTRIBUTIONS AFTER   14400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4827.4
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =     96.728
    MAX CONC IS 0.00000006 OUTPUT SUPPRESSED AT  120.00 FT


CONCENTRATIONS ABOVE BACKGROUND OF SILT     (MG/L) IN THE CLOUD  14400.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   +   + .03 .16 .60 1.6 3.1 4.2 4.2 3.0 1.5 .59   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   +   + .03 .17 .64 1.7 3.2 4.5 4.5 3.2 1.6 .62   0   0   0   0   0   0   0   0   OOOOO
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  5 OOOO    0    0    0    0    0    0    0    +    + .02 .13 .48 1.2 2.4 3.4 3.4 2.4 1.2 .47    0    0    0    0    0    0    0    0   00000
  6 OOOO    0    0    0    0    0    0    0    +    + .01 .07 .26 .71 1.3 1.8 1.8 1.3 .70 .26    0    0    0    0    0    0    0    0   00000
  7 OOOO    0    0    0    0    0    0    0    .    +    + .02 .10 .28 .54 .74 .74 .53 .27 .10    0    0    0    0    0    0    0    0   00000
  8 OOOO    0    0    0    0    0    0    0    .    +    +    + .03 .08 .15 .21 .21 .15 .07 .02    0    0    0    0    0    0    0    0   00000
  9 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 10 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 11 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 12 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 13 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 14 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 15 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 16 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 17 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 18 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 19 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 20 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 21 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 22 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 23 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 24 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 25 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 26 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 27 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 28 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 29 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 30 OOOO    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   00000
 31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


BOTTOM ACCUMULATION OF SILT     (CU FT/GRID SQUARE) ,  14400.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2    3    4    5    6    7    8    9   10   11   12   13   14   15   16   17   18   19   20   21   22   23   24   25   26   27   28   29   30   31
  2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
  3 OOOO    0    0    0    0    0    0    .    .    +    + .01 .05 .12 .21 .27 .24 .16 .07 .02    +    +    +    .    .    0    0    0   00000
  4 OOOO    0    0    0    0    0    0    .    +    +    + .02 .09 .20 .34 .40 .34 .21 .09 .03    +    +    +    .    .    0    0    0   00000
```

```
 5 OOOO   0    0    0    0    0    0    .    +    + .01  .04  .14  .29  .45  .50  .40  .23  .10  .03   +    +    +    .    .    0    0    0    OOOOO
 6 OOOO   0    0    0    0    0    .    .    +    + .01  .07  .20  .39  .54  .54  .39  .21  .08  .02   +    +    +    .    0    0    0    0    OOOOO
 7 OOOO   0    0    0    0    0    .    .    +    + .02  .10  .27  .47  .59  .53  .34  .16  .05  .01   +    +    .    .    0    0    0    0    OOOOO
 8 OOOO   0    0    0    0    0    .    +    +    + .04  .15  .35  .56  .61  .48  .27  .11  .03    +    +    +    .    .    0    0    0    0    OOOOO
 9 OOOO   0    0    0    0    0    .    +    + .01  .07  .22  .45  .63  .60  .40  .19  .07  .01    +    +    .    .    0    0    0    0    0    OOOOO
10 OOOO   0    0    0    0    0    .    +    + .02  .11  .31  .55  .67  .55  .32  .13  .03    +    +    +    .    .    0    0    0    0    0    OOOOO
11 OOOO   0    0    0    0    .    .    +    + .04  .17  .41  .65  .68  .48  .23  .08  .02    +    +    .    .    0    0    0    0    0    0    OOOOO
12 OOOO   0    0    0    0    .    .    + .01  .07  .25  .53  .73  .65  .38  .15  .04    +    +    +    .    .    0    0    0    0    0    0    OOOOO
13 OOOO   0    0    0    0    .    +    + .02  .11  .35  .66  .77  .57  .28  .09  .02    +    +    .    .    0    0    0    0    0    0    0    OOOOO
14 OOOO   0    0    0    0    .    +    + .03  .18  .48  .78  .75  .46  .18  .05    +    +    +    .    0    0    0    0    0    0    0    0    OOOOO
15 OOOO   0    0    0    0    .    +    + .06  .27  .64  .86  .68  .34  .10  .02    +    +    .    .    0    0    0    0    0    0    0    0    OOOOO
16 OOOO   0    0    0    0    .    + .01  .11  .41  .80  .88  .56  .22  .05    +    +    .    .    0    0    0    0    0    0    0    0    0    OOOOO
17 OOOO   0    0    0    .    .    + .02  .18  .58  .94  .83  .41  .12  .02    +    +    .    0    0    0    0    0    0    0    0    0    0    OOOOO
18 OOOO   0    0    0    .    +    + .05  .30  .79  1.0  .70  .26  .05    +    +    .    .    0    0    0    0    0    0    0    0    0    0    OOOOO
19 OOOO   0    0    0    .    +    + .10  .48  1.0  1.0  .51  .14  .02    +    +    .    0    0    0    0    0    0    0    0    0    0    0    OOOOO
20 OOOO   0    0    0    .    + .01  .18  .74  1.2  .89  .32  .06    +    +    .    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
21 OOOO   0    0    0    .    + .03  .34  1.0  1.3  .68  .16  .02    +    .    .    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
22 OOOO   0    0    0    .    + .07  .61  1.5  1.2  .42  .06    +    +    .    0    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
23 OOOO   0    0    0    .    + .16  1.1  1.9  .99  .19  .01    +    .    0    0    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
24 OOOO   0    0    0    . .01  .40  2.1  2.1  .60  .06    +    .    .    0    0    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
25 OOOO   0    0    0    + .03  1.0  3.8  1.9  .24  .01    +    .    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
26 OOOO   0    0    0    + .07  2.7  6.1  1.1  .04    +    .    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
27 OOOO   0    0    0    . .10  5.6  4.0  .24    +    .    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
28 OOOO   0    0    0    . .02  1.8  .63    +    .    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
29 OOOO   0    0    0    0    .    +    +    .    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
30 OOOO   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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SMALL CLOUDS AT   14400.00 SECONDS ELAPSED TIME FOR SILT
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM           DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID    (CU FT)     (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1        2628.        0.1649E+05   150.7      0.0000E+00   5821.       1.606       316.1      0.340000E-04
  2        2630.        0.1649E+05   40.42      0.0000E+00   5856.       291.6       194.4      0.340000E-04
```

3	2631.	0.1649E+05	23.41	0.0000E+00	5882.	459.9	154.5	0.340000E-04
4	2632.	0.1649E+05	70.47	0.0000E+00	5972.	588.4	125.6	0.340000E-04
5	2632.	0.1649E+05	49.94	0.0000E+00	6078.	669.8	50.18	0.340000E-04
6	2633.	0.1649E+05	19.69	0.0000E+00	6136.	697.9	22.07	0.340000E-04
7	2635.	0.1649E+05	9.381	0.0000E+00	6171.	703.6	16.36	0.340000E-04
8	2636.	0.1649E+05	5.875	0.0000E+00	6186.	705.3	14.73	0.340000E-04
9	2638.	0.1649E+05	4.354	0.0000E+00	6198.	705.9	14.06	0.340000E-04
10	2640.	0.1649E+05	3.514	0.0000E+00	6208.	706.3	13.69	0.340000E-04
11	2640.	0.1649E+05	2835.	0.0000E+00	6208.	685.5	34.49	0.340000E-04
12	2703.	0.1649E+05	83.97	0.0000E+00	5806.	0.0000E+00	302.6	0.340000E-04
13	2704.	0.1649E+05	20.18	0.0000E+00	5837.	273.9	178.8	0.340000E-04
14	2705.	0.1649E+05	11.65	0.0000E+00	5859.	426.7	142.3	0.340000E-04
15	2705.	0.1649E+05	11.13	0.0000E+00	5885.	543.1	42.60	0.340000E-04
16	2706.	0.1649E+05	44.65	0.0000E+00	6023.	559.7	133.2	0.340000E-04
17	2707.	0.1649E+05	16.01	0.0000E+00	6098.	666.9	43.03	0.340000E-04
18	2708.	0.1649E+05	6.529	0.0000E+00	6136.	684.0	31.15	0.340000E-04
19	2709.	0.1649E+05	3.713	0.0000E+00	6160.	689.2	28.54	0.340000E-04
20	2711.	0.1649E+05	2.648	0.0000E+00	6173.	691.8	27.63	0.340000E-04
21	2714.	0.1649E+05	2.085	0.0000E+00	6180.	693.5	26.51	0.340000E-04
22	2714.	0.1649E+05	1412.	0.0000E+00	6180.	686.0	34.02	0.340000E-04

```
BOTTOM ACCUMULATION OF SILT     (CU FT/GRID SQUARE) ,  14400.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOO000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
 3 OOOO   0   0   0   0   0   0   .   .   +   + .01 .05 .12 .21 .27 .24 .16 .07 .02   +   +   +   .   .   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   .   +   +   + .02 .09 .20 .34 .40 .34 .21 .09 .03   +   +   +   .   .   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   .   +   + .01 .04 .14 .29 .45 .50 .40 .23 .10 .03   +   +   +   .   .   0   0   0   00000
 6 OOOO   0   0   0   0   0   .   .   +   + .01 .07 .20 .39 .54 .54 .39 .21 .08 .02   +   +   +   .   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   .   .   +   + .02 .10 .27 .47 .59 .53 .34 .16 .05 .01   +   +   .   .   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   .   +   +   + .04 .15 .35 .56 .61 .48 .27 .11 .03   +   +   +   .   .   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   .   +   + .01 .07 .22 .45 .63 .60 .40 .19 .07 .01   +   +   .   .   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   .   +   + .02 .11 .31 .55 .67 .55 .32 .13 .03   +   +   +   .   .   0   0   0   0   0   00000
11 OOOO   0   0   0   0   .   .   +   + .04 .17 .41 .65 .68 .48 .23 .08 .02   +   +   .   .   0   0   0   0   0   0   00000
```

```
12 OOOO   0   0   0   0   .   .   + .01 .07 .25 .53 .73 .65 .38 .15 .04   +   +   +   .   .   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   .   +   + .02 .11 .35 .66 .77 .57 .28 .09 .02   +   +   .   .   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   .   +   + .03 .18 .48 .78 .75 .46 .18 .05   +   +   +   .   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   .   +   + .06 .27 .64 .86 .68 .34 .10 .02   +   +   .   .   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   .   + .01 .11 .41 .80 .88 .56 .22 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   .   .   + .02 .18 .58 .94 .83 .41 .12 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   .   +   + .05 .30 .79 1.0 .70 .26 .05   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   .   +   + .10 .48 1.0 1.0 .51 .14 .02   +   +   .   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   .   + .01 .18 .74 1.2 .89 .32 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   .   + .03 .34 1.0 1.3 .68 .16 .02   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   .   + .07 .61 1.5 1.2 .42 .06   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   .   + .16 1.1 1.9 .99 .19 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   . .01 .40 2.1 2.1 .60 .06   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   + .03 1.0 3.8 1.9 .24 .01   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   + .07 2.7 6.1 1.1 .04   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   . .10 5.6 4.0 .24   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   . .02 1.8 .63   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


THICKNESS (FT) OF SILT     ACCUMULATED ON BOTTOM,    14400.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY  0.1000E-04     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   .   .   +   +   + .02 .06 .10 .13 .12 .08 .03 .01   +   +   .   .   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   .   .   +   + .01 .04 .10 .17 .20 .17 .10 .04 .01   +   +   .   .   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   .   +   +   + .02 .07 .14 .22 .25 .20 .11 .05 .01   +   +   .   .   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   .   +   +   + .03 .10 .19 .27 .27 .19 .10 .04 .01   +   +   .   .   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   .   .   +   + .01 .05 .13 .23 .29 .26 .17 .08 .02   +   +   +   .   .   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   .   .   +   + .02 .07 .17 .28 .30 .24 .13 .05 .01   +   +   .   .   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   .   +   +   + .03 .11 .22 .31 .30 .20 .09 .03   +   +   +   .   .   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   .   +   + .01 .05 .15 .27 .33 .27 .16 .06 .01   +   +   .   .   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   .   +   + .02 .08 .20 .32 .34 .24 .11 .04 .01   +   +   .   .   0   0   0   0   0   0   00000
```

```
12 OOOO   0   0   0   0   .   .   +   + .03 .12 .26 .36 .32 .19 .07 .02   +   +   .   .   0   0   0   0   0   0   0   OOOOO
13 OOOO   0   0   0   0   .   .   + .01 .05 .17 .33 .38 .28 .14 .04 .01   +   +   .   .   0   0   0   0   0   0   0   OOOOO
14 OOOO   0   0   0   0   .   +   + .01 .09 .24 .39 .37 .23 .09 .02   +   +   .   .   0   0   0   0   0   0   0   0   OOOOO
15 OOOO   0   0   0   0   .   +   + .03 .13 .32 .43 .34 .17 .05 .01   +   +   .   0   0   0   0   0   0   0   0   0   OOOOO
16 OOOO   0   0   0   0   .   +   + .05 .20 .40 .44 .28 .11 .02   +   +   .   .   0   0   0   0   0   0   0   0   0   OOOOO
17 OOOO   0   0   0   0   .   + .01 .09 .29 .47 .41 .20 .06 .01   +   +   .   0   0   0   0   0   0   0   0   0   0   OOOOO
18 OOOO   0   0   0   .   .   + .02 .15 .39 .51 .35 .13 .02   +   +   .   .   0   0   0   0   0   0   0   0   0   0   OOOOO
19 OOOO   0   0   0   .   +   + .05 .24 .50 .50 .25 .07 .01   +   .   .   0   0   0   0   0   0   0   0   0   0   0   OOOOO
20 OOOO   0   0   0   .   +   + .09 .37 .61 .44 .16 .03   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   .   + .01 .17 .54 .66 .34 .08 .01   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   0   .   + .03 .30 .75 .63 .21 .03   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   .   + .08 .56 .95 .49 .09   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
24 OOOO   0   0   0   .   + .20 1.0 1.0 .30 .03   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   . .01 .54 1.9 .98 .12   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   . .03 1.3 3.0 .59 .02   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   . .05 2.8 2.0 .12   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   . .01 .91 .31   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


    BEGIN LONG TERM SIMULATION OF FATE OF CLAY
SUMMARY OF CLAY     DISTRIBUTIONS AFTER     600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    1200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    1800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    2400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
```

SUMMARY OF CLAY DISTRIBUTIONS AFTER 3000.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 4924.8

TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF CLAY DISTRIBUTIONS AFTER 3600.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 4924.8

TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

CONCENTRATIONS ABOVE BACKGROUND OF CLAY (MG/L) IN THE CLOUD 3600.00 SECONDS AFTER DUMP

120.00 FT BELOW THE WATER SURFACE

...MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO																													
3	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
4	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
5	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
6	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
7	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
8	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
9	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
10	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
11	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
12	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
13	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
14	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
15	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
16	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
17	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
18	OOOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
19	OOOO	0	0	0	0	0	0	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
20	OOOO	0	0	0	0	0	.	+	.01	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
21	OOOO	0	0	0	0	.	+	.04	.29	.22	.02	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
22	OOOO	0	0	0	0	.	+	.14	.87	.66	.06	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
23	OOOO	0	0	0	0	.	+	.05	.32	.24	.02	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
24	OOOO	0	0	0	0	0	.	+	.01	.01	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	

```
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


CONCENTRATIONS ABOVE BACKGROUND OF CLAY     (MG/L) IN THE CLOUD   3600.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
17 OOOO   0   0   0   0   0   0   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
18 OOOO   0   0   0   0   .   .   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
19 OOOO   0   0   0   .   +   + .04 .12 .10 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
20 OOOO   0   0   0   .   + .09 .84 2.3 1.9 .52 .04   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   + .02 .56 4.9  14  12 3.0 .25   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   .   + .03 1.0 9.1  25  21 5.6 .46   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   + .02 .59 5.2  14  12 3.2 .26   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
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24 OOOO   0   0   0   .   + .10 .94 2.5 2.1 .57 .04   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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SMALL CLOUDS AT 3600.00 SECONDS ELAPSED TIME FOR CLAY

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.2099E+05	9367.	150.7	0.0000E+00	2464.	10.97	296.3	0.340000E-04
2	0.2099E+05	9367.	40.42	0.0000E+00	2551.	301.0	174.6	0.340000E-04
3	0.2099E+05	9366.	23.41	0.0000E+00	2611.	469.3	134.7	0.340000E-04
4	0.2099E+05	9366.	70.47	0.0000E+00	2818.	597.7	105.9	0.340000E-04
5	0.2099E+05	9366.	50.48	0.0000E+00	3044.	679.2	40.80	0.340000E-04
6	0.2099E+05	9366.	20.33	0.0000E+00	3162.	707.3	12.68	0.340000E-04
7	0.2099E+05	9366.	9.910	0.0000E+00	3230.	713.0	6.973	0.340000E-04
8	0.2100E+05	9365.	6.312	0.0000E+00	3260.	714.7	5.339	0.340000E-04
9	0.2100E+05	9364.	4.732	0.0000E+00	3283.	715.3	4.669	0.340000E-04
10	0.2100E+05	9364.	3.851	0.0000E+00	3302.	715.7	4.304	0.340000E-04
11	0.2100E+05	9364.	2903.	0.0000E+00	3303.	694.7	25.25	0.396598E-04
12	0.2106E+05	9360.	83.97	0.0000E+00	2427.	6.693	282.9	0.340000E-04
13	0.2106E+05	9360.	20.18	0.0000E+00	2504.	283.3	159.1	0.340000E-04
14	0.2107E+05	9360.	11.65	0.0000E+00	2557.	436.1	122.5	0.340000E-04
15	0.2107E+05	9360.	11.13	0.0000E+00	2618.	552.4	22.88	0.340000E-04
16	0.2107E+05	9360.	44.65	0.0000E+00	2929.	569.0	113.5	0.340000E-04
17	0.2107E+05	9360.	16.01	0.0000E+00	3084.	676.3	23.31	0.340000E-04
18	0.2107E+05	9359.	6.529	0.0000E+00	3163.	693.3	11.43	0.340000E-04
19	0.2107E+05	9359.	3.713	0.0000E+00	3209.	698.5	8.819	0.340000E-04
20	0.2107E+05	9358.	2.648	0.0000E+00	3235.	701.1	7.914	0.340000E-04
21	0.2107E+05	9357.	2.087	0.0000E+00	3249.	702.8	7.439	0.340000E-04

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 22       0.2107E+05     9357.       1439.      0.0000E+00   3249.       695.3       24.67      0.340000E-04
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    4200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    4800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    5400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    6000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    6600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    7200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00


CONCENTRATIONS ABOVE BACKGROUND OF CLAY     (MG/L) IN THE CLOUD   7200.00 SECONDS AFTER DUMP
             120.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
11 OOOO   0   0   0   0   0   0   0   .   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
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12 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   .   .   +   + .01 .01   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   .   +   + .02 .07 .08 .04 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   .   + .01 .08 .22 .27 .14 .03   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   .   + .01 .11 .30 .37 .20 .04   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   .   + .01 .06 .18 .22 .12 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   .   +   + .01 .05 .06 .03   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   .   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


CONCENTRATIONS ABOVE BACKGROUND OF CLAY     (MG/L) IN THE CLOUD   7200.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   .   .   .   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
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11 OOOO   0   0   0   0   0   .   .   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
12 OOOO   0   0   0   0   .   .   +   + .03 .08 .10 .06 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
13 OOOO   0   0   0   0   .   + .01 .08 .33 .72 .84 .52 .17 .03   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
14 OOOO   0   0   0   0   +   + .04 .37 1.5 3.2 3.7 2.3 .77 .13   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
15 OOOO   0   0   0   0   +   + .11 .89 3.6 7.8 9.1 5.6 1.8 .33   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
16 OOOO   0   0   0   0   + .01 .15 1.1 4.6  10  12 7.2 2.4 .42   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
17 OOOO   0   0   0   0   +   + .10 .79 3.2 6.9 8.0 5.0 1.6 .29   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
18 OOOO   0   0   0   0   +   + .03 .29 1.1 2.5 2.9 1.8 .61 .10   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
19 OOOO   0   0   0   0   .   +   + .05 .23 .50 .58 .36 .12 .02   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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SMALL CLOUDS AT 7200.00 SECONDS ELAPSED TIME FOR CLAY

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.1487E+05	0.1174E+05	150.7	0.0000E+00	3935.	7.681	302.9	0.340000E-04
2	0.1487E+05	0.1174E+05	40.42	0.0000E+00	3988.	297.7	181.2	0.340000E-04
3	0.1487E+05	0.1174E+05	23.41	0.0000E+00	4026.	466.0	141.3	0.340000E-04
4	0.1487E+05	0.1174E+05	70.47	0.0000E+00	4158.	594.4	112.4	0.340000E-04
5	0.1487E+05	0.1174E+05	50.48	0.0000E+00	4311.	675.9	44.08	0.340000E-04
6	0.1487E+05	0.1174E+05	20.33	0.0000E+00	4393.	704.0	15.97	0.340000E-04
7	0.1487E+05	0.1174E+05	9.910	0.0000E+00	4442.	709.7	10.26	0.340000E-04
8	0.1488E+05	0.1174E+05	6.312	0.0000E+00	4463.	711.4	8.625	0.340000E-04

9	0.1488E+05	0.1174E+05	4.732	0.0000E+00	4480.	712.0	7.956	0.340000E-04
10	0.1488E+05	0.1174E+05	3.851	0.0000E+00	4494.	712.4	7.590	0.340000E-04
11	0.1488E+05	0.1174E+05	2903.	0.0000E+00	4494.	691.5	28.54	0.340000E-04
12	0.1494E+05	0.1174E+05	83.97	0.0000E+00	3913.	3.407	289.4	0.340000E-04
13	0.1494E+05	0.1174E+05	20.18	0.0000E+00	3959.	280.0	165.7	0.340000E-04
14	0.1495E+05	0.1174E+05	11.65	0.0000E+00	3992.	432.8	129.1	0.340000E-04
15	0.1495E+05	0.1174E+05	11.13	0.0000E+00	4030.	549.1	29.46	0.340000E-04
16	0.1495E+05	0.1174E+05	44.65	0.0000E+00	4233.	565.7	120.1	0.340000E-04
17	0.1495E+05	0.1174E+05	16.01	0.0000E+00	4339.	673.0	29.89	0.340000E-04
18	0.1495E+05	0.1174E+05	6.529	0.0000E+00	4394.	690.0	18.01	0.340000E-04
19	0.1495E+05	0.1173E+05	3.713	0.0000E+00	4427.	695.2	15.39	0.340000E-04
20	0.1495E+05	0.1173E+05	2.648	0.0000E+00	4445.	697.8	14.49	0.340000E-04
21	0.1495E+05	0.1173E+05	2.087	0.0000E+00	4455.	699.6	14.01	0.340000E-04
22	0.1495E+05	0.1173E+05	1439.	0.0000E+00	4455.	692.0	27.95	0.340000E-04

```
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    7800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    8400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    9000.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER    9600.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   10200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   10800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
    MAX CONC IS 0.00000009 OUTPUT SUPPRESSED AT  120.00 FT
```

CONCENTRATIONS ABOVE BACKGROUND OF CLAY (MG/L) IN THE CLOUD 10800.00 SECONDS AFTER DUMP

719.00 FT BELOW THE WATER SURFACE

...MULTIPLY DISPLAYED VALUES BY 1.000 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	.	.	.	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	.	+	+	+	.02	.04	.05	.04	.02	+	+	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	+	+	+	.04	.12	.25	.32	.27	.15	.05	.01	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	+	+	.03	.16	.51	1.0	1.3	1.1	.62	.22	.05	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	+	.01	.09	.44	1.3	2.7	3.5	3.0	1.6	.60	.14	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	+	.02	.16	.77	2.3	4.7	6.2	5.2	2.9	1.0	.24	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	+	.02	.18	.88	2.7	5.4	7.0	5.9	3.2	1.1	.27	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	+	.01	.13	.64	1.9	3.9	5.1	4.3	2.4	.86	.20	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	+	+	.06	.30	.95	1.9	2.4	2.1	1.1	.41	.09	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	+	+	.02	.09	.29	.59	.77	.65	.36	.12	.03	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SMALL CLOUDS AT 10800.00 SECONDS ELAPSED TIME FOR CLAY

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	8748.	0.1412E+05	150.7	0.0000E+00	4971.	4.395	309.5	0.340000E-04
2	8750.	0.1412E+05	40.42	0.0000E+00	5013.	294.4	187.8	0.340000E-04
3	8751.	0.1412E+05	23.41	0.0000E+00	5043.	462.7	147.9	0.340000E-04
4	8752.	0.1412E+05	70.47	0.0000E+00	5148.	591.2	119.0	0.340000E-04
5	8752.	0.1412E+05	50.48	0.0000E+00	5271.	672.6	47.37	0.340000E-04
6	8753.	0.1412E+05	20.33	0.0000E+00	5338.	700.7	19.26	0.340000E-04
7	8755.	0.1412E+05	9.910	0.0000E+00	5378.	706.5	13.55	0.340000E-04
8	8756.	0.1412E+05	6.312	0.0000E+00	5395.	708.1	11.91	0.340000E-04
9	8758.	0.1412E+05	4.732	0.0000E+00	5409.	708.8	11.24	0.340000E-04
10	8760.	0.1412E+05	3.851	0.0000E+00	5421.	709.1	10.88	0.340000E-04
11	8760.	0.1412E+05	2903.	0.0000E+00	5421.	688.2	31.82	0.340000E-04
12	8823.	0.1411E+05	83.97	0.0000E+00	4954.	0.1208	296.0	0.340000E-04
13	8824.	0.1411E+05	20.18	0.0000E+00	4990.	276.7	172.3	0.340000E-04
14	8825.	0.1411E+05	11.65	0.0000E+00	5016.	429.5	135.7	0.340000E-04
15	8825.	0.1411E+05	11.13	0.0000E+00	5046.	545.8	36.03	0.340000E-04
16	8826.	0.1411E+05	44.65	0.0000E+00	5208.	562.4	126.7	0.340000E-04
17	8827.	0.1411E+05	16.01	0.0000E+00	5294.	669.7	36.46	0.340000E-04
18	8828.	0.1411E+05	6.529	0.0000E+00	5339.	686.8	24.58	0.340000E-04
19	8829.	0.1411E+05	3.713	0.0000E+00	5366.	692.0	21.96	0.340000E-04
20	8831.	0.1411E+05	2.648	0.0000E+00	5381.	694.6	21.06	0.340000E-04
21	8834.	0.1411E+05	2.087	0.0000E+00	5389.	696.3	20.58	0.340000E-04
22	8834.	0.1411E+05	1439.	0.0000E+00	5389.	688.8	31.24	0.340000E-04

SUMMARY OF CLAY DISTRIBUTIONS AFTER 11400.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 4924.8

TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF CLAY DISTRIBUTIONS AFTER 12000.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 4924.8

TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) = 0.00000E+00

SUMMARY OF CLAY DISTRIBUTIONS AFTER 12600.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) = 4924.8

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    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   13200.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   13800.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
SUMMARY OF CLAY     DISTRIBUTIONS AFTER   14400.00 SEC.
    TOTAL SUSPENDED MATERIAL (CU FT) =     4924.8
    TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =    0.00000E+00
    MAX CONC IS 0.00000006 OUTPUT SUPPRESSED AT  120.00 FT


CONCENTRATIONS ABOVE BACKGROUND OF CLAY     (MG/L) IN THE CLOUD  14400.00 SECONDS AFTER DUMP
             719.00 FT BELOW THE WATER SURFACE
...MULTIPLY DISPLAYED VALUES BY   1.000         (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   +   + .03 .16 .60 1.6 3.1 4.2 4.2 3.0 1.5 .59   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   +   + .03 .17 .64 1.7 3.2 4.5 4.5 3.2 1.6 .62   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   0   +   + .02 .13 .48 1.3 2.4 3.4 3.4 2.4 1.2 .47   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   0   +   + .01 .07 .26 .71 1.3 1.8 1.8 1.3 .70 .26   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   0   .   +   + .02 .10 .28 .54 .74 .74 .53 .27 .10   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   0   .   +   +   + .03 .08 .15 .21 .21 .15 .07 .02   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
```

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20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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SMALL CLOUDS AT 14400.00 SECONDS ELAPSED TIME FOR CLAY

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	2628.	0.1649E+05	150.7	0.0000E+00	5821.	1.109	316.1	0.340000E-04
2	2630.	0.1649E+05	40.42	0.0000E+00	5856.	291.1	194.4	0.340000E-04
3	2631.	0.1649E+05	23.41	0.0000E+00	5882.	459.4	154.5	0.340000E-04
4	2632.	0.1649E+05	70.47	0.0000E+00	5972.	587.9	125.6	0.340000E-04
5	2632.	0.1649E+05	50.48	0.0000E+00	6078.	669.3	50.66	0.340000E-04
6	2633.	0.1649E+05	20.33	0.0000E+00	6136.	697.5	22.54	0.340000E-04
7	2635.	0.1649E+05	9.910	0.0000E+00	6171.	703.2	16.83	0.340000E-04
8	2636.	0.1649E+05	6.312	0.0000E+00	6186.	704.8	15.20	0.340000E-04
9	2638.	0.1649E+05	4.732	0.0000E+00	6198.	705.5	14.53	0.340000E-04
10	2640.	0.1649E+05	3.851	0.0000E+00	6208.	705.8	14.16	0.340000E-04
11	2640.	0.1649E+05	2903.	0.0000E+00	6208.	684.9	35.11	0.340000E-04
12	2703.	0.1649E+05	83.97	0.0000E+00	5806.	0.0000E+00	302.6	0.340000E-04
13	2704.	0.1649E+05	20.18	0.0000E+00	5837.	273.4	178.8	0.340000E-04
14	2705.	0.1649E+05	11.65	0.0000E+00	5859.	426.2	142.3	0.340000E-04
15	2705.	0.1649E+05	11.13	0.0000E+00	5885.	542.5	42.60	0.340000E-04
16	2706.	0.1649E+05	44.65	0.0000E+00	6023.	559.2	133.2	0.340000E-04
17	2707.	0.1649E+05	16.01	0.0000E+00	6098.	666.4	43.03	0.340000E-04

18	2708.	0.1649E+05	6.529	0.0000E+00	6136.	683.5	31.15	0.340000E-04
19	2709.	0.1649E+05	3.713	0.0000E+00	6160.	688.7	28.54	0.340000E-04
20	2711.	0.1649E+05	2.648	0.0000E+00	6173.	691.3	27.63	0.340000E-04
21	2714.	0.1649E+05	2.087	0.0000E+00	6180.	693.0	27.00	0.340000E-04
22	2714.	0.1649E+05	1439.	0.0000E+00	6180.	685.5	34.53	0.340000E-04

BEGIN LONG TERM SIMULATION OF FATE OF GRAVEL

SUMMARY OF GRAVEL   DISTRIBUTIONS AFTER   600.00 SEC.

TOTAL SUSPENDED MATERIAL (CU FT) =   0.00000E+00

TOTAL MATERIAL SETTLED TO BOTTOM (CU FT) =   4374.0

COMPUTATIONS FOR GRAVEL   TERMINATED AT   600.00 SEC. ELAPSED TIME...MATERIAL SETTLED TO BOTTOM

BOTTOM ACCUMULATION OF GRAVEL   (CU FT/GRID SQUARE) ,   600.00 SECONDS AFTER DUMP

...MULTIPLY DISPLAYED VALUES BY   10.00   (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)

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M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
```

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20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   0   0   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   0   0 437   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


THICKNESS (FT) OF GRAVEL   ACCUMULATED ON BOTTOM,      600.00 SECONDS AFTER DUMP
...MULTIPLY DISPLAYED VALUES BY  0.1000E-02     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
```

```
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
27 OOOO   0   0   0   0   0   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   0   0 6.5   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


    BEGIN LONG TERM SIMULATION OF FATE OF FLUID
SUMMARY OF FLUID    DISTRIBUTIONS AFTER     600.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT     600.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1       0.2610E+05     7384.      0.1889E+05  0.0000E+00   1679.       697.5       22.51      0.000000E+00
  2       0.2617E+05     7377.       9447.      0.0000E+00   1551.       698.1       21.93      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER    1200.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT    1200.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1       0.2508E+05     7780.      0.1889E+05  0.0000E+00   2128.       696.9       23.06      0.000000E+00
  2       0.2515E+05     7773.       9447.      0.0000E+00   2037.       697.5       22.48      0.000000E+00
```

```
SUMMARY OF FLUID    DISTRIBUTIONS AFTER    1800.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT    1800.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1       0.2406E+05     8176.      0.1889E+05  0.0000E+00   2482.       696.4       23.61      0.000000E+00
  2       0.2413E+05     8169.       9447.      0.0000E+00   2407.       697.0       23.03      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER    2400.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT    2400.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1       0.2304E+05     8572.      0.1889E+05  0.0000E+00   2786.       695.8       24.16      0.000000E+00
  2       0.2311E+05     8565.       9447.      0.0000E+00   2720.       696.4       23.57      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER    3000.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT    3000.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1       0.2202E+05     8968.      0.1889E+05  0.0000E+00   3057.       695.3       24.70      0.000000E+00
  2       0.2209E+05     8961.       9447.      0.0000E+00   2997.       695.9       24.12      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER    3600.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.
    MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT  120.00 FT
```

CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 3600.00 SECONDS AFTER DUMP

719.00 FT BELOW THE WATER SURFACE

...MULTIPLY DISPLAYED VALUES BY 0.1000E-04 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
17	0000	0	0	0	0	0	0	0	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
18	0000	0	0	0	0	0	.	+	+	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
19	0000	0	0	0	0	.	+	.01	.02	.02	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
20	0000	0	0	0	.	+	.02	.19	.52	.44	.11	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
21	0000	0	0	0	.	+	.12	1.1	3.0	2.6	.69	.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
22	0000	0	0	0	.	+	.23	2.0	5.6	4.8	1.2	.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
23	0000	0	0	0	.	+	.13	1.2	3.2	2.7	.74	.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
24	0000	0	0	0	.	+	.02	.21	.58	.50	.13	.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
29	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
30	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
31	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													

CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 3600.00 SECONDS AFTER DUMP

THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME

...MULTIPLY DISPLAYED VALUES BY 0.1000E-03 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
10	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
11	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
12	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
13	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
14	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
15	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
16	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
17	0000	0	0	0	0	0	0	0	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
18	0000	0	0	0	0	0	.	.	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
19	0000	0	0	0	0	.	+	+	.01	.01	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
20	0000	0	0	0	.	+	.01	.10	.28	.24	.06	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
21	0000	0	0	0	.	+	.07	.61	1.6	1.4	.37	.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
22	0000	0	0	0	.	+	.12	1.1	3.0	2.6	.69	.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
23	0000	0	0	0	.	+	.07	.65	1.7	1.5	.40	.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
24	0000	0	0	0	.	+	.01	.11	.32	.27	.07	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000

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29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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SMALL CLOUDS AT 3600.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.2100E+05	9364.	0.1889E+05	0.0000E+00	3303.	694.7	25.25	0.000000E+00
2	0.2107E+05	9357.	9447.	0.0000E+00	3249.	695.3	24.67	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 4200.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

SMALL CLOUDS AT 4200.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.1998E+05	9760.	0.1889E+05	0.0000E+00	3532.	694.2	25.80	0.000000E+00
2	0.2005E+05	9753.	9447.	0.0000E+00	3481.	694.8	25.22	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 4800.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

SMALL CLOUDS AT 4800.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.1896E+05	0.1016E+05	0.1889E+05	0.0000E+00	3745.	693.7	26.35	0.000000E+00
2	0.1903E+05	0.1015E+05	9447.	0.0000E+00	3698.	694.2	25.76	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 5400.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

SMALL CLOUDS AT 5400.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.1794E+05	0.1055E+05	0.1889E+05	0.0000E+00	3946.	693.1	26.89	0.000000E+00
2	0.1801E+05	0.1055E+05	9447.	0.0000E+00	3902.	693.7	26.31	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 6000.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

SMALL CLOUDS AT 6000.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.1692E+05	0.1095E+05	0.1889E+05	0.0000E+00	4137.	692.6	27.44	0.000000E+00
2	0.1699E+05	0.1094E+05	9447.	0.0000E+00	4095.	693.1	26.86	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 6600.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

SMALL CLOUDS AT 6600.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.1590E+05	0.1134E+05	0.1889E+05	0.0000E+00	4320.	692.0	27.99	0.000000E+00
2	0.1597E+05	0.1134E+05	9447.	0.0000E+00	4279.	692.6	27.41	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 7200.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 120.00 FT

CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 7200.00 SECONDS AFTER DUMP

719.00 FT BELOW THE WATER SURFACE

...MULTIPLY DISPLAYED VALUES BY 0.1000E-04 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													
3	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
4	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
5	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
6	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
7	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
8	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
9	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
10	0000	0	0	0	0	0	0	0	.	.	.	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
11	0000	0	0	0	0	0	.	.	+	+	+	+	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
12	0000	0	0	0	0	0	.	+	+	+	.02	.02	.01	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
13	0000	0	0	0	0	.	+	+	.01	.07	.17	.19	.12	.04	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
14	0000	0	0	0	0	.	+	.01	.08	.35	.76	.88	.55	.18	.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
15	0000	0	0	0	0	.	+	.02	.20	.84	1.8	2.1	1.3	.44	.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
16	0000	0	0	0	0	.	+	.03	.26	1.0	2.3	2.7	1.7	.56	.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
17	0000	0	0	0	0	.	+	.02	.18	.75	1.6	1.9	1.1	.39	.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
18	0000	0	0	0	0	.	+	+	.06	.27	.60	.70	.43	.14	.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
19	0000	0	0	0	0	.	+	+	.01	.05	.11	.13	.08	.02	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
20	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
21	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
22	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
23	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
24	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
25	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
26	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
27	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
28	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
29	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
30	0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000
31	0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000																													

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 CONCENTRATIONS ABOVE BACKGROUND OF FLUID    (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD   7200.00 SECONDS AFTER
DUMP
 THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME
 ...MULTIPLY DISPLAYED VALUES BY  0.1000E-03     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
 M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
  2 000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
  3 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
  4 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
  5 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
  6 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
  7 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
  8 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
  9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 10 OOOO   0   0   0   0   0   0   0   .   .   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 11 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 12 OOOO   0   0   0   0   0   .   +   +   + .01 .01   +   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 13 OOOO   0   0   0   0   .   +   + .01 .04 .09 .11 .06 .02   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 14 OOOO   0   0   0   0   .   +   + .04 .19 .43 .49 .31 .10 .01   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 15 OOOO   0   0   0   0   .   + .01 .11 .47 1.0 1.2 .74 .24 .04   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 16 OOOO   0   0   0   0   .   + .02 .15 .61 1.3 1.5 .96 .31 .05   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 17 OOOO   0   0   0   0   .   + .01 .10 .42 .92 1.0 .66 .22 .03   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 18 OOOO   0   0   0   0   .   +   + .03 .15 .33 .39 .24 .08 .01   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 19 OOOO   0   0   0   0   .   .   +   + .03 .06 .07 .04 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
 31 000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
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SMALL CLOUDS AT    7200.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1       0.1488E+05    0.1174E+05  0.1889E+05  0.0000E+00   4494.       691.5       28.54      0.000000E+00
  2       0.1495E+05    0.1173E+05   9447.      0.0000E+00   4455.       692.0       27.95      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER    7800.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT    7800.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1       0.1386E+05    0.1214E+05  0.1889E+05  0.0000E+00   4662.       690.9       29.08      0.000000E+00
  2       0.1393E+05    0.1213E+05   9447.      0.0000E+00   4624.       691.5       28.50      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER    8400.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT    8400.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1       0.1284E+05    0.1253E+05  0.1889E+05  0.0000E+00   4824.       690.4       29.63      0.000000E+00
  2       0.1291E+05    0.1253E+05   9447.      0.0000E+00   4787.       691.0       29.05      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER    9000.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT    9000.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
```

#	TOP OF GRID	LEFT OF GRID	(CU FT)	(CU FT)	(FT)	(FT)	(FT)	(FPS)
1	0.1182E+05	0.1293E+05	0.1889E+05	0.0000E+00	4980.	689.8	30.18	0.000000E+00
2	0.1189E+05	0.1292E+05	9447.	0.0000E+00	4945.	690.4	29.60	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 9600.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

SMALL CLOUDS AT 9600.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	0.1080E+05	0.1332E+05	0.1889E+05	0.0000E+00	5131.	689.3	30.73	0.000000E+00
2	0.1087E+05	0.1332E+05	9447.	0.0000E+00	5097.	689.9	30.15	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 10200.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

SMALL CLOUDS AT 10200.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	9780.	0.1372E+05	0.1889E+05	0.0000E+00	5278.	688.7	31.28	0.000000E+00
2	9854.	0.1371E+05	9447.	0.0000E+00	5245.	689.3	30.69	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 10800.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 120.00 FT

CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 10800.00 SECONDS AFTER DUMP

719.00 FT BELOW THE WATER SURFACE

...MULTIPLY DISPLAYED VALUES BY 0.1000E-04 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

```
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   0   .   .   .   .   .   .   .   .   .   0   0   0   0   0   0   0   0   0   0   0OOOO
```

```
  4 OOOO   0   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   .   0   0   0   0   0   0   0   0   0   0   OOOOO
  5 OOOO   0   0   0   0   0   0   .   .   +   +   +   + .01 .01   +   +   +   0   0   0   0   0   0   0   0   0   0   OOOOO
  6 OOOO   0   0   0   0   0   0   .   +   +   + .02 .05 .07 .06 .03 .01   +   0   0   0   0   0   0   0   0   0   0   OOOOO
  7 OOOO   0   0   0   0   0   0   +   +   + .03 .12 .24 .31 .27 .14 .05 .01   0   0   0   0   0   0   0   0   0   0   OOOOO
  8 OOOO   0   0   0   0   0   0   +   + .02 .10 .32 .65 .84 .72 .39 .14 .03   0   0   0   0   0   0   0   0   0   0   OOOOO
  9 OOOO   0   0   0   0   0   0   +   + .03 .18 .56 1.1 1.4 1.2 .68 .24 .05   0   0   0   0   0   0   0   0   0   0   OOOOO
 10 OOOO   0   0   0   0   0   0   +   + .04 .20 .64 1.2 1.6 1.4 .77 .27 .06   0   0   0   0   0   0   0   0   0   0   OOOOO
 11 OOOO   0   0   0   0   0   0   +   + .03 .15 .47 .94 1.2 1.0 .57 .20 .04   0   0   0   0   0   0   0   0   0   0   OOOOO
 12 OOOO   0   0   0   0   0   0   +   + .01 .07 .22 .45 .58 .49 .27 .09 .02   0   0   0   0   0   0   0   0   0   0   OOOOO
 13 OOOO   0   0   0   0   0   0   .   +   + .02 .07 .14 .18 .15 .08 .03   +   0   0   0   0   0   0   0   0   0   0   OOOOO
 14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 10800.00 SECONDS AFTER DUMP

THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME

```
...MULTIPLY DISPLAYED VALUES BY  0.1000E-04     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
```

```
 2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
 3 OOOO   0   0   0   0   0   0   0   .   .   .   +   +   +   +   +   .   .   0   0   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   .   .   +   +   +   +   +   +   +   +   +   0   0   0   0   0   0   0   0   0   0   00000

 5 OOOO   0   0   0   0   0   0   .   +   +   + .02 .05 .07 .06 .03 .01   +   0   0   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   +   + .01 .05 .17 .34 .45 .38 .21 .07 .01   0   0   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   +   + .04 .23 .70 1.4 1.8 1.5 .86 .30 .07   0   0   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   + .01 .13 .61 1.8 3.7 4.9 4.1 2.2 .82 .19   0   0   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   0   + .03 .22 1.0 3.2 6.5 8.5 7.2 3.9 1.4 .33   0   0   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   0   + .03 .25 1.2 3.7 7.4  10 8.1 4.5 1.6 .37   0   0   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   0   + .02 .18 .88 2.7 5.4 7.0 6.0 3.3 1.1 .27   0   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   0   + .01 .09 .42 1.3 2.6 3.4 2.8 1.5 .56 .13   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   0   0   +   + .02 .13 .40 .81 1.0 .89 .49 .17 .04   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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SMALL CLOUDS AT   10800.00 SECONDS ELAPSED TIME FOR FLUID

LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL

```
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1        8760.        0.1412E+05  0.1889E+05  0.0000E+00   5421.       688.2       31.82      0.000000E+00
  2        8834.        0.1411E+05   9447.      0.0000E+00   5389.       688.8       31.24      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER   11400.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT   11400.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1        7740.        0.1451E+05  0.1889E+05  0.0000E+00   5560.       687.6       32.37      0.000000E+00
  2        7814.        0.1451E+05   9447.      0.0000E+00   5529.       688.2       31.79      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER   12000.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT   12000.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1        6720.        0.1491E+05  0.1889E+05  0.0000E+00   5696.       687.1       32.92      0.000000E+00
  2        6794.        0.1490E+05   9447.      0.0000E+00   5665.       687.7       32.34      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER   12600.00 SEC
    TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) =     28342.


SMALL CLOUDS AT   12600.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM          DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
  1        5700.        0.1530E+05  0.1889E+05  0.0000E+00   5828.       686.5       33.47      0.000000E+00
  2        5774.        0.1530E+05   9447.      0.0000E+00   5798.       687.1       32.88      0.000000E+00
SUMMARY OF FLUID    DISTRIBUTIONS AFTER   13200.00 SEC
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TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

SMALL CLOUDS AT 13200.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	4680.	0.1570E+05	0.1889E+05	0.0000E+00	5958.	686.0	34.01	0.000000E+00
2	4754.	0.1569E+05	9447.	0.0000E+00	5928.	686.6	33.43	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 13800.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

SMALL CLOUDS AT 13800.00 SECONDS ELAPSED TIME FOR FLUID

CLOUD #	LOCATION OF CLOUD CENTROID DISTANCE FROM TOP OF GRID	LEFT OF GRID	MASS FROM DISPOSAL (CU FT)	ENTRAINED MASS (CU FT)	CLOUD X-Z DIAMETER (FT)	DEPTH OF TOP OF CLOUD (FT)	CLOUD VERT. THICKNESS (FT)	SOLIDS FALL VELOCITY (FPS)
1	3660.	0.1610E+05	0.1889E+05	0.0000E+00	6084.	685.4	34.56	0.000000E+00
2	3734.	0.1609E+05	9447.	0.0000E+00	6056.	686.0	33.98	0.000000E+00

SUMMARY OF FLUID DISTRIBUTIONS AFTER 14400.00 SEC

TOTAL FLUID FRACTION VOLUME FROM DISPOSAL (CU FT) = 28342.

MAX CONC IS 0.00000000 OUTPUT SUPPRESSED AT 120.00 FT

CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 14400.00 SECONDS AFTER DUMP

719.00 FT BELOW THE WATER SURFACE

...MULTIPLY DISPLAYED VALUES BY 0.1000E-04 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
3	O	O	O	O	0	0	0	0	+	+	+	.04	.17	.46	.89	1.2	1.2	.88	.45	.17	0	0	0	0	0	0	0	0	O	O
4	O	O	O	O	0	0	0	0	+	+	+	.04	.18	.48	.93	1.2	1.2	.92	.47	.17	0	0	0	0	0	0	0	0	O	O
5	O	O	O	O	0	0	0	0	+	+	+	.03	.14	.39	.74	1.0	1.0	.74	.38	.14	0	0	0	0	0	0	0	0	O	O
6	O	O	O	O	0	0	0	0	.	+	+	.02	.09	.25	.48	.66	.66	.47	.24	.09	0	0	0	0	0	0	0	0	O	O
7	O	O	O	O	0	0	0	0	.	+	+	.01	.05	.14	.28	.39	.39	.28	.14	.05	0	0	0	0	0	0	0	0	O	O

```
  8 OOOO   0   0   0   0   0   0   0   .   +   + .01 .03 .10 .19 .26 .26 .19 .09 .03   0   0   0   0   0   0   0   0   OOOOO
  9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO

 20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
```

CONCENTRATIONS ABOVE BACKGROUND OF FLUID (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD 14400.00 SECONDS AFTER DUMP

THESE CONCENTRATIONS ARE THE MAXIMUM OCCURING IN THE WATER COLUMN AT THIS TIME

...MULTIPLY DISPLAYED VALUES BY 0.1000E-04 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

```
 M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
  2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
  3 OOOO   0   0   0   0   0   0   0   +   + .04 .23 .85 2.2 4.3 6.0 6.0 4.3 2.2 .83   0   0   0   0   0   0   0   0   OOOOO
  4 OOOO   0   0   0   0   0   0   0   +   + .04 .24 .90 2.4 4.6 6.3 6.3 4.5 2.3 .88   0   0   0   0   0   0   0   0   OOOOO
```

```
  5 OOOO   0   0   0   0   0   0   0   +   + .03 .18 .68 1.8 3.5 4.8 4.8 3.4 1.7 .67   0   0   0   0   0   0   0   0   OOOOO
  6 OOOO   0   0   0   0   0   0   0   +   + .02 .10 .37 1.0 1.9 2.6 2.6 1.9 .98 .36   0   0   0   0   0   0   0   0   OOOOO
  7 OOOO   0   0   0   0   0   0   0   +   +   + .04 .14 .39 .76 1.0 1.0 .75 .39 .14   0   0   0   0   0   0   0   0   OOOOO
  8 OOOO   0   0   0   0   0   0   0   .   +   + .01 .04 .11 .22 .31 .31 .22 .11 .04   0   0   0   0   0   0   0   0   OOOOO
  9 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 10 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 11 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 12 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 13 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 14 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 15 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 16 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 17 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 18 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 19 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 20 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 21 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 22 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 23 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 24 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 25 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 26 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 27 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 28 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 29 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
 31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO


  CONCENTRATIONS ABOVE BACKGROUND OF FLUID    (VOLUMETRIC RATIO OF DUMP FLUID TO AMBIENT WATER) IN THE CLOUD  14400.00 SECONDS AFTER
DUMP
 THESE CONCENTRATIONS ARE THE MAXIMUM THAT EVER OCCURRED IN THE WATER COLUMN DURING THE SIMULATION
 ...MULTIPLY DISPLAYED VALUES BY  0.1000E-02     (LEGEND... + = .LT. .01   . = .LT. .0001   0 = .LT. .000001)
 M N=  2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
  2 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
```

```
 3 OOOO   0   0   0   0   0   0   0   .   .   +   +   + .02 .04 .06 .06 .04 .02   +   0   0   0   0   0   0   0   0   00000
 4 OOOO   0   0   0   0   0   0   0   .   +   +   + .01 .03 .05 .06 .06 .04 .02   +   0   0   0   0   0   0   0   0   00000
 5 OOOO   0   0   0   0   0   0   .   .   +   +   + .01 .04 .06 .07 .06 .03 .01   +   0   0   0   0   0   0   0   0   00000
 6 OOOO   0   0   0   0   0   0   .   .   +   +   + .02 .05 .07 .07 .05 .02 .01   +   0   0   0   0   0   0   0   0   00000
 7 OOOO   0   0   0   0   0   0   .   .   +   + .01 .03 .06 .07 .07 .04 .02   +   +   0   0   0   0   0   0   0   0   00000
 8 OOOO   0   0   0   0   0   0   .   +   +   + .02 .05 .07 .08 .06 .03 .01   +   +   0   0   0   0   0   0   0   0   00000
 9 OOOO   0   0   0   0   0   .   .   +   + .01 .03 .06 .08 .08 .05 .02   +   +   +   0   0   0   0   0   0   0   0   00000
10 OOOO   0   0   0   0   0   .   .   +   + .01 .04 .08 .09 .08 .04 .01   +   +   +   0   0   0   0   0   0   0   0   00000
11 OOOO   0   0   0   0   0   .   +   +   + .02 .06 .09 .10 .07 .03 .01   +   +   0   0   0   0   0   0   0   0   0   00000
12 OOOO   0   0   0   0   0   .   +   + .01 .03 .08 .10 .10 .05 .02   +   +   0   0   0   0   0   0   0   0   0   0   00000
13 OOOO   0   0   0   0   .   .   +   + .01 .05 .10 .12 .09 .04 .01   +   +   0   0   0   0   0   0   0   0   0   0   00000
14 OOOO   0   0   0   0   .   .   +   + .03 .07 .12 .12 .07 .02   +   +   0   0   0   0   0   0   0   0   0   0   0   00000
15 OOOO   0   0   0   0   .   +   + .01 .04 .10 .14 .11 .05 .01   +   +   0   0   0   0   0   0   0   0   0   0   0   00000
16 OOOO   0   0   0   0   .   +   + .02 .07 .13 .15 .09 .03   +   +   0   0   0   0   0   0   0   0   0   0   0   0   00000
17 OOOO   0   0   0   0   .   +   + .03 .10 .16 .15 .06 .02   +   +   0   0   0   0   0   0   0   0   0   0   0   0   00000
18 OOOO   0   0   0   0   .   + .01 .05 .14 .19 .12 .04 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
19 OOOO   0   0   0   0   .   + .01 .08 .19 .20 .09 .02   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
20 OOOO   0   0   0   .   +   + .03 .13 .24 .17 .06 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
21 OOOO   0   0   0   .   +   + .06 .21 .27 .13 .03   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
22 OOOO   0   0   0   .   + .01 .11 .30 .26 .07 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
23 OOOO   0   0   0   .   + .02 .21 .39 .19 .04   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
24 OOOO   0   0   0   .   + .06 .37 .42 .10 .01   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
25 OOOO   0   0   0   .   + .15 .61 .31 .04   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
26 OOOO   0   0   0   .   + .37 .82 .13   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
27 OOOO   0   0   0   . .01 1.0 .58 .03   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
28 OOOO   0   0   0   0   + .17 .10   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
29 OOOO   0   0   0   0   .   +   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   00000
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
```

```
SMALL CLOUDS AT   14400.00 SECONDS ELAPSED TIME FOR FLUID
       LOCATION OF CLOUD CENTROID   MASS FROM   ENTRAINED   CLOUD X-Z   DEPTH OF   CLOUD VERT.   SOLIDS FALL
CLOUD         DISTANCE FROM           DISPOSAL     MASS      DIAMETER  TOP OF CLOUD  THICKNESS     VELOCITY
  #    TOP OF GRID   LEFT OF GRID     (CU FT)    (CU FT)      (FT)        (FT)        (FT)          (FPS)
```

1	2640.	0.1649E+05	0.1889E+05	0.0000E+00	6208.	684.9	35.11	0.000000E+00
2	2714.	0.1649E+05	9447.	0.0000E+00	6180.	685.5	34.53	0.000000E+00

FINAL DISTRIBUTIONS OF TOTAL SETTLED MATERIAL FOLLOW.....

TOTAL ACCUMULATED SOLID VOLUME ON BOTTOM (CU FT/GRID SQR), 14400.00 SECONDS AFTER DUMP

...MULTIPLY DISPLAYED VALUES BY 100.0 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	.	.	.	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	.	.	.	+	+	+	+	+	+	+	+	+	.	.	.	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	+	.	.	.	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	+	.	.	.	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	.	.	.	+	+	+	+	+	+	+	+	+	+	.	.	.	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	+	.	.	.	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	.	+	+	+	+	+	+	+	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	.	.	+	+	+	+	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	.	+	+	+	+	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	.	+	+	+	+	+	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	.	.	+	+	+	.01	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	.	.	+	+	.01	.01	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	.	+	+	+	.01	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	.	+	+	.01	.01	+	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	.	+	+	.01	.01	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	.	+	.01	.01	+	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	+	+	.02	.02	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	.	+	.01	.04	.01	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	.	.10	6.4	3.7	.03	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

27	OOOO	0	0	0	+	2.6	179	81	.36	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
28	OOOO	0	0	0	.	1.2	129	24	.06	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
29	OOOO	0	0	0	0	+	.22	.05	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
30	OOOO	0	0	0	0	0	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
31	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO																													

TOTAL THICKNESS (FT) OF NEW MATERIAL ON BOTTOM, 14400.00 SECONDS AFTER DUMP

...MULTIPLY DISPLAYED VALUES BY 0.1000E-01 (LEGEND... + = .LT. .01 . = .LT. .0001 0 = .LT. .000001)

M N=	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO																													
3	OOOO	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	.	.	.	0	0	0	0	0	0	0	00000	
4	OOOO	0	0	0	0	0	0	0	0	0	.	.	.	.	.	+	.	.	.	.	.	0	0	0	0	0	0	0	00000	
5	OOOO	0	0	0	0	0	0	0	0	0	.	.	.	.	+	+	+	.	.	.	.	0	0	0	0	0	0	0	00000	
6	OOOO	0	0	0	0	0	0	0	0	0	.	.	.	.	+	+	.	.	.	.	.	0	0	0	0	0	0	0	00000	
7	OOOO	0	0	0	0	0	0	0	0	.	.	.	.	+	+	+	.	.	.	.	0	0	0	0	0	0	0	0	00000	
8	OOOO	0	0	0	0	0	0	0	0	.	.	.	.	+	+	+	.	.	.	.	0	0	0	0	0	0	0	0	00000	
9	OOOO	0	0	0	0	0	0	0	0	.	.	.	+	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0	00000	
10	OOOO	0	0	0	0	0	0	0	.	.	.	.	+	+	+	.	.	.	.	0	0	0	0	0	0	0	0	0	00000	
11	OOOO	0	0	0	0	0	0	0	.	.	.	+	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0	0	00000	
12	OOOO	0	0	0	0	0	0	0	.	.	.	+	+	+	.	.	.	.	0	0	0	0	0	0	0	0	0	0	00000	
13	OOOO	0	0	0	0	0	0	0	.	.	.	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0	0	0	00000	
14	OOOO	0	0	0	0	0	0	.	.	.	+	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0	0	0	00000	
15	OOOO	0	0	0	0	0	0	.	.	.	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	00000	
16	OOOO	0	0	0	0	0	0	.	.	+	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	00000	
17	OOOO	0	0	0	0	0	0	.	.	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
18	OOOO	0	0	0	0	0	.	.	.	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
19	OOOO	0	0	0	0	0	.	.	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
20	OOOO	0	0	0	0	0	.	.	+	+	+	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
21	OOOO	0	0	0	0	0	.	.	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
22	OOOO	0	0	0	0	0	.	+	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
23	OOOO	0	0	0	0	.	.	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
24	OOOO	0	0	0	0	.	+	+	+	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
25	OOOO	0	0	0	0	.	+	+	+	.	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	
26	OOOO	0	0	0	0	+	.16	.09	+	.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00000	

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27 OOOO   0   0   0   . .06 4.5 2.0   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
28 OOOO   0   0   0   . .03 3.2 .61   +   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
29 OOOO   0   0   0   0   .   +   +   .   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
30 OOOO   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   OOOOO
31 OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
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INITIAL MIXING COMPUTATIONS RESULTS FOR SAND   :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	120.0	0.000E+00	0.	0.	0.000E+00
2.00	120.0	0.000E+00	0.	0.	0.000E+00
3.00	120.0	0.000E+00	0.	0.	0.000E+00
4.00	120.0	0.000E+00	0.	0.	0.000E+00
1.00	719.0	0.000E+00	0.	0.	0.000E+00
2.00	719.0	0.000E+00	0.	0.	0.000E+00
3.00	719.0	0.000E+00	0.	0.	0.000E+00
4.00	719.0	0.000E+00	0.	0.	0.000E+00

INITIAL MIXING COMPUTATIONS RESULTS FOR SILT   :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	120.0	0.877E+00	21000.	9000.	0.877E+00
2.00	120.0	0.374E+00	15000.	12000.	0.374E+00
3.00	120.0	0.234E+00	9000.	14000.	0.234E+00
4.00	120.0	0.158E+00	3000.	16000.	0.158E+00
1.00	719.0	0.252E+02	21000.	9000.	0.252E+02
2.00	719.0	0.118E+02	15000.	12000.	0.118E+02
3.00	719.0	0.704E+01	9000.	14000.	0.704E+01
4.00	719.0	0.453E+01	3000.	16000.	0.453E+01

INITIAL MIXING COMPUTATIONS RESULTS FOR CLAY :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	120.0	0.878E+00	21000.	9000.	0.878E+00
2.00	120.0	0.374E+00	15000.	12000.	0.374E+00
3.00	120.0	0.234E+00	9000.	14000.	0.234E+00
4.00	120.0	0.158E+00	3000.	16000.	0.158E+00
1.00	719.0	0.251E+02	21000.	9000.	0.251E+02
2.00	719.0	0.118E+02	15000.	12000.	0.118E+02
3.00	719.0	0.705E+01	9000.	14000.	0.705E+01
4.00	719.0	0.454E+01	3000.	16000.	0.454E+01

INITIAL MIXING COMPUTATIONS RESULTS FOR GRAVEL :

TIME (HR)	DEPTH (FT)	MAX CONC ABOVE BACKGROUND ON ENTIRE GRID (MG/L)	X-LOC (FT)	Z-LOC (FT)	MAX CONC ABOVE BACKGROUND OUTSIDE DISPOSAL SITE (MG/L)
1.00	120.0	0.000E+00	0.	0.	0.000E+00
2.00	120.0	0.000E+00	0.	0.	0.000E+00
3.00	120.0	0.000E+00	0.	0.	0.000E+00
4.00	120.0	0.000E+00	0.	0.	0.000E+00
1.00	719.0	0.000E+00	0.	0.	0.000E+00
2.00	719.0	0.000E+00	0.	0.	0.000E+00
3.00	719.0	0.000E+00	0.	0.	0.000E+00
4.00	719.0	0.000E+00	0.	0.	0.000E+00

INITIAL MIXING COMPUTATIONS RESULTS FOR FLUID :

MAX CONC ABOVE BACKGROUND

MAX CONC ABOVE BACKGROUND OUTSIDE

TIME	DEPTH	ON ENTIRE GRID	X-LOC	Z-LOC	DISPOSAL SITE
(HR)	(FT)	(PERCENT)	(FT)	(FT)	(PERCENT)
0.17	120.0	0.276E-38	22000.	3000.	0.276E-38
0.33	120.0	0.164E-38	20000.	3000.	0.164E-38
0.50	120.0	0.116E-38	19000.	3000.	0.116E-38
0.67	120.0	0.898E-39	18000.	3000.	0.898E-39
0.83	120.0	0.727E-39	17000.	4000.	0.727E-39
1.00	120.0	0.608E-39	16000.	4000.	0.608E-39
1.17	120.0	0.520E-39	14000.	4000.	0.520E-39
1.33	120.0	0.452E-39	13000.	5000.	0.452E-39
1.50	120.0	0.398E-39	12000.	5000.	0.398E-39
1.67	120.0	0.355E-39	11000.	5000.	0.355E-39
1.83	120.0	0.319E-39	10000.	5000.	0.319E-39
2.00	120.0	0.289E-39	9000.	6000.	0.289E-39
2.17	120.0	0.263E-39	8000.	6000.	0.263E-39
2.33	120.0	0.241E-39	7000.	6000.	0.241E-39
2.50	120.0	0.222E-39	6000.	7000.	0.222E-39
2.67	120.0	0.205E-39	4000.	7000.	0.205E-39
2.83	120.0	0.190E-39	3000.	7000.	0.190E-39
3.00	120.0	0.178E-39	2000.	8000.	0.178E-39
3.17	120.0	0.166E-39	1000.	8000.	0.166E-39
3.33	120.0	0.156E-39	1000.	8000.	0.156E-39
3.50	120.0	0.146E-39	1000.	9000.	0.146E-39
3.67	120.0	0.137E-39	1000.	9000.	0.137E-39
3.83	120.0	0.130E-39	1000.	9000.	0.130E-39
4.00	120.0	0.123E-39	1000.	9000.	0.123E-39
0.17	719.0	0.197E-01	26000.	7000.	0.319E-03
0.33	719.0	0.156E-01	25000.	8000.	0.184E-03
0.50	719.0	0.115E-01	24000.	8000.	0.129E-03
0.67	719.0	0.787E-02	23000.	9000.	0.311E-02
0.83	719.0	0.739E-02	22000.	9000.	0.739E-02
1.00	719.0	0.570E-02	21000.	9000.	0.570E-02
1.17	719.0	0.507E-02	20000.	10000.	0.507E-02
1.33	719.0	0.447E-02	19000.	10000.	0.447E-02

1.50	719.0	0.364E-02	18000.	11000.	0.364E-02
1.67	719.0	0.350E-02	17000.	11000.	0.350E-02
1.83	719.0	0.301E-02	16000.	11000.	0.301E-02
2.00	719.0	0.276E-02	15000.	12000.	0.276E-02
2.17	719.0	0.254E-02	14000.	12000.	0.254E-02
2.33	719.0	0.219E-02	13000.	13000.	0.219E-02
2.50	719.0	0.212E-02	12000.	13000.	0.212E-02
2.67	719.0	0.191E-02	11000.	13000.	0.191E-02
2.83	719.0	0.177E-02	10000.	14000.	0.177E-02
3.00	719.0	0.167E-02	9000.	14000.	0.167E-02
3.17	719.0	0.148E-02	8000.	15000.	0.148E-02
3.33	719.0	0.145E-02	7000.	15000.	0.145E-02
3.50	719.0	0.133E-02	6000.	15000.	0.133E-02
3.67	719.0	0.126E-02	5000.	16000.	0.126E-02
3.83	719.0	0.126E-02	4000.	16000.	0.126E-02
4.00	719.0	0.129E-02	3000.	16000.	0.129E-02
0.17	684.9	0.130E-01	26000.	7000.	0.217E-03
0.33	684.9	0.104E-01	25000.	8000.	0.125E-03
0.50	684.9	0.778E-02	24000.	8000.	0.890E-04
0.67	684.9	0.536E-02	23000.	9000.	0.213E-02
0.83	684.9	0.507E-02	22000.	9000.	0.507E-02
1.00	684.9	0.394E-02	21000.	9000.	0.394E-02
1.17	684.9	0.353E-02	20000.	10000.	0.353E-02
1.33	684.9	0.314E-02	19000.	10000.	0.314E-02
1.50	684.9	0.257E-02	18000.	11000.	0.257E-02
1.67	684.9	0.249E-02	17000.	11000.	0.249E-02
1.83	684.9	0.215E-02	16000.	11000.	0.215E-02
2.00	684.9	0.199E-02	15000.	12000.	0.199E-02
2.17	684.9	0.184E-02	14000.	12000.	0.184E-02
2.33	684.9	0.160E-02	13000.	13000.	0.160E-02
2.50	684.9	0.156E-02	12000.	13000.	0.156E-02
2.67	684.9	0.141E-02	11000.	13000.	0.141E-02
2.83	684.9	0.131E-02	10000.	14000.	0.131E-02
3.00	684.9	0.124E-02	9000.	14000.	0.124E-02

3.17	684.9	0.111E-02	8000.	15000.	0.111E-02
3.33	684.9	0.109E-02	7000.	15000.	0.109E-02
3.50	684.9	0.101E-02	6000.	15000.	0.101E-02
3.67	684.9	0.947E-03	5000.	16000.	0.947E-03
3.83	684.9	0.906E-03	4000.	16000.	0.906E-03
4.00	684.9	0.824E-03	3000.	16000.	0.824E-03
0.17	693.7	0.609E-01	26000.	7000.	0.998E-03
0.33	693.7	0.486E-01	25000.	8000.	0.578E-03
0.50	693.7	0.363E-01	24000.	8000.	0.409E-03
0.67	693.7	0.250E-01	23000.	9000.	0.989E-02
0.83	693.7	0.236E-01	22000.	9000.	0.236E-01
1.00	693.7	0.183E-01	21000.	9000.	0.183E-01
1.17	693.7	0.164E-01	20000.	10000.	0.164E-01
1.33	693.7	0.146E-01	19000.	10000.	0.146E-01
1.50	693.7	0.120E-01	18000.	11000.	0.120E-01
1.67	693.7	0.116E-01	17000.	11000.	0.116E-01
1.83	693.7	0.999E-02	16000.	11000.	0.999E-02
2.00	693.7	0.920E-02	15000.	12000.	0.920E-02
2.17	693.7	0.852E-02	14000.	12000.	0.852E-02
2.33	693.7	0.739E-02	13000.	13000.	0.739E-02
2.50	693.7	0.721E-02	12000.	13000.	0.721E-02
2.67	693.7	0.651E-02	11000.	13000.	0.651E-02
2.83	693.7	0.607E-02	10000.	14000.	0.607E-02
3.00	693.7	0.574E-02	9000.	14000.	0.574E-02
3.17	693.7	0.511E-02	8000.	15000.	0.511E-02
3.33	693.7	0.502E-02	7000.	15000.	0.502E-02
3.50	693.7	0.464E-02	6000.	15000.	0.464E-02
3.67	693.7	0.436E-02	5000.	16000.	0.436E-02
3.83	693.7	0.417E-02	4000.	16000.	0.417E-02
4.00	693.7	0.379E-02	3000.	16000.	0.379E-02
0.17	702.4	0.103E+00	26000.	7000.	0.167E-02
0.33	702.4	0.823E-01	25000.	8000.	0.973E-03
0.50	702.4	0.615E-01	24000.	8000.	0.687E-03
0.67	702.4	0.422E-01	23000.	9000.	0.167E-01
0.83	702.4	0.399E-01	22000.	9000.	0.399E-01

1.00	702.4	0.310E-01	21000.	9000.	0.310E-01
1.17	702.4	0.277E-01	20000.	10000.	0.277E-01
1.33	702.4	0.246E-01	19000.	10000.	0.246E-01
1.50	702.4	0.202E-01	18000.	11000.	0.202E-01
1.67	702.4	0.195E-01	17000.	11000.	0.195E-01
1.83	702.4	0.168E-01	16000.	11000.	0.168E-01
2.00	702.4	0.155E-01	15000.	12000.	0.155E-01
2.17	702.4	0.143E-01	14000.	12000.	0.143E-01
2.33	702.4	0.124E-01	13000.	13000.	0.124E-01
2.50	702.4	0.121E-01	12000.	13000.	0.121E-01
2.67	702.4	0.109E-01	11000.	13000.	0.109E-01
2.83	702.4	0.102E-01	10000.	14000.	0.102E-01
3.00	702.4	0.964E-02	9000.	14000.	0.964E-02
3.17	702.4	0.859E-02	8000.	15000.	0.859E-02
3.33	702.4	0.843E-02	7000.	15000.	0.843E-02
3.50	702.4	0.778E-02	6000.	15000.	0.778E-02
3.67	702.4	0.732E-02	5000.	16000.	0.732E-02
3.83	702.4	0.700E-02	4000.	16000.	0.700E-02
4.00	702.4	0.636E-02	3000.	16000.	0.636E-02
0.17	711.2	0.633E-01	26000.	7000.	0.102E-02
0.33	711.2	0.504E-01	25000.	8000.	0.595E-03
0.50	711.2	0.376E-01	24000.	8000.	0.419E-03
0.67	711.2	0.258E-01	23000.	9000.	0.102E-01
0.83	711.2	0.244E-01	22000.	9000.	0.244E-01
1.00	711.2	0.189E-01	21000.	9000.	0.189E-01
1.17	711.2	0.170E-01	20000.	10000.	0.170E-01
1.33	711.2	0.150E-01	19000.	10000.	0.150E-01
1.50	711.2	0.123E-01	18000.	11000.	0.123E-01
1.67	711.2	0.119E-01	17000.	11000.	0.119E-01
1.83	711.2	0.103E-01	16000.	11000.	0.103E-01
2.00	711.2	0.947E-02	15000.	12000.	0.947E-02
2.17	711.2	0.877E-02	14000.	12000.	0.877E-02
2.33	711.2	0.759E-02	13000.	13000.	0.759E-02
2.50	711.2	0.741E-02	12000.	13000.	0.741E-02
2.67	711.2	0.668E-02	11000.	13000.	0.668E-02

2.83	711.2	0.623E-02	10000.	14000.	0.623E-02
3.00	711.2	0.589E-02	9000.	14000.	0.589E-02
3.17	711.2	0.524E-02	8000.	15000.	0.524E-02
3.33	711.2	0.514E-02	7000.	15000.	0.514E-02
3.50	711.2	0.475E-02	6000.	15000.	0.475E-02
3.67	711.2	0.447E-02	5000.	16000.	0.447E-02
3.83	711.2	0.428E-02	4000.	16000.	0.428E-02
4.00	711.2	0.390E-02	3000.	16000.	0.390E-02
0.17	720.0	0.140E-01	26000.	7000.	0.227E-03
0.33	720.0	0.111E-01	25000.	8000.	0.132E-03
0.50	720.0	0.832E-02	24000.	8000.	0.930E-04
0.67	720.0	0.572E-02	23000.	9000.	0.226E-02
0.83	720.0	0.540E-02	22000.	9000.	0.540E-02
1.00	720.0	0.419E-02	21000.	9000.	0.419E-02
1.17	720.0	0.376E-02	20000.	10000.	0.376E-02
1.33	720.0	0.333E-02	19000.	10000.	0.333E-02
1.50	720.0	0.273E-02	18000.	11000.	0.273E-02
1.67	720.0	0.264E-02	17000.	11000.	0.264E-02
1.83	720.0	0.228E-02	16000.	11000.	0.228E-02
2.00	720.0	0.210E-02	15000.	12000.	0.210E-02
2.17	720.0	0.194E-02	14000.	12000.	0.194E-02
2.33	720.0	0.168E-02	13000.	13000.	0.168E-02
2.50	720.0	0.164E-02	12000.	13000.	0.164E-02
2.67	720.0	0.148E-02	11000.	13000.	0.148E-02
2.83	720.0	0.138E-02	10000.	14000.	0.138E-02
3.00	720.0	0.131E-02	9000.	14000.	0.131E-02
3.17	720.0	0.116E-02	8000.	15000.	0.116E-02
3.33	720.0	0.114E-02	7000.	15000.	0.114E-02
3.50	720.0	0.106E-02	6000.	15000.	0.106E-02
3.67	720.0	0.101E-02	5000.	16000.	0.101E-02
3.83	720.0	0.104E-02	4000.	16000.	0.104E-02
4.00	720.0	0.114E-02	3000.	16000.	0.114E-02

RESULT: THE TOXICITY CRITERIA FOR THE DISPOSAL SITE WAS NOT VIOLATED.

*** RUN COMPLETED ***

APPENDIX I

Tissue Chemistry Statistical Outputs

Tissue Statistical Evaluation on *M. nasuta* for Metal Samples Collected from Port Everglades (Florida) May 2004

IMPORT successfully completed.

The following results are for:
SAMPLETYPE$ = reference

Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
SB	5.000	0.230	0.735
AS	5.000	0.192	1.000
CD	5.000	0.273	0.320
CR	5.000	0.240	0.614
CU	**5.000**	**0.401**	**0.009**
PB	5.000	0.294	0.199
HG	5.000	0.231	0.724
NI	5.000	0.309	0.137
AG	5.000	0.344	0.053
ZN	5.000	0.211	0.990

The following results are for:
SAMPLETYPE$ = site

Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
SB	5.000	0.177	1.000
AS	5.000	0.200	1.000
CD	5.000	0.243	0.578
CR	**5.000**	**0.383**	**0.016**
CU	5.000	0.305	0.152
PB	5.000	0.208	1.000
HG	5.000	0.237	0.646
NI	**5.000**	**0.350**	**0.044**
AG	5.000	0.156	1.000
ZN	5.000	0.185	1.000

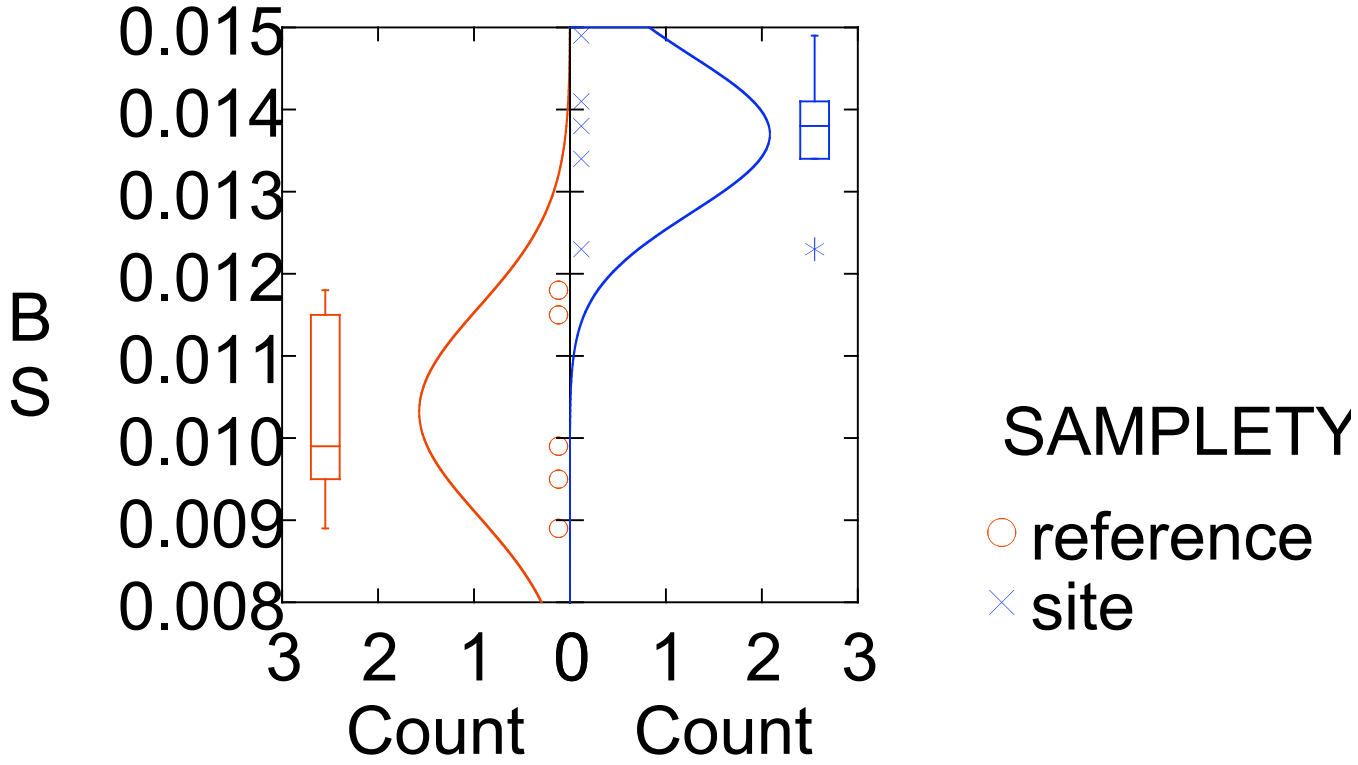
Cu replicate results are not normally distributed in the reference sample. Cr and Ni replicate results were not normally distributed in the site sample.
The remaining chemicals may be evaluated by t-test.

Two-sample t test on SB grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.010	0.001
site	5	0.014	0.001

Separate Variance t = -4.754 df = 7.4 Prob = 0.002
Bonferroni Adjusted Prob = 0.012
Difference in Means = -0.003 95.00% CI = -0.005 to -0.002

Pooled Variance t = -4.754 df = 8 Prob = 0.001
Bonferroni Adjusted Prob = 0.010
Difference in Means = -0.003 95.00% CI = -0.005 to -0.002

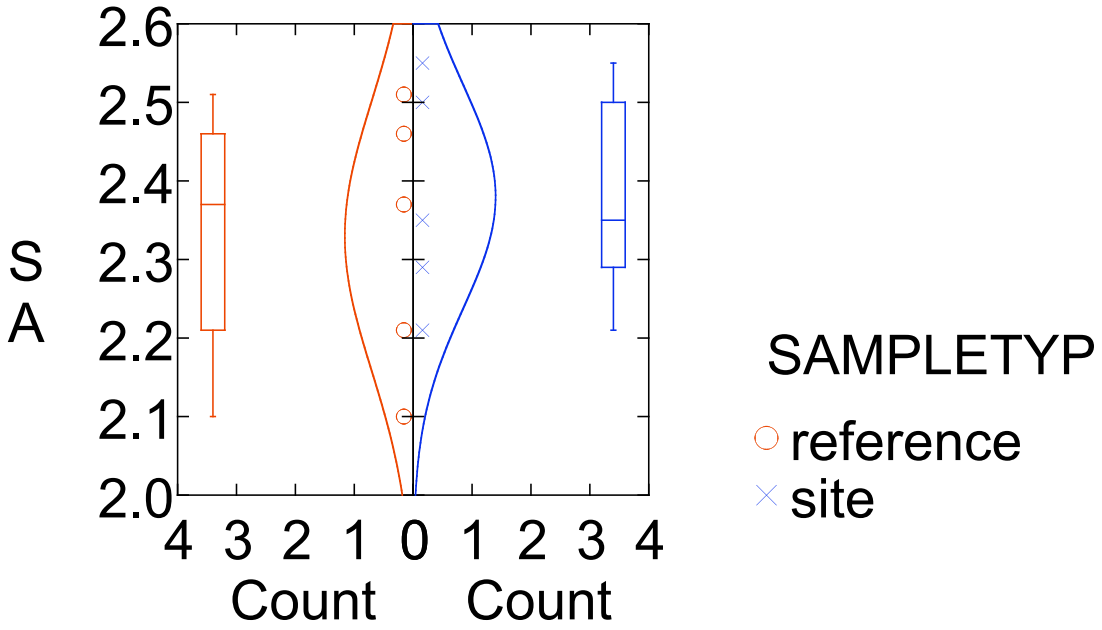


Two-sample t test on AS grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	2.330	0.172
site	`5	2.380	0.142

Separate Variance t = -0.501 df = 7.7 Prob = 0.630
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.050 95.00% CI = -0.282 to 0.182

Pooled Variance t = -0.501 df = 8 Prob = 0.630
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.050 95.00% CI = -0.280 to 0.180

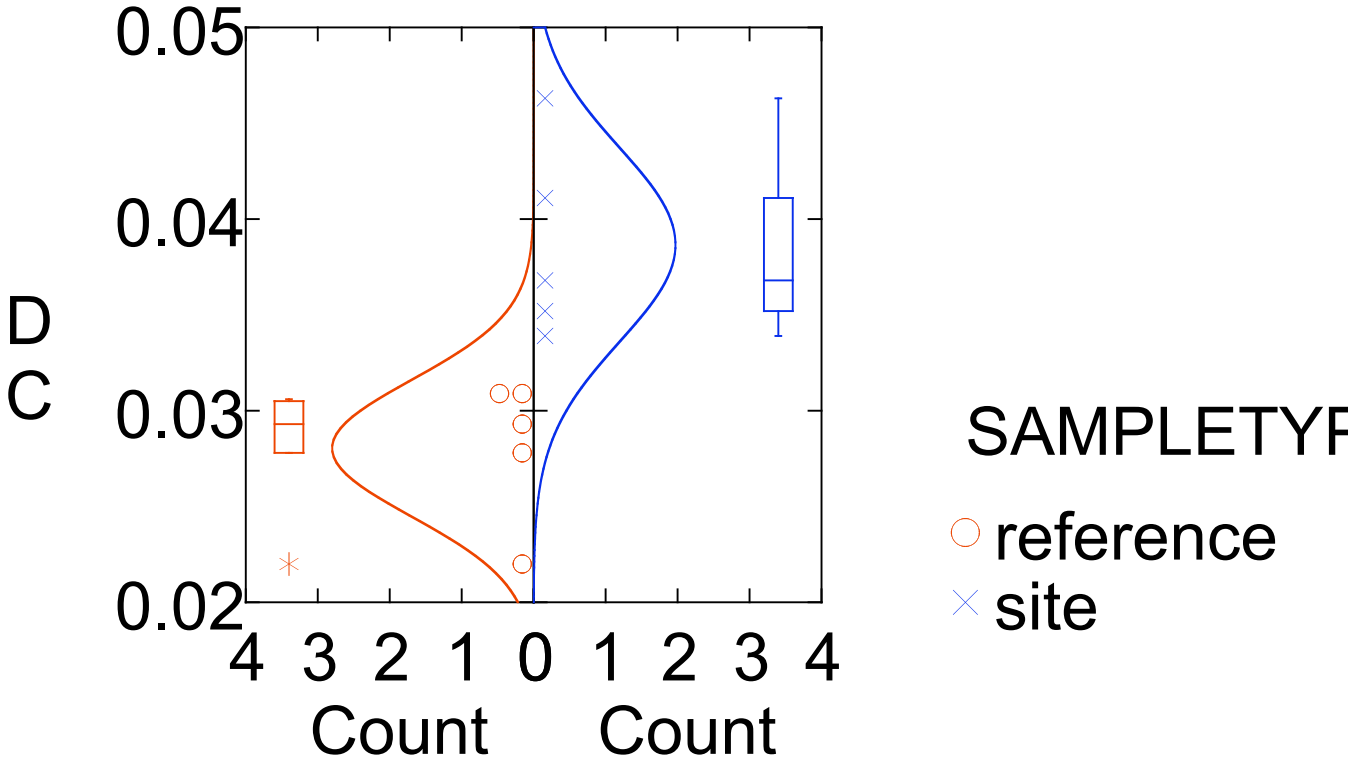


Two-sample t test on CD grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.028	0.004
site	5	0.039	0.005

Separate Variance t = -3.838 df = 7.2 Prob = 0.006
Bonferroni Adjusted Prob = 0.043
Difference in Means = -0.011 95.00% CI = -0.017 to -0.004

Pooled Variance t = -3.838 df = 8 Prob = 0.005
Bonferroni Adjusted Prob = 0.035
Difference in Means = -0.011 95.00% CI = -0.017 to -0.004

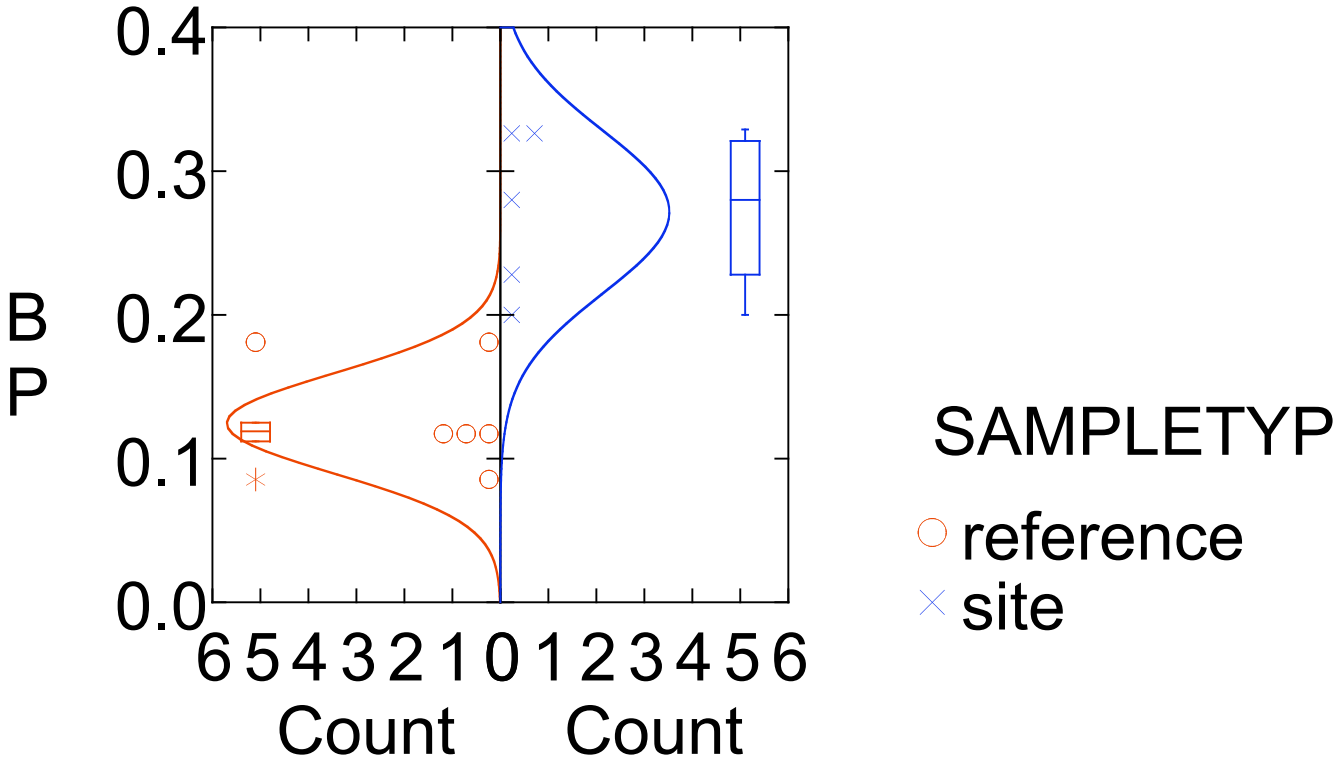


Two-sample t test on PB grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.124	0.035
site	5	0.272	0.057

Separate Variance t = -4.940 df = 6.7 Prob = 0.002
Bonferroni Adjusted Prob = 0.014
Difference in Means = -0.147 95.00% CI = -0.218 to -0.076

Pooled Variance t = -4.940 df = 8 Prob = 0.001
Bonferroni Adjusted Prob = 0.008
Difference in Means = -0.147 95.00% CI = -0.216 to -0.078

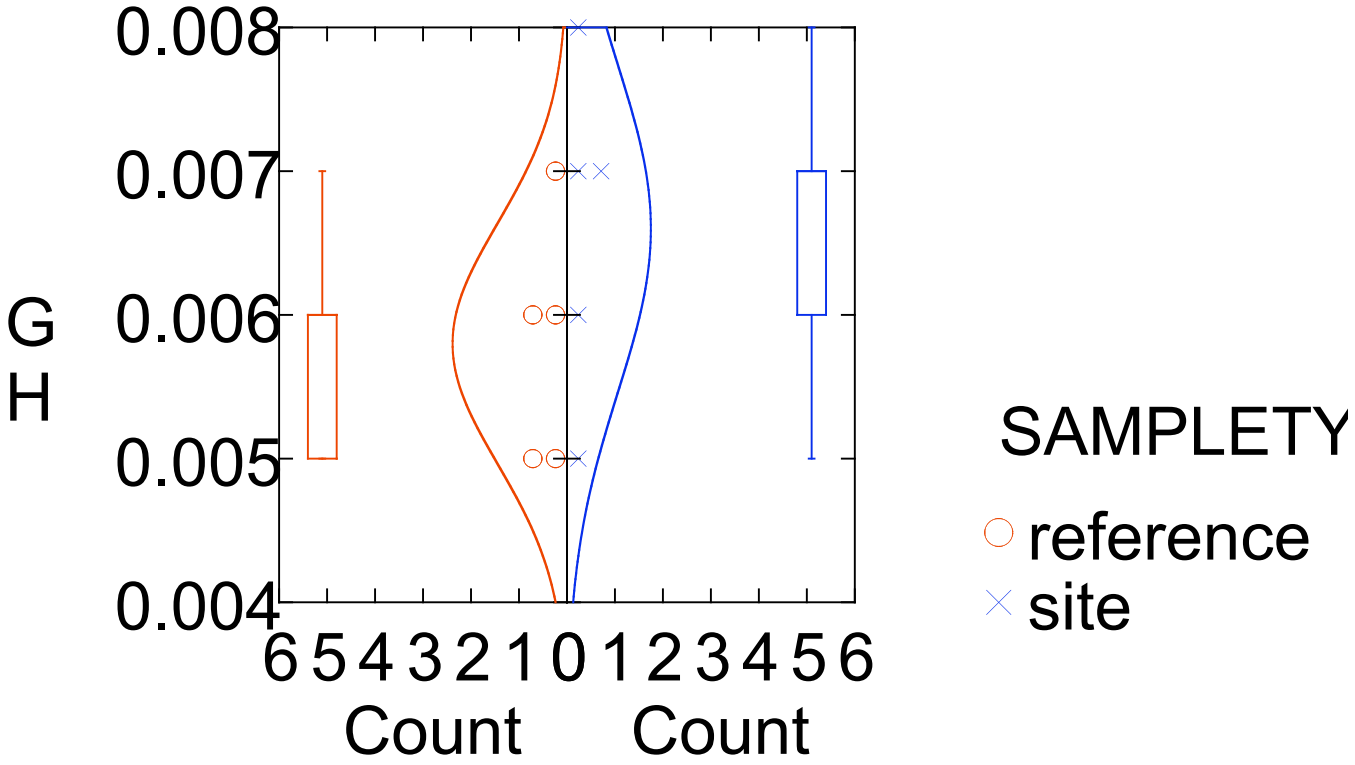


Two-sample t test on HG grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.006	0.001
site	5	0.007	0.001

Separate Variance t = -1.265 df = 7.3 Prob = 0.245
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.001 95.00% CI = -0.002 to 0.001

Pooled Variance t = -1.265 df = 8 Prob = 0.242
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.001 95.00% CI = -0.002 to 0.001

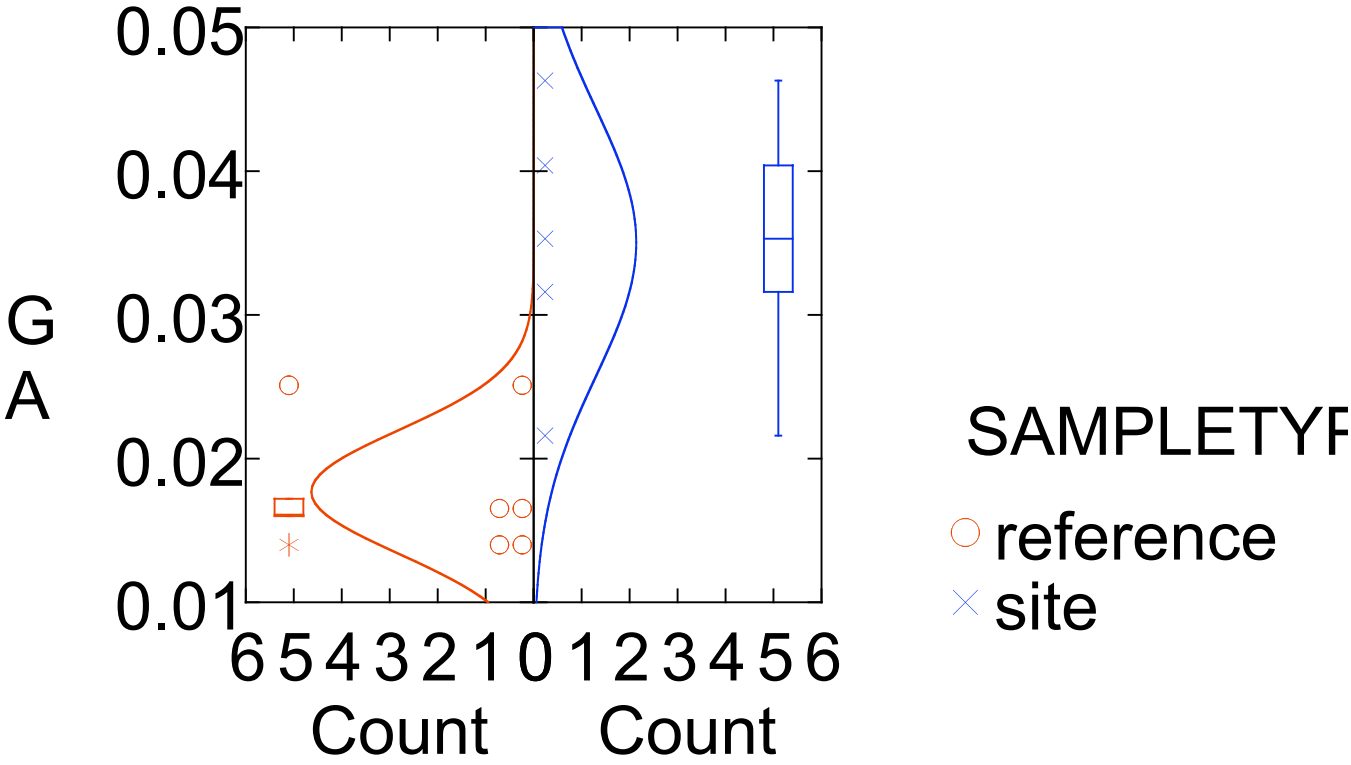


Two-sample t test on AG grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.018	0.004
site	5	0.035	0.009

Separate Variance t = -3.778 df = 5.6 Prob = 0.010
Bonferroni Adjusted Prob = 0.072
Difference in Means = -0.017 95.00% CI = -0.029 to -0.006

Pooled Variance t = -3.778 df = 8 Prob = 0.005
Bonferroni Adjusted Prob = 0.038
Difference in Means = -0.017 95.00% CI = -0.028 to -0.007

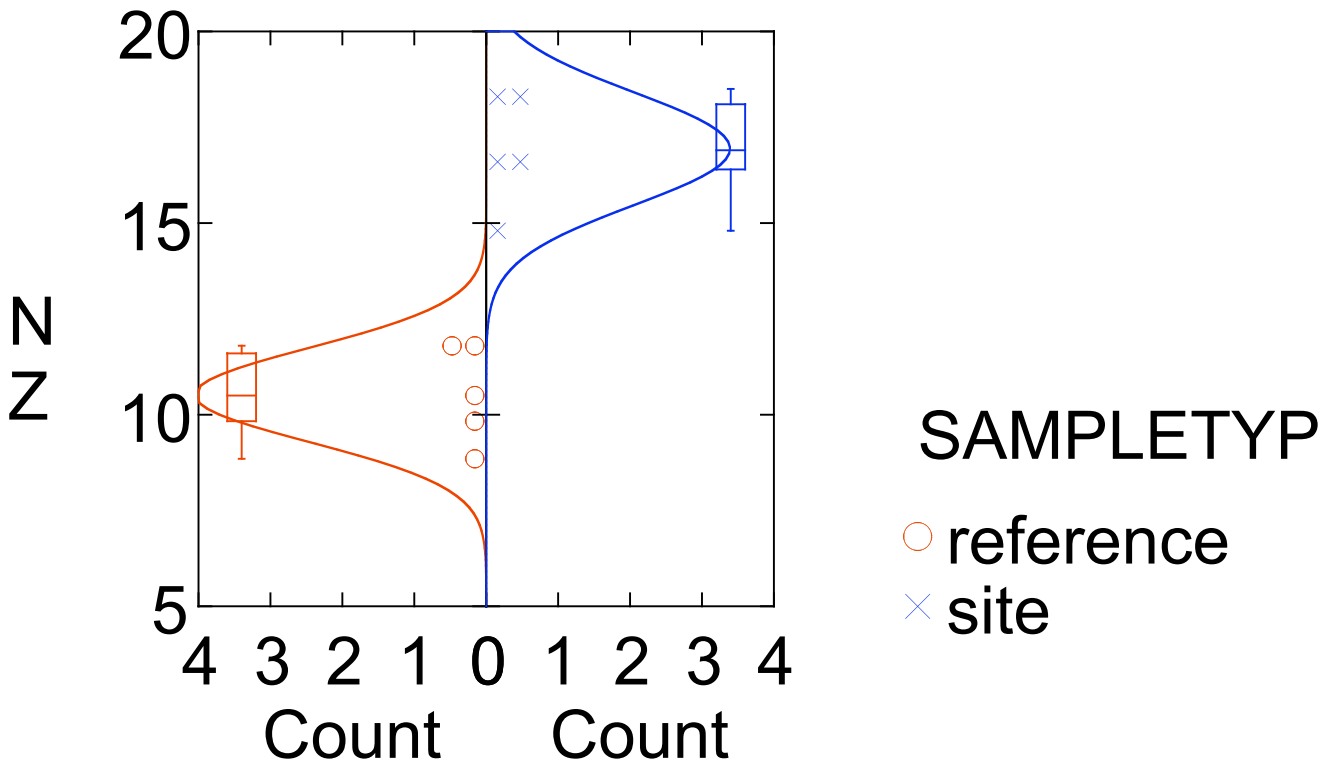


Two-sample t test on ZN grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	10.516	1.232
site	5	16.940	1.471

Separate Variance t = -7.487 df = 7.8 Prob = 0.000
Bonferroni Adjusted Prob = 0.001
Difference in Means = -6.424 95.00% CI = -8.413 to -4.435

Pooled Variance t = -7.487 df = 8 Prob = 0.000
Bonferroni Adjusted Prob = 0.000
Difference in Means = -6.424 95.00% CI = -8.402 to -4.446



Categorical values encountered during processing are:
SAMPLETYPE$ (2 levels)
reference, site

Kruskal-Wallis One-Way Analysis of Variance for 10 cases
Dependent variable is CR
Grouping variable is SAMPLETYPE$

Group	Count	Rank Sum
reference	5	21.500
site	5	33.500

Mann-Whitney U test statistic = 6.500
Probability is 0.207
Chi-square approximation = 1.590 with 1 df

Kruskal-Wallis One-Way Analysis of Variance for 10 cases
Dependent variable is CU
Grouping variable is SAMPLETYPE$

Group	Count	Rank Sum
reference	5	18.000
site	5	37.000

Mann-Whitney U test statistic = 3.000
Probability is 0.047
Chi-square approximation = 3.938 with 1 df

Kruskal-Wallis One-Way Analysis of Variance for 10 cases
Dependent variable is NI
Grouping variable is SAMPLETYPE$

```
   Group       Count   Rank Sum

  reference        5      26.000
  site             5      29.000
Mann-Whitney U test statistic =       11.000
Probability is        0.754
Chi-square approximation =        0.098 with 1 df
IMPORT successfully completed.

  10 cases and 12 variables processed and saved.
```

The following metals were significantly elevated in *M nasuta* tissue after exposure to site-related sediments, when compared with reference sediments:

Sb, Cd, Cu, Pb, Ag, and Zn

Tissue Statistical Evaluation on *N. virens* for Metal Samples Collected from Port Everglades (Florida) May 2004

IMPORT successfully completed.

The following results are for:
SAMPLETYPE$ = reference

Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
SB	5.000	0.197	1.000
AS	5.000	0.251	0.503
CD	5.000	0.300	0.173
CR	5.000	0.331	0.078
CU	5.000	0.202	1.000
PB	5.000	0.195	1.000
HG	5.000	0.273	0.324
NI	5.000	0.227	0.773
AG	5.000	0.221	0.843
ZN	5.000	0.223	0.820

The following results are for:
SAMPLETYPE$ = site

Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
SB	5.000	0.310	0.135
AS	5.000	0.321	0.100
CD	**5.000**	**0.356**	**0.037**
CR	5.000	0.243	0.578
CU	5.000	0.329	0.081
PB	5.000	0.345	0.052
HG	5.000	0.221	0.841
NI	5.000	0.214	0.945
AG	5.000	0.217	0.894
ZN	5.000	0.301	0.168

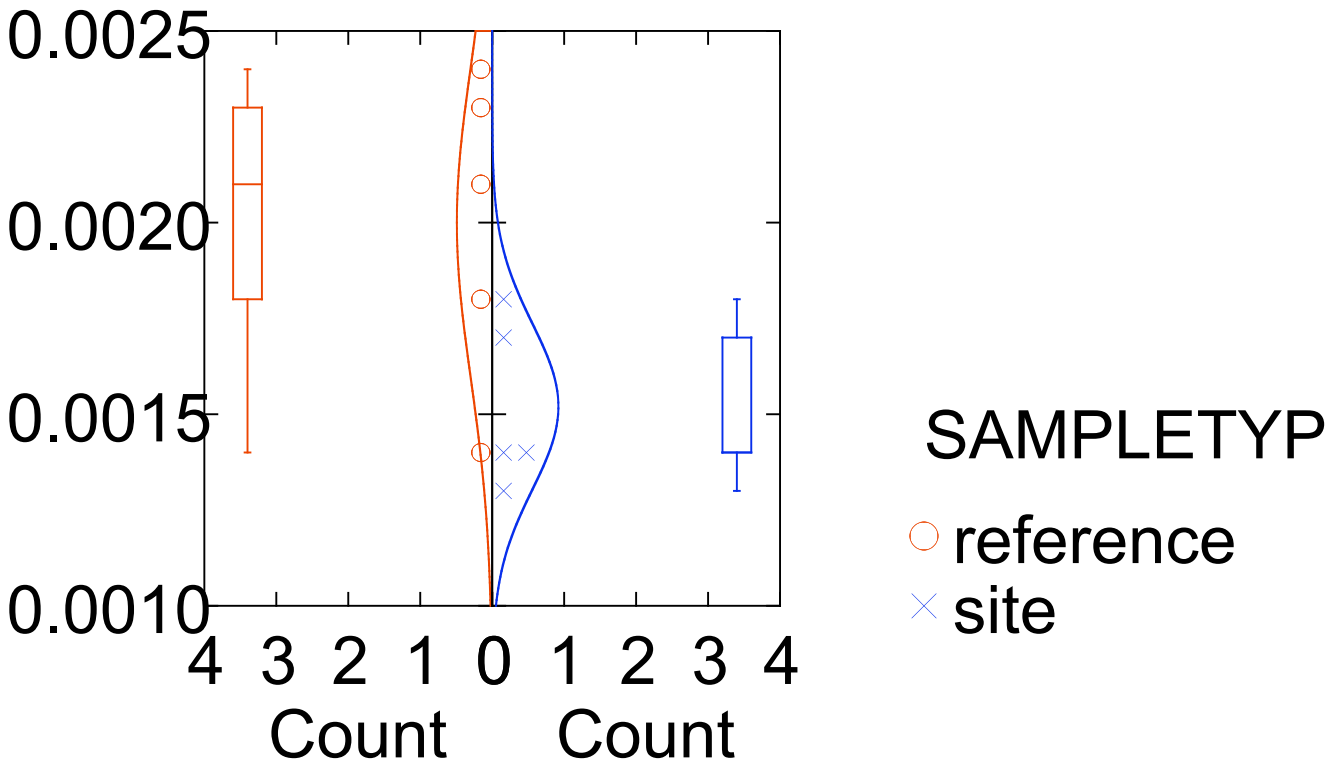
With the exception of Cd in the site sample all metals were normally distributed in sample replicates.

Two-sample t test on SB grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.002	0.000
site	5	0.002	0.000

Separate Variance t = 2.331 df = 6.1 Prob = 0.058
Bonferroni Adjusted Prob = 0.520
Difference in Means = 0.000 95.00% CI = -0.000 to 0.001

Pooled Variance t = 2.331 df = 8 Prob = 0.048
Bonferroni Adjusted Prob = 0.433
Difference in Means = 0.000 95.00% CI = 0.000 to 0.001

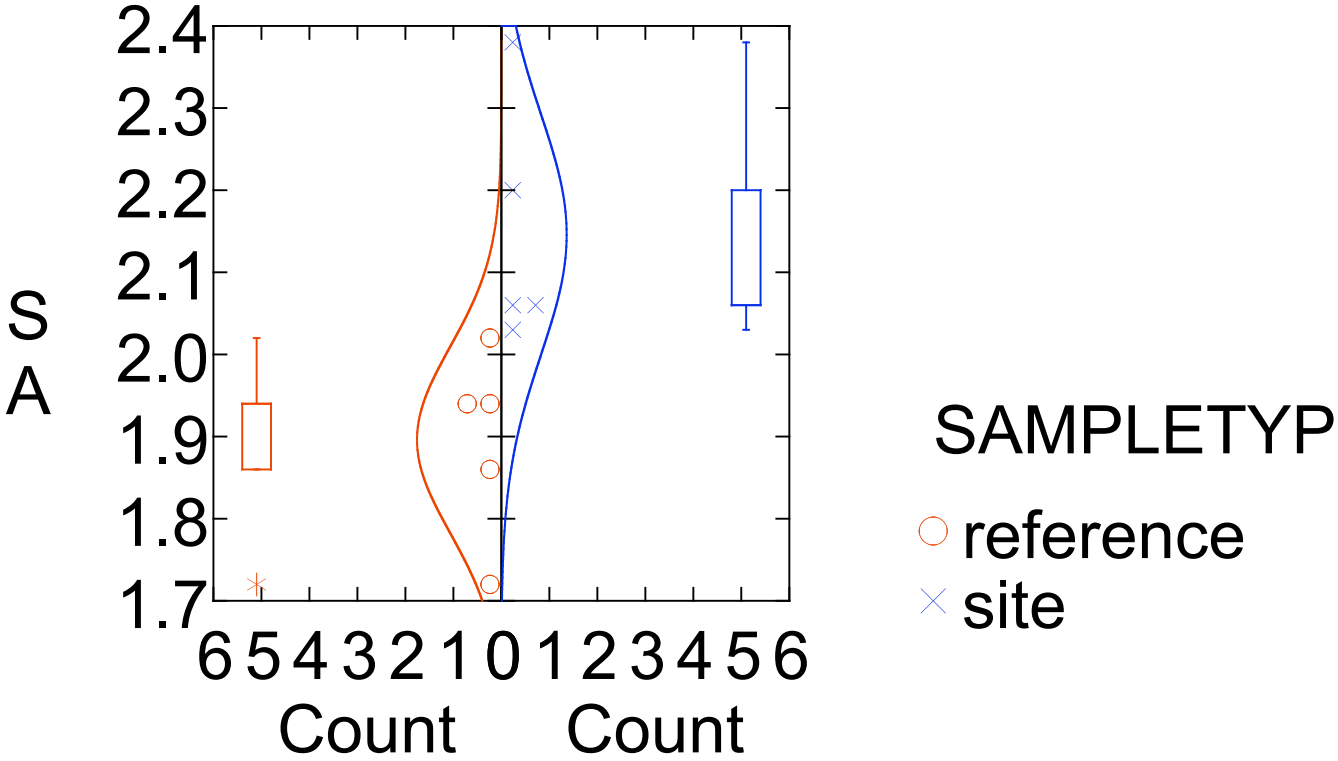


Two-sample t test on AS grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	1.896	0.113
site	5	2.146	0.147

Separate Variance t = -3.016 df = 7.5 Prob = 0.018
Bonferroni Adjusted Prob = 0.161
Difference in Means = -0.250 95.00% CI = -0.443 to -0.057

Pooled Variance t = -3.016 df = 8 Prob = 0.017
Bonferroni Adjusted Prob = 0.150
Difference in Means = -0.250 95.00% CI = -0.441 to -0.059

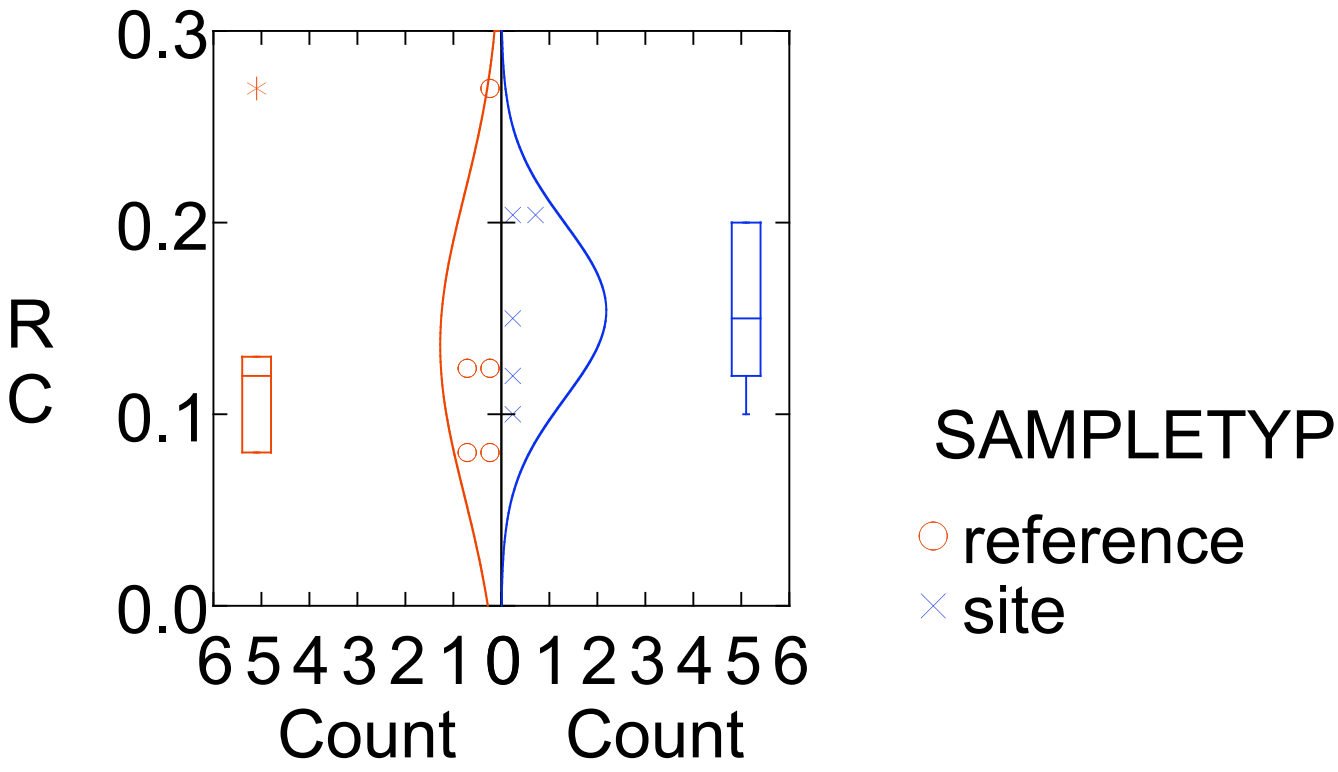


Two-sample t test on CR grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.136	0.078
site	5	0.154	0.046

Separate Variance t = -0.444 df = 6.4 Prob = 0.671
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.018 95.00% CI = -0.116 to 0.080

Pooled Variance t = -0.444 df = 8 Prob = 0.669
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.018 95.00% CI = -0.111 to 0.075

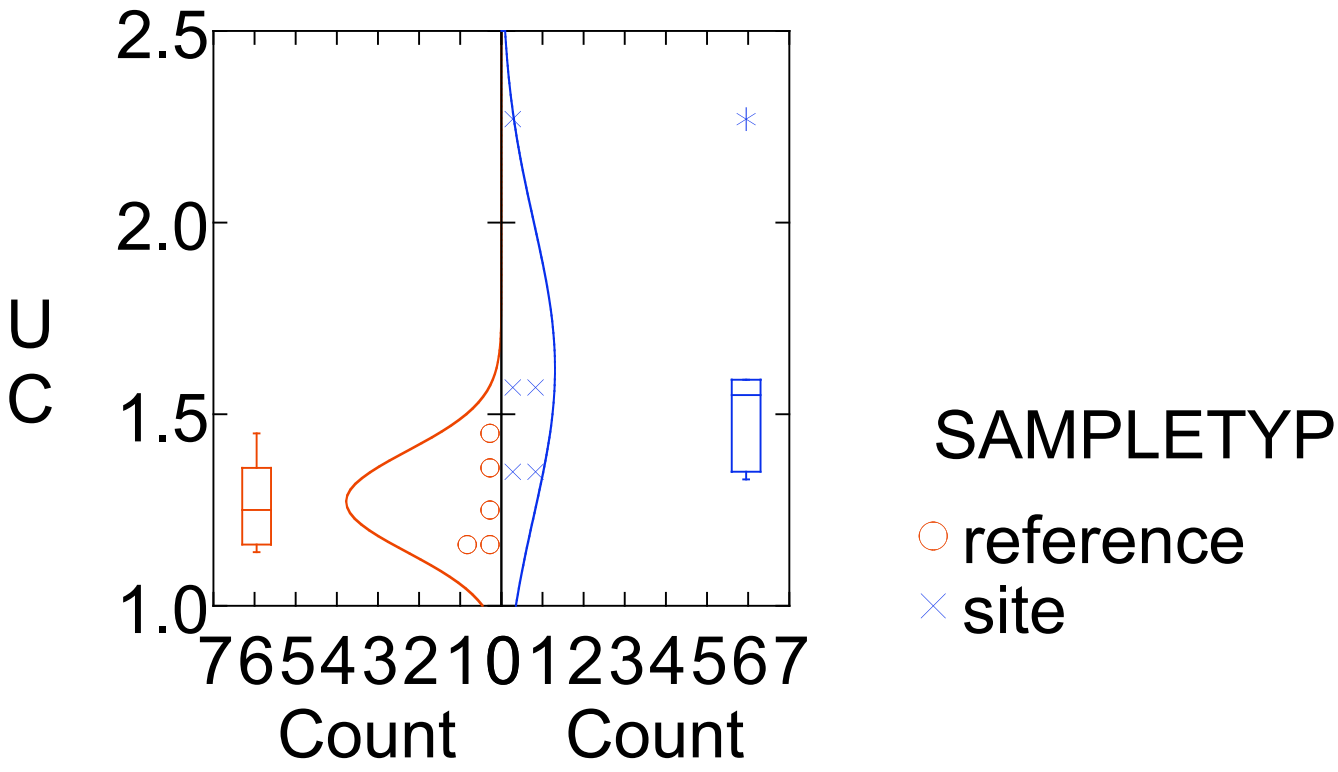


Two-sample t test on CU grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	1.272	0.132
site	5	1.618	0.383

Separate Variance t = -1.912 df = 4.9 Prob = 0.115
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.346 95.00% CI = -0.813 to 0.121

Pooled Variance t = -1.912 df = 8 Prob = 0.092
Bonferroni Adjusted Prob = 0.831
Difference in Means = -0.346 95.00% CI = -0.763 to 0.071

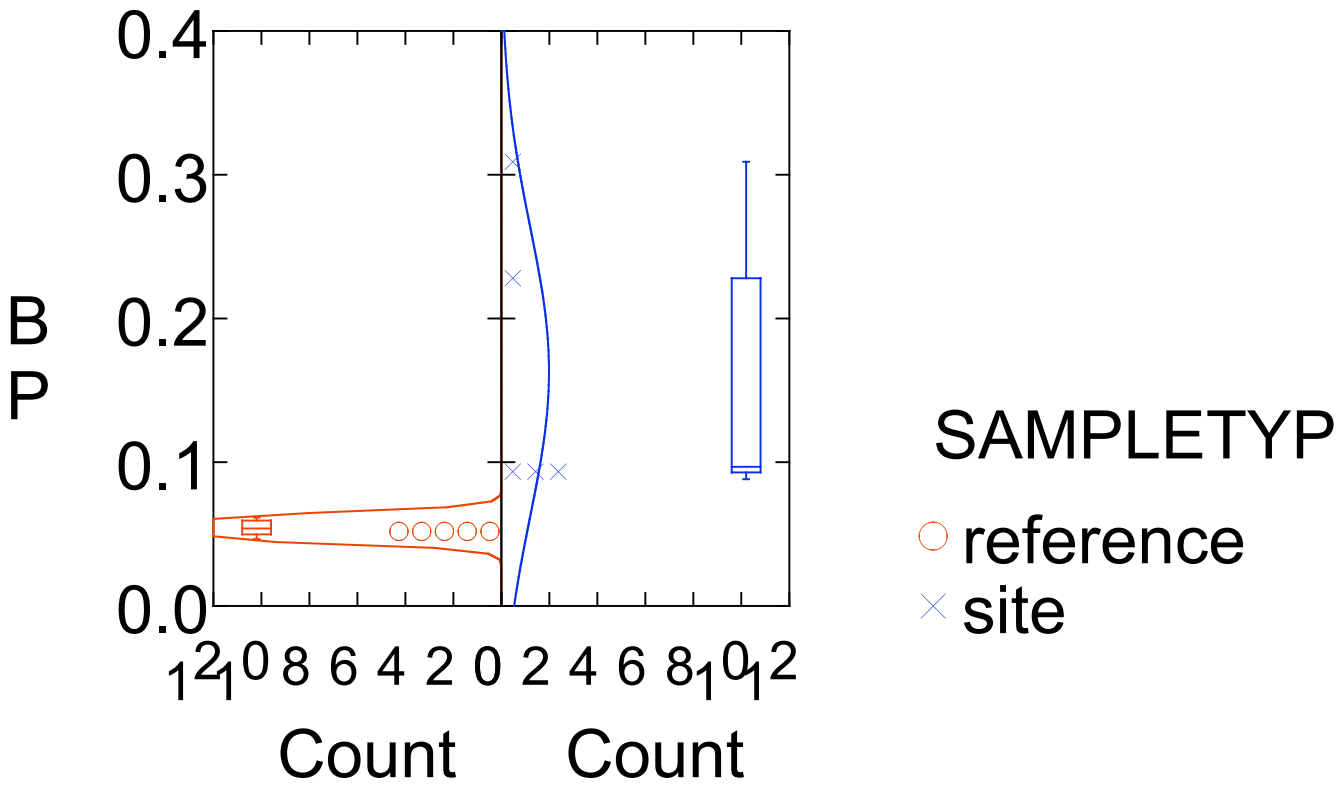


Two-sample t test on PB grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.054	0.006
site	5	0.163	0.101

Separate Variance t = -2.414 df = 4.0 Prob = 0.073
Bonferroni Adjusted Prob = 0.655
Difference in Means = -0.109 95.00% CI = -0.233 to 0.016

Pooled Variance t = -2.414 df = 8 Prob = 0.042
Bonferroni Adjusted Prob = 0.380
Difference in Means = -0.109 95.00% CI = -0.213 to -0.005

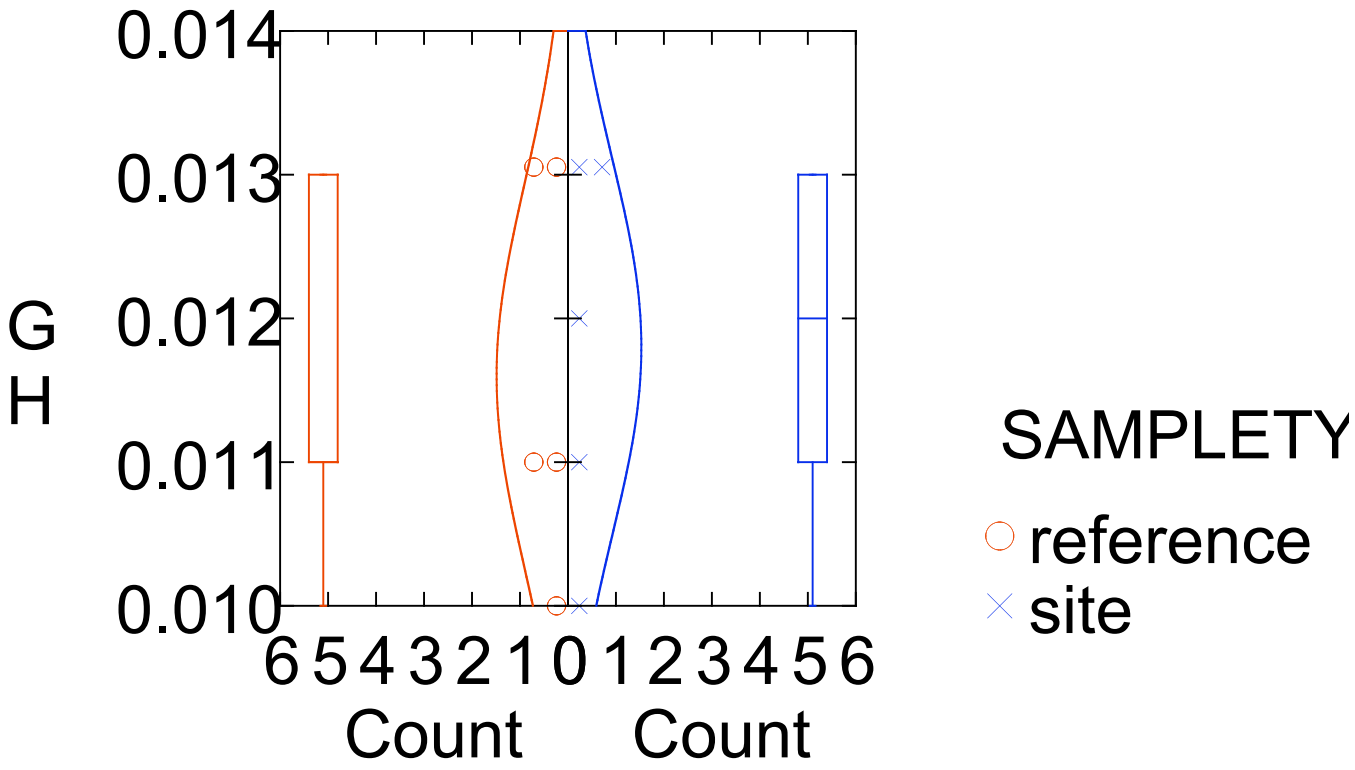


Two-sample t test on HG grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.012	0.001
site	5	0.012	0.001

Separate Variance t = -0.239 df = 8.0 Prob = 0.817
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.000 95.00% CI = -0.002 to 0.002

Pooled Variance t = -0.239 df = 8 Prob = 0.817
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.000 95.00% CI = -0.002 to 0.002

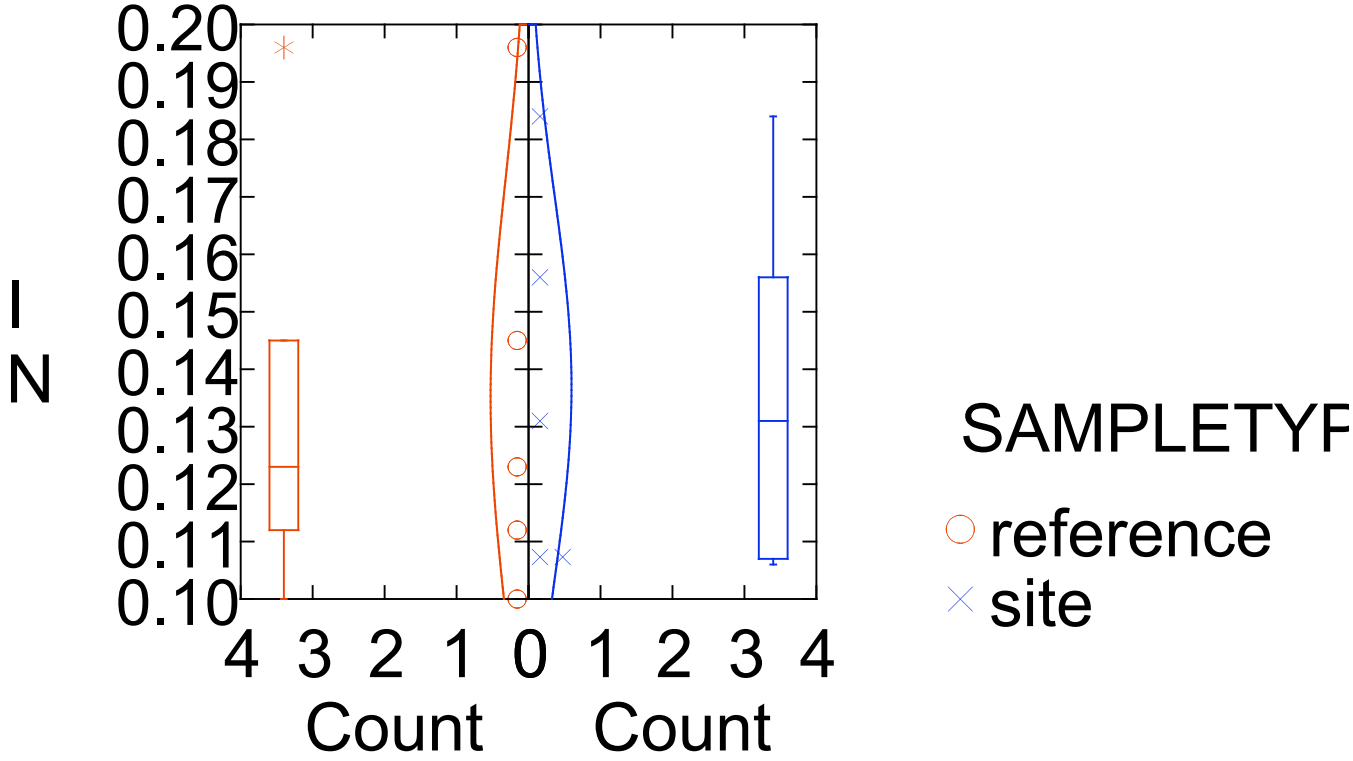


Two-sample t test on NI grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.135	0.038
site	5	0.137	0.033

Separate Variance t = -0.071 df = 7.9 Prob = 0.945
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.002 95.00% CI = -0.054 to 0.051

Pooled Variance t = -0.071 df = 8 Prob = 0.945
Bonferroni Adjusted Prob = 1.000
Difference in Means = -0.002 95.00% CI = -0.054 to 0.050

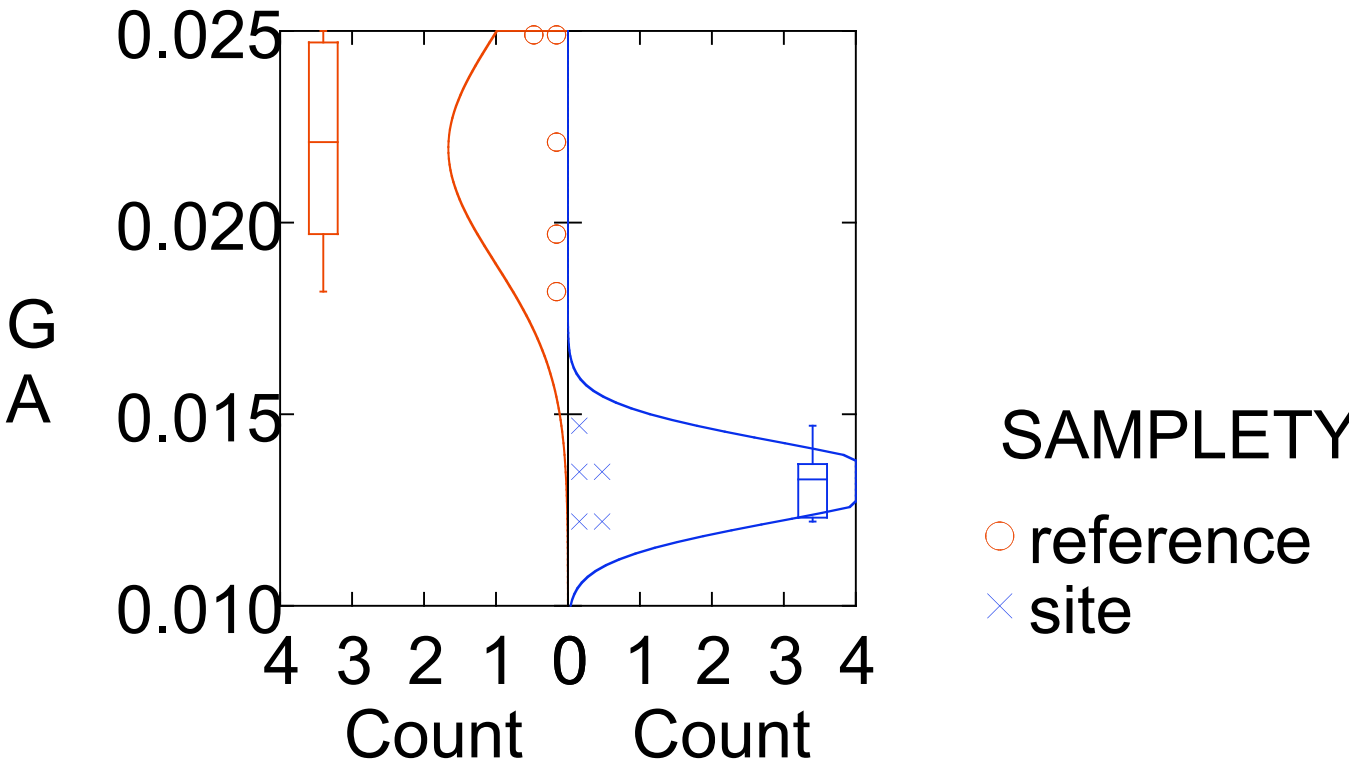


Two-sample t test on AG grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	0.022	0.003
site	5	0.013	0.001

Separate Variance t = 6.127 df = 4.9 Prob = 0.002
Bonferroni Adjusted Prob = 0.016
Difference in Means = 0.009 95.00% CI = 0.005 to 0.012

Pooled Variance t = 6.127 df = 8 Prob = 0.000
Bonferroni Adjusted Prob = 0.003
Difference in Means = 0.009 95.00% CI = 0.005 to 0.012

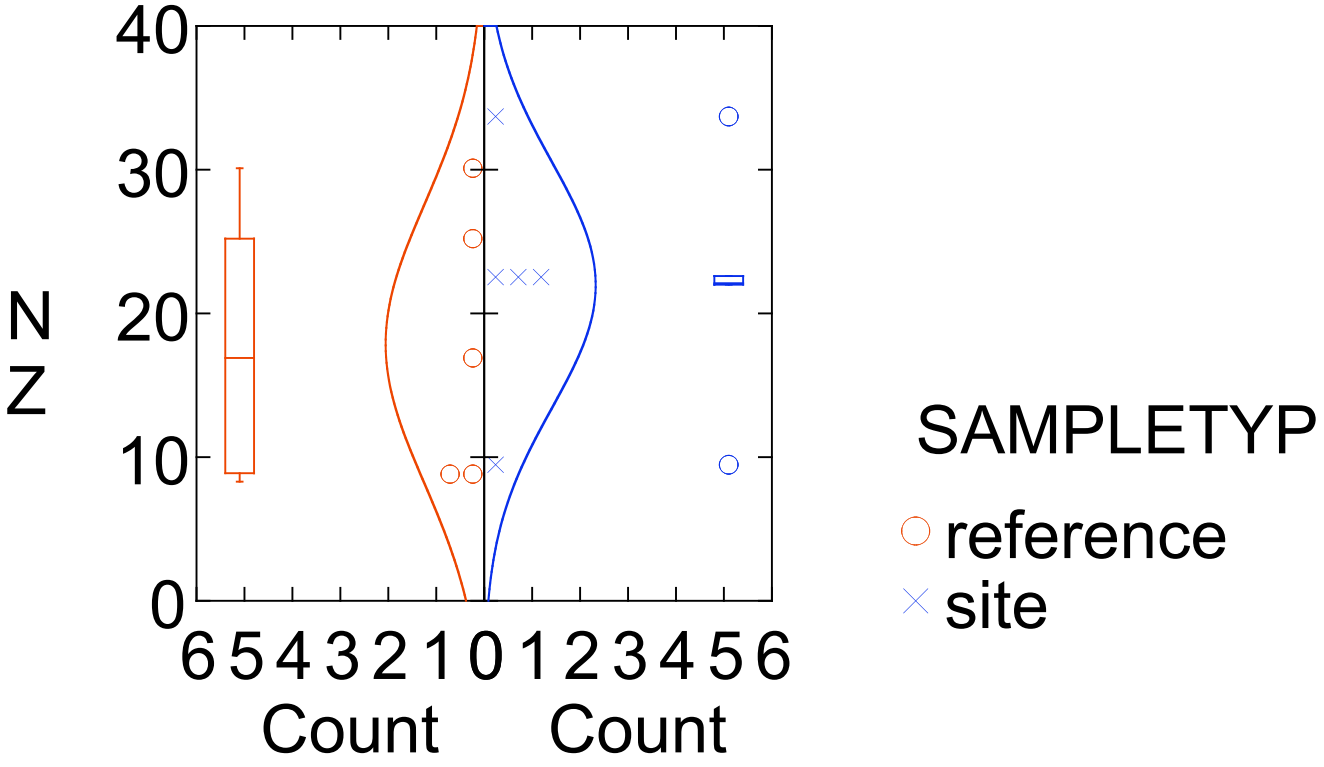


Two-sample t test on ZN grouped by SAMPLETYPE$

Group	N	Mean	SD
reference	5	17.874	9.706
site	5	21.974	8.577

Separate Variance t = -0.708 df = 7.9 Prob = 0.499
Bonferroni Adjusted Prob = 1.000
Difference in Means = -4.100 95.00% CI = -17.493 to 9.293

Pooled Variance t = -0.708 df = 8 Prob = 0.499
Bonferroni Adjusted Prob = 1.000
Difference in Means = -4.100 95.00% CI = -17.458 to 9.258



Categorical values encountered during processing are:
SAMPLETYPE$ (2 levels)
reference, site

Kruskal-Wallis One-Way Analysis of Variance for 10 cases
Dependent variable is CD
Grouping variable is SAMPLETYPE$

Group	Count	Rank Sum
reference	5	36.500
site	5	18.500

Mann-Whitney U test statistic = 21.500
Probability is 0.059
Chi-square approximation = 3.556 with 1 df

10 cases and 12 variables processed and saved.
SYSTAT Rectangular file P:\EAT\2004\projects\PPB103EvaluationsUSACEJax\PortEverglades\stats\\N virens wet weight metals.SYD,
created Fri Jan 21, 2005 at 10:22:07, contains variables:

No metals were significantly elevated in site sample when compared with reference sample.

Tissue Statistical Evaluation on *N. virens* for Butyltin Samples Collected from Port Everglades (Florida) May 2004

IMPORT successfully completed.

The following results are for:
SITE$ = reference
Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
DINBUTYLTI	**5.000**	**0.360**	**0.033**
TRINBUTYLT	**5.000**	**0.473**	**0.001**
LNDI	**5.000**	**0.367**	**0.027**
LNTRI	**5.000**	**0.473**	**0.001**

The following results are for:
SITE$ = site

Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
DINBUTYLTI	5.000	0.231	0.724
TRINBUTYLT	5.000	0.300	0.173
LNDI	5.000	0.232	0.706
LNTRI	5.000	0.284	0.253

Reference site replicates are neither normal nor lognormal. Therefore use nonparametric Kruskal Wallis hypothesis test.

Categorical values encountered during processing are:
SITE$ (2 levels)
reference, site

Kruskal-Wallis One-Way Analysis of Variance for 10 cases
Dependent variable is DINBUTYLTI
Grouping variable is SITE$

Group	Count	Rank Sum
reference	5	15.000
site	5	40.000

Mann-Whitney U test statistic = 0.000
Probability is 0.008
Chi-square approximation = 7.075 with 1 df

Kruskal-Wallis One-Way Analysis of Variance for 10 cases
Dependent variable is TRINBUTYLT
Grouping variable is SITE$

Group	Count	Rank Sum
reference	5	15.000
site	5	40.000

Mann-Whitney U test statistic = 0.000
Probability is 0.007
Chi-square approximation = 7.353 with 1 df

Both di- and tri-n-butyltin are significantly elevated in N virens exposed to site sediments.

Tissue Statistical Evaluation on *M. nasuta* for Butyltin Samples Collected from Port Everglades (Florida) May 2004

The following results are for:
SITE$ = reference

Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
DINBUTYLTI	5.000	0.243	0.578
TRINBUTYLT	**5.000**	**0.473**	**0.001**

The following results are for:
SITE$ = site

Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
DINBUTYLTI	**5.000**	**0.389**	**0.013**
TRINBUTYLT	5.000	0.226	0.783

Deviations from normality.

The following results are for:
SITE$ = reference

Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
LNDI	**5.000**	**0.388**	**0.013**
LNTRI	**5.000**	**0.000**	**.**

The following results are for:
SITE$ = site

Kolmogorov-Smirnov One Sample Test using Normal(0.00,1.00) distribution

Variable	N-of-Cases	MaxDif	Lilliefors Probability (2-tail)
LNDI	**5.000**	**0.371**	**0.023**
LNTRI	5.000	0.227	0.767

Also not lognormal. Therefore use nonparametric Kruskal Wallis hypothesis test.

Categorical values encountered during processing are:
SITE$ (2 levels)
reference, site

Kruskal-Wallis One-Way Analysis of Variance for 10 cases
Dependent variable is DINBUTYLTI
Grouping variable is SITE$

Group	Count	Rank Sum
reference	5	21.000
site	5	34.000

Mann-Whitney U test statistic = 6.000

Table XX Tissue Statistical Evaluation on *M. nasuta* for Butyltin Samples Collected from Port Everglades (Florida) May 2004

Probability is 0.173
Chi-square approximation = 1.855 with 1 df

Kruskal-Wallis One-Way Analysis of Variance for 10 cases
Dependent variable is TRINBUTYLT
Grouping variable is SITE$

Group	Count	Rank Sum
reference	5	15.000
site	5	40.000

Mann-Whitney U test statistic = 0.000
Probability is 0.007
Chi-square approximation = 7.258 with 1 df

Site samples are significantly elevated for tri-n-butyltin.

IMPORT successfully completed.