

OFFICE OF EMERGENCY AND REMEDIAL RESPONSE

TECHNICAL MEMORANDUM
REMEDIAL TECHNOLOGY EVALUATION
PENTA WOOD PRODUCTS
SIREN, WISCONSIN
MAY, 1994

RECEIVED

JUN 1 5 1994

NORTHWEST DISTRICT
HEADQUARTERS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

- 1.1 Objective of this Study
- 1.2 Site Background
- 1.3 Remedial Technology
 - 1.3.1 Soil Washing
 - 1.3.2 Solidification/Stabilization

2.0 METHODOLOGY

- 2.1 Soil Samples
- 2.2 Soil Washing Study
- 2.3 Solidification/Stabilization Study
- 2.4 Analytical Test Methods
 - 2.4.1 Chemical Test Methods
 - 2.4.2 Physical Test Methods
 - 2.4.2.1 Bulk Density/Specific Gravity
 - 2.4.2.2 Moisture Content
 - 2.4.2.3 pH Determination
 - 2.4.2.4 Grain Size Analysis
 - 2.4.2.5 Unconfined Compressive Strength
 - 2.4.2.6 Chemical Oxygen Demand

3.0 RESULTS

REFERENCES

APPENDICES

- A Analytical Reports
- B Laboratory Notes

LIST OF TABLES

TABLE 1	PCP Results for Penta and ACA Soil Sample Particle Size Fractions
TABLE 2	Relationship Between PCP Levels and TCLP PCP Levels in Soil
TABLE 3	Relationship Between Metals Levels and TCLP Metals Levels in Soil
TABLE 4	PCP Results for Penta Soil Samples - Soil Washing Study
TABLE 5	PCP Results for Penta/ACA Soil Samples - Soil Washing Study
TABLE 6	PCP Results for Penta Supernatant Samples - Soil Washing Study
TABLE 7	PCP Results for Penta/ACA Supernatant Samples - Soil Washing Study
TABLE 8	Metals Results for Penta Soil Samples - Soil Washing Study
TABLE 9	Metals Results for Penta/ACA Soil Samples - Soil Washing Study
TABLE 10	Metals Results for Penta Supernatant Samples - Soil Washing Study
TABLE 11	Metals Results for Penta/ACA Supernatant Samples - Soil Washing Study
TABLE 12	PCP and Metals Results for Supernatant Samples from Large Penta/ACA Soil Batch
TABLE 13	Immunoassay PCP Results for Penta Seep Soil Samples - Soil Washing Study
TABLE 14	Immunoassay PCP Results for Penta Seep Soil Samples - Soil Washing Study
TABLE 15	COD Results for Centrifuged Penta Seep Supernatant Samples - Soil Washing Study
TABLE 16	PCP And Metals Results for Untreated Soil Samples - S/S Study
TABLE 17	TCLP Results for Untreated Soil Samples - S/S Study
TABLE 18	Unconfined Compressive Strength Results for ACA Soil Samples - S/S Study
TABLE 19	Unconfined Compressive Strength Results for Penta/ACA Soil Samples - S/S Study
TABLE 20	Unconfined Compressive Strength Results for Washed Penta/ACA Soil Samples - S/S Study
TABLE 21	Physical Characteristics Results for ACA Soil Samples - S/S Study
TABLE 22	Physical Characteristics Results for Penta/ACA Soil Samples - S/S Study
TABLE 23	Physical Characteristics Results for Washed Penta/ACA Soil Samples - S/S Study

LIST OF FIGURES

- FIGURE 1 ACA Grain Size Analysis
- FIGURE 2 PCP Grain Size Analysis
- FIGURE 3 PCP/ACA Grain Size Analysis
- FIGURE 4 Ash Pile Grain Size Analysis

1.0 INTRODUCTION

1.1 Objective of this Study

The objective of this project was to evaluate treatment technologies for the remediation of PCP-, ACA-, and mixed PCP/ACA-contaminated soil matrices collected from the Penta Wood Products site, located in Siren, Wisconsin. Soil washing was evaluated in the treatment of soils contaminated with PCP and PCP/ACA. Solidification/stabilization (S/S) was evaluated in the treatment of soils contaminated with ACA and PCP/ACA (unwashed and washed).

1.2 Site Background

The Penta Wood Products (PWP) property consists of approximately 120 acres, of which 80 acres were actively used; the remaining 40 acres are undeveloped and consist of forested areas and wetlands. The property is located in a rural agricultural and residential area and is bordered to the east, west, and north by forested areas; some of these areas are classified by the State of Wisconsin as wetlands. With the exception of a small parcel, State Route 70 forms the southern site boundary of the property. A small parcel of the PWP property is located south of State Route 70. A number of surface waterbodies are present north and west of the site. Doctor Lake and an unnamed lake are located 2,000 feet east and northeast of the site, respectively. Approximately 2,137 acres of lakes, 94 acres of bogs, and 7,500 acres of wetlands are located within a four mile radius of the site. The Amsterdam Slough Public Hunting area covers 7,233 acres and is located one mile north of the site.

Chemical treatment and ancillary wood fabrication operations began in 1953, and ceased in May, 1992 due to the inability of the facility to comply with recently enacted Resource Conservation and Recovery Act drip track regulations. Prior to 1956, wood was treated by dipping poles and timbers into an open tank of pentachlorophenol (PCP) solution or by introducing PCP into the wood under a vacuum. In 1956, a pressure treatment cylinder was installed which used a 5 to 7 percent PCP solution in a #2 fuel oil carrier. In 1975, a second pressure process was added using chemonite, a water borne salt treatment consisting of arsenate, copper II oxide, and zinc. This product is also referred to as ammoniacal-copper-arsenic (ACA).

The active portion of the site consisted of three roughly defined functional areas including a wood fabrication and white wood (untreated wood) storage area, a treated wood storage area, and a process area. A number of contaminant sources and areas of concern have been identified and include the following:

- o Woodchip pile
- o PCP treatment area
- o Oil-water separator
- o Wastewater lagoon
- o Landfill areas
- o Off-site soils
- o Bulk storage tanks
- o ACA treatment area
- o Boiler water disposal lagoon
- o Gully to wastewater lagoon
- o On-site soils

The wood fabrication and white wood storage area is situated north of Route 70 in the western third of the property. Two sawmills, wood chipping equipment, conveyor equipment, and several storage buildings were scattered throughout this area. Woodchip storage and disposal areas are situated along the north and west border of the site and white wood was stored in the north central portion of the site. The documents reviewed have indicated that

wastewater and waste woodtreating product were also disposed of in the woodchip piles. All of the white wood, some of the buildings, and portions of the sawmills have been removed from the property.

Treated wood storage areas are located in the eastern third of the property north of Route 70. Pentachlorophenol treated wood was stored in the southeast corner of the site and ACA treated wood was stored in the northeast corner of the site. A number of storage buildings were present in the PCP storage area. Treated wood products were also stored in a small parcel south of State Route 70, however the product type was not specified in the documents available. Several above-ground storage tanks are also located in this area. All buildings and treated wood products have been removed from the treated wood storage areas; the storage tanks remain.

The chemical treatment area is located in the central third of the property north of Route 70. This area consists of a process building, a boiler building, an oil-water separator building, and a number of storage, vehicle service, and administrative buildings. Several above- and below-ground storage tanks are also present in this area with capacities ranging from 300 to 10,000 gallons. The tank contents are assumed to include chemical wood treatment products, diesel fuel, fuel oil, and gasoline.

As mentioned previously, wood products were treated in the process building with PCP since operations began in 1953, and ACA since 1975. The west side of the process building was used to treat wood with PCP and a pressure vessel extends from the side of the building. The extent of discolored soil visible in historic and recent photos suggest that product was routinely spilled from this operation. Additionally, patches of stained soil immediately west of the process building suggest that this was a drip area for PCP treated wood products. The east side of the process building was used for the ACA treatment process. A number of tanks, a treatment retort, and a small oil-water separator are present in this area.

The oil-water separator building is located immediately north of the process building. The oil-water separating unit is approximately 6 feet deep and 30 feet long. A fixed film biological treatment unit (Biotrol, Inc.) is present in this building as well. Although a number of storage buildings have been removed from the site, all process buildings in the chemical treatment area remain.

Two lagoons are present on the site. The first is a boiler water disposal lagoon, located immediately north of the process building. It is approximately 25 feet wide and 45 feet long and the lagoon walls are above grade and constructed of soil, ash from burning sludge, and treated wood scraps. This lagoon was used to dispose of non-contact boiler blow-down water. A second lagoon is located along the northeast edge of the site and is approximately three times the size of the boiler blowdown lagoon. The lagoon is situated in a slight depression and berms of mounded soil form the north and west walls of the lagoon. This lagoon was used for the disposal of process wastewater from the PCP and ACA treatment areas and excess water from the oil-water separator. Additionally, this lagoon received surface stormwater runoff through an eroded gully that drains the chemical treatment area and the treated wood product storage area.

Two landfill areas are located on the western side of the site. The first is associated with a ravine, approximately 20 to 30 feet in depth, located along the western site boundary. Woodchips, scrap wood, and some process water has been dumped into this area. A second landfill area is located along the north side of the site and was used to dispose of butt pieces

of wood.

As mentioned above, all white wood and treated wood products, as well as some buildings have been removed from the site. The active portion of the site is relatively flat with a slight downward grade towards the northeast. Runoff from the site is directed toward the waste process water disposal lagoon and off-site into adjacent forested and wetland areas. Drainage pathways, erosional, and depositional areas are clearly evident across the site and in areas adjacent to the site. This is particularly true in areas adjacent to the northeastern lagoon and in the treated wood storage area.

Contaminants of concern at the PWP site have been identified by the EPA and state of WI and include PCP, arsenic, copper, zinc. Dioxins/furans are also of concern, but a limited number of analytical determinations have been performed; dioxins/furans have been detected in samples collected in the vicinity of the boiler, the boiler blowdown lagoon, and ash piles. Other contaminants detected on-site include petroleum hydrocarbons and polynuclear aromatic hydrocarbons. Although the overall pattern of contamination in the various media can be described in general terms, it is not accurate to portray the site in terms of discrete areas of high, moderate, and low contamination. The long and variable history of activities throughout the site, the pattern of accidental and intentional releases, and the natural and man-induced migration of contaminants necessitate caution when describing the extent of contamination based on sampling performed to date.

Contaminants of concern have been detected in soil and groundwater collected from active portions of the PWP property as well as areas adjacent to the property. Concentrations of PCP ranging from 1,100 to 2,700 ug/l (microgram per liter) have been detected in groundwater collected from two production wells located south of the process building. Pentachlorophenol detected in surface soils collected from various areas of the site range from non-detected and below the detection limit in soil collected from treated wood storage areas, white wood storage areas, sawmill areas, and office areas, and from 92 to 10,000 mg/kg (milligrams per liter) in the lagoons, dump areas, and chemical treatment areas. Arsenic concentrations followed a similar pattern with non-detectable to low concentrations in "non-process" areas and from 10 to 42,000 mg/kg in chemical treatment areas. Concentrations of these contaminants followed similar patterns in subsurface soil samples.

Ecological and human health concerns at the PWP site revolve around PCP and arsenic in surface soil, woodchips, and groundwater. The elevated concentrations in these media, apparent exposure routes, and available toxicity data suggest that the site represents a substantial environmental risk to human and nonhuman receptors.

1.3 Remedial Technology

1.3.1 Soil Washing

Soil washing is a physical/chemical separation and volume reduction process that is generally used in conjunction with other technologies to remediate a site. Contaminants are removed (i.e., washed) from the soil matrix to form a concentrated water slurry containing the contaminants and fine soil particles. Soil washing does not destroy or reduce the toxicity of the contaminants unless it is combined with other chemical processes (i.e., oxidation). Due to the physical nature of fine soil particles binding with the chemical contaminants, they are usually not applicable to this technology. The objective of soil washing technology is to wash the

contamination from the larger soil particles and then return them to the site. The fine soil particles and contaminated water are then treated by other technologies (i.e., bioremediation, carbon adsorption, etc.). The advantages of soil washing are (1) an increased volume of clean material (large soil particles) can be returned to the site and (2) a reduced volume of contaminated material (the wash water and fine soil particles) will require treatment by a potentially more energy intensive and costly technology (i.e., incineration, thermal desorption).

1.3.2 Solidification/Stabilization

The treatment technology evaluated in this test program was solidification/stabilization (S/S). S/S is a proven technology for the treatment of hazardous wastes and hazardous waste sites. S/S processes reduce the mobility of a contaminant, either by physically restricting its contact with a mobile phase (solidification) or by chemically altering/binding the contaminant to reduce its mobility (stabilization). Stabilization can be achieved without solidification, while solidification usually includes stabilization. Solidification also refers to the use of binders for waste bulking to facilitate the handling of liquid wastes.

Binding agents fall into several classes. The most common are cementitious and pozzolanic materials including Portland cement, fly ash, lime, and kiln dust. Binding agents form a solid, high strength aluminosilicate matrix that can trap waste particles, bind various contaminants, and reduce permeability of the waste/binder mass. Various chemical agents added to the binder may improve specific properties of S/S-treated waste, such as strength, curing rate, contaminant binding, pore size, or waste dispersion⁽¹⁾.

Cement-based S/S processes are suitable for inorganic wastes, but are not as effective for treating organic wastes or inorganic/organic mixtures. This is due to the fact that organic compounds are typically incompatible with cement-based mixtures and interfere with their physical and chemical transformation. Among the factors which may inhibit the stabilization of waste are the hydrophobic nature of organic waste materials, surface tension effects, and the presence of microorganisms⁽¹⁾.

Possible options that may overcome incompatibility problems between organic wastes and inorganic S/S matrices include the use of organophilic clays, activated carbon, and other ingredients.

2.0 METHODOLOGY

2.1 Soil Samples

The soil samples used in the treatability test program described in this report were collected at the Penta Wood Products site by U.S. EPA ERT personnel on April 13, 1994, and by REAC personnel on March 30, 1994.

One 5-gallon container of each of the following bulk soil samples was collected on April 13, 1994 by U.S. EPA ERT personnel:

1. Penta (only) from Seep Area. This sample was dark brown in color and contained a high proportion of sand.

2. ACA (only) from Wood Storage Drip Area. This sample was dark brown in color and contained a high proportion of sand.
3. Penta/ACA from ACA Process Area. This sample was dark brown in color and exhibited a very silty, fine grained texture. The as-received sample contained a high proportion of wood pieces and debris.
4. Ash Pile. This sample was dark brown in color and appeared to be sandy.

After removing sufficient as-received sample for on-site grain size analysis, the soil samples were passed through a 1/4 inch screen to remove large particles and debris. After screening, each sample was well mixed to insure homogeneity and placed in plastic containers.

All on-site treatability tests were performed using soil samples described above. Bulk samples Penta (from the Seep Area) and Penta/ACA (from the ACA Process Area) were selected for use in on-site soil washing tests. Bulk samples chosen for on-site S/S testing included ACA (from the Wood Storage Drip Area) and Penta/ACA (from the ACA Process Area), both unwashed and washed.

A bulk sample of Penta Seep Area soil was also collected by REAC personnel on March 30, 1994. This sample was prepared as described above and used in soil washing tests that were conducted at WESTON's ETL.

2.2 Soil Washing Study

Soil washing tests were initially conducted at the PWP site on April 13-14, 1994 by U.S. EPA ERT and REAC personnel. Soil samples collected on April 13, 1994 were used in this study.

Several soil washing treatments were evaluated both alone and in combination, including surfactants (Tergitol NP-10, Tween 80), sodium silicate, and pH adjustment using sodium hydroxide. Tergitol NP-10 and Tween 80 were used in all tests at a concentration of 0.1 percent, while sodium silicate was used at 0.5 percent. All tests were conducted at ambient temperature (approximately 10 - 15 degrees C) using a water:solids ratio of 6:1.

The following soil washing tests were conducted using soil sample Penta:

- Water Control (1 wash)
- Water Control (2 washes)
- Tergitol NP-10 (1 wash)
- pH 10 (1 wash)
- pH 10/Tergitol NP-10 (1 wash)
- pH 10/Tergitol NP-10 (2 washes)
- pH 10/Tergitol NP-10 (1 wash, 1 rinse)
- pH 10/Tergitol NP-10 (1 wash) Duplicate
- Tween 80 (1 wash)
- pH 10/Tween 80 (1 wash)
- pH 10/Tween 80 (2 washes)
- pH 10/Tween 80 (1 wash, 1 rinse)
- Tween 80 (1 wash) Duplicate

The following soil washing tests were conducted using soil sample Penta/ACA:

- Water Control (1 wash)
- Water Control (2 washes)
- Tergitol NP-10 (1 wash)
- pH 10 (1 wash)
- pH 10/Tergitol NP-10 (1 wash)
- pH 10/Tergitol NP-10 (2 washes)
- pH 10/Tergitol NP-10 (1 wash, 1 rinse)
- Silicate (1 wash)

The test protocol that was employed during the treatability study was as follows:

1. Weigh out 125 grams (g) of contaminated soil.
2. Place soil in a 1-liter clear wide mouth glass jar.
3. Add 250 milliliters (ml) deionized water (2:1 water:solids ratio) adjusted to the desired temperature, pH, and additive concentration. If adjusting the pH note the amount of acid or base required.
4. Record ambient water temperature and soil pH.
5. Place soil slurry under the paddle stirrer and set speed at approximately 50 rpm. This slow speed and low water:solids ratio will allow for an increased scrubbing action of the soil particles.
6. Allow mixing for 10 minutes.
7. Add 500 ml of distilled water and increase the speed to approximately 200 rpm for 10 minutes (enough to keep the heavier particles suspended).
8. If performing consecutive washes, cap the sample container and allow to settle for 10 minutes. Pour off the liquid fraction and repeat steps 3 to 7.
9. Pour off the liquid fraction and retain for further analysis.
10. Homogenize remaining soils, noting color and layers, and analyze for contaminants.

An additional soil washing procedure was conducted at the Penta Wood Products site in which a large (6 kg) batch of Penta/ACA soil was washed in preparation for use as a substrate in S/S tests. In this procedure, 2 kg of soil was placed in each of three 5 gallon buckets. Twelve liters of aqueous wash solution (0.1% Tween 80/pH 10) was added to each bucket. This resulted in a 6:1 liquid:solids ratio. The contents of each bucket was then manually stirred with a large wooden paddle for 20 minutes, then allowed to settle for 10 minutes. The supernatant in each bucket was decanted and replaced with an equivalent volume of water. The wash/rinse process was repeated again, and after settling, the rinse water was decanted from the solids. The settled solids were then placed into aluminum pans with small (approximately 1/16 inch diameter) holes in the bottom and allowed to drain overnight in preparation for the S/S study tests.

On May 10-11, 1994 a final series of soil washing tests was conducted by REAC personnel at WESTON's ETL. The tests were performed using bulk soil sample Penta collected on March 30, 1994. The test matrix consisted of:

- Water Control (3 washes)
- pH 10 (3 washes)
- pH 11 (3 washes)
- pH 10/Air Sparging (3 washes)

pH 10/0.5% Sodium hexametaphosphate (3 washes)
pH 10/0.1% Tergitol NP-10 (3 washes)

The protocol described above was used for this soil washing test series, and a total of 3 washes was employed for each test treatment. Monitoring and adjustment of pH with sodium hydroxide was performed periodically to maintain the pH at the required level. The pH in each of the test samples appeared to stabilize after 3 washes.

After each wash cycle, the wash liquid supernatant was decanted from the settled solids. A composited wash liquid (consisting of the supernatant decanted from the settled solids after each of the 3 wash cycles) was generated for each of the test samples following the conclusion of the soil washing tests. This composited liquid was then centrifuged to remove the fine solids dispersed in it. Thus, for each of the 6 soil washing tests, 3 samples were generated: 1) washed solids; 2) centrifuged wash liquid; 3) fine solids removed from the wash liquid via centrifugation.

The solids from the soil washing treatment that was judged by visual observation to be the most effective (pH 10/Air Sparging) were then wet sieved (using water) into 3 particle size fractions: >40 mesh, >120 mesh, and <120 mesh. The quantity of <120 mesh solids obtained was negligible. As a result, these solids were added to the composited wash liquid supernatant (prior to centrifuging) obtained from this test sample. The >40 mesh and >120 mesh fractions from this sample, as well as the washed solids from each of the other soil washing tests, were then air dried.

Samples of the centrifuged wash liquid from each soil wash test were submitted to WESTON's Fate and Effects Laboratory for Chemical Oxygen Demand (COD) analysis on May 17, 1994.

Samples of air dried washed solids were analyzed at the ETL for PCP content using Millipore enzyme immunoassay test kits. The washed solids, centrifuged wash liquid, and fine solids removed from the liquid were shipped on May 17, 1994 to a subcontract laboratory (GP Environmental, located in Gaithersburg, Maryland) for PCP analysis. Copies of the chain of custody forms accompanying these analytical samples are included in Appendix A. Copies of the chain of custody forms were sent to ERT TAT personnel. The analytical results will also be forwarded to ERT TAT.

2.3 Solidification/Stabilization Study

S/S tests were conducted at the PWP site on April 15-16, 1994 by U.S. EPA ERT and REAC personnel. Soil samples collected on April 13, 1994 were used for all samples.

Type I Portland cement, both alone and in combination with several chemical additives, was used to treat the soil samples. The following cement-based mixtures were evaluated using soil sample ACA:

- 10% Cement
- 20% Cement
- 20% Cement/5% Silicate
- 20% Cement/0.3% Hydrogen Peroxide
- 33% Cement

The following cement-based mixtures were evaluated using soil sample Penta/ACA:

- 20% Cement
- 20% Cement/5% Carbon
- 20% Cement/5% Clay
- 20% Cement/5% Silicate
- 20% Cement/5% Clay/5% Silicate

The following cement-based mixtures were evaluated using a washed sample of Penta/ACA soil:

- 20% Cement
- 20% Cement/5% Clay
- 20% Cement/5% Carbon

The test matrices listed above were designed to determine whether treatment with cement (by itself or in combination with other additives) is a feasible remediation option for soils contaminated with ACA or a mixture of PCP and ACA. All reagents (with the exception of hydrogen peroxide) were used at levels of 5 percent by weight of the as-received soil in the mixture. This dosage was not based on chemical treatment optimization but rather to ensure that performance effects due to the presence of the additives would be distinguishable from those of cement by itself.

All treatment formulations were mixed using a Hobart mixer. The minimum amount of water was added that would produce a workable yet not too flowable mix. The cement-treated soil mixtures were tamped into cylindrical molds which were then placed into a constant temperature (approximately 10-20 degrees C) controlled humidity curing chamber for a period of 28 days. The samples were allowed to cure for several days in a curing chamber located on the PWP site. On April 20, 1994 the cement cores were transported to WESTON's ETL for the remainder of the 28 day curing period.

The molded and cured cement samples were removed from the curing chamber on May 16, 1994 and UCS values determined. These samples were then crushed to approximately 1/8 inch in diameter using a hammermill. This was done to ensure sample homogeneity. Samples of the crushed cement cores were shipped to GP Environmental on May 17, 1994 for PCP, TCLP PCP, and TCLP metals (As, Cu, and Zn) analyses. Copies of the chain of custody forms accompanying these samples are included in Appendix A. Copies of the chain of custody forms were also sent to ERT TAT personnel. The analytical results will also be forwarded to ERT TAT.

It should be noted that several cement molds of each sample were made. There are sufficient cement molds remaining for permeability, wet/dry, and freeze/thaw testing to be conducted. They are currently in storage in the cement curing chamber, which has been placed in cold storage (4 degrees C) at the ETL pending further testing requirements.

2.4 Analytical Test methods

2.4.1 Chemical Test Methods

Untreated soil samples were initially analyzed for PCP, metals (arsenic, copper, and zinc), and TCLP PCP and TCLP metals (arsenic, copper, and zinc). PCP and metals

analyses were conducted according to SW 846. TCLP tests followed 625/CLP (PCP) and EPA 600/CFR 40 (arsenic, copper and zinc). Cured and crushed cement-treated soil mixtures were analyzed for PCP and TCLP (PCP and arsenic, copper, and zinc) using the methods cited above.

On-site PCP screening using Ohmicron and Millipore enzyme immunoassay test kits was also conducted, as were metals (arsenic, copper, and zinc) analyses using X-ray fluorescence techniques.

2.4.2 Physical Test Methods

2.4.2.1 Bulk Density/ Specific Gravity

Bulk density measurements of untreated soil samples and cured cement-treated soil mixtures were determined by weighing a specimen of known volume and mass and reporting the mass per unit volume. American Society for Testing Materials (ASTM) method D2937-83 was followed, with the exception that as-received density values of untreated soil samples were derived rather than in-situ density values. This was necessary since no undisturbed soil cores were available. Specific gravity measurements were obtained in accordance with ASTM D854. Appendix B contains bulk density data and other laboratory notes.

2.4.2.2 Moisture Content

Moisture content of untreated soil samples as well as uncured and cured cement-treated soil mixtures was determined by drying a known mass of moisture-containing sample in an oven at 105 degrees C. The mass of the dried sample was then determined. Moisture content was expressed in percent as $[(\text{wet sample mass} - \text{dry sample mass}) / \text{wet sample mass}] \times 100$. ASTM method D2216-90 was followed.

2.4.2.3 pH Determination

The pH values of all prepared soil wash solutions, as well as untreated soils and cured cement-treated soil mixtures were determined according to ASTM test procedure D4972-89. Test samples were prepared by adding 10 grams (g) soil or soil/cement mixture to 10 milliliters (ml) deionized water, shaking, and allowing the mixture to reach equilibrium for 1 hour. A pH meter was used to measure the pH of all samples.

2.4.2.4 Grain Size Analysis

Grain size analysis of untreated soils was conducted in accordance with ASTM method D422-63. This method utilized a series of stacked sieves to determine the distribution of particle sizes larger than 200 mesh (75 micrometers), while the distribution of particle sizes smaller than 200 mesh was determined by a sedimentation process using a hydrometer to obtain the needed data. A field adaptation of this method utilizing sieve screening only was employed to provide approximate particle size distributions of soil samples on a fast turnaround basis.

2.4.2.5 Unconfined Compressive Strength

Unconfined compressive strength of cured cement-treated soil mixtures was determined by measuring the ability of a cylindrical molded sample of known dimension to resist uniaxial compressive stress. A Soiltest U-560A compression testing machine was used to conduct the tests. ASTM method D1633-84 was followed.

2.4.2.6 Chemical Oxygen Demand

Chemical oxygen demand values were determined using the reactor digestion method for wastewater and sea water. A Hach test kit was used for this method, which provides a colorimetric indication of the COD level.

3.0 RESULTS

Attached are 23 data tables that summarize the experimental results of all of the treatability tests conducted during this project. The analytical data presented in the following tables are based on preliminary analytical reports. The data should be used with caution and should not be used as a basis for process or treatment design. Appendix A contains laboratory reports of engineering analytical samples.

Tables 1 - 3 provide background information on untreated soils from the PWP site.

Tables 4 - 15 contain performance data for evaluation of soil washing treatments.

Tables 16 - 23 contain performance data for evaluation of S/S treatments.

Figures 1 - 4 show particle size distribution curves for several soils.

Due to REAC contract time constraints, no discussion of results is included in this memo.

REFERENCES

1. Parikh, K., 1992. "Final Report - Immobilization Treatability Studies, PSC Resources Site, Palmer, Massachusetts; Brunswick Wood Preserving, Brunswick, Georgia; Escambia Treating Company, Pensacola, Florida." Roy F. Weston/REAC, Edison, New Jersey.

Tables

TABLE 1
 PCP Results for Penta and ACA Soil Sample Particle Size Fractions
 Penta Wood Products
 Siren, WI
 May 1994

Particle Size Fraction	Equivalent Particle Size	PCP Concentration		Size Fraction Weight %		PCP in Size Fraction (%)	
		Penta Soil	ACA Soil	Penta Soil	ACA Soil	Penta Soil	ACA Soil
> 18 Mesh	> 1 mm	1,600	1,100	11.3	3.9	17.5	5.5
> 60 Mesh	> 250 um	950	520	75.9	67.3	69.7	44.7
> 120 Mesh	> 125 um	1,300	1,000	7.4	17.1	9.3	21.8
> 200 Mesh	> 75 um	2,800	1,900	0.8	3.3	2.2	8.0
< 200 Mesh	< 75 um	3,500	2,300	0.4	6.8	1.3	20.0

Results in milligrams per kilogram (mg/kg).

Note: Analysis of >10 mesh particle size range not conducted. However, >10 mesh particle size range in Penta and ACA soil samples was 4.3% and 1.6% respectively. Size fraction PCP percentages do not include PCP contribution by >10 mesh particle size range.

DRAFT

TABLE 2
 Relationship Between PCP Levels and TCLP PCP Levels in Soil
 Penta Wood Products
 Siren, WI
 May 1994

Soil Sample	PCP (mg/kg)	TCLP PCP (mg/l)	Kd (1) PCP
700N 1700E 0	34	1.3	26.1
1100N 1100E 0	1.7 J	0.002 J	850
1200N 1400E 0	37	0.021	1,762
Penta Sump area	1,100	6.8	162
ACA Untreated	9.3	0.01 U	930
Penta/ACA Untreated	1,600	0.25	6,400
Washed Penta/ACA Untreated	1,900	0.29	6,551

(1) $K_d = \text{Soil PCP concentration (mg/kg)} / \text{TCLP PCP concentration (mg/l)}$.

U indicates compound not found below detection limit.

J indicates compound found below detection limit.

DRAFT

TABLE 3
 Relationship Between Metals Levels and TCLP Metals Levels in Soil
 Penta Wood Products
 Siren, WI
 May 1994

Soil Sample	As (mg/kg)	Cu (mg/kg)	Zn (mg/kg)	TCLP As (mg/l)	TCLP Cu (mg/l)	TCLP Zn (mg/l)	Kd (3) (As)
ACA Untreated	271 (1)	529	69.1	1.2	9.0	1.5	226
Penta/ACA Untreated	20,600 (1)	30,400	17,900	151	153	244	136
Washed Penta/ACA Untreated	24,500 (1)	35,000	23,400	143	143	191	171
ACA Wood Storage Area	40.8 (1)	111	25.3	0.093 B	1.8	0.33	439
Chemonite Area 1	9,900 (1)	21,400	5,840	120	201	135	82.5
700 N 1700E 0	130 J (2)	75 U	56 U	0.040 U	0.20	0.16	3250
1200N 1400E 0	100 J/170/310 (2)	75 U/170 J/130 J	56 U/64 J/56 U	0.14 B	0.40	0.094 B	1380

(1) Analyzed by ICP.

(2) Analyzed by XRF.

(3) $Kd = \text{Soil As concentration (mg/kg)} / \text{TCLP As concentration (mg/l)}$.

U indicates compound not found below detection limit.

B indicates compound found in blank.

J indicates compound found below detection limit.

DRAFT

TABLE 4
 PCP Results for Penta Soil Samples – Soil Washing Study
 Penta Wood Products
 Siren, WI
 May 1994

Treatment	PCP Concentration	Removal (%)
Untreated	1,800 (1)	--
Control – Water (1 Wash)	980	46
Control – Water (2 Washes)	900	50
Tergitol NP–10 (1 Wash)	890	51
pH 10 (1 Wash)	830	54
pH 10/Tergitol NP–10 (1 Wash)	790	56
pH 10/Tergitol NP–10 (2 Washes)	480	73
pH 10/Tergitol NP–10 (1 Wash, 1 Rinse)	600	67
pH 10/Tergitol NP–10 (1 Wash) Duplicate	800	56
Tween 80 (1 Wash)	760	58
pH 10/Tween 80 (1 Wash)	790	56
pH 10/Tween 80 (2 Washes)	420	77
pH 10/Tween 80 (Wash/Rinse)	520 (2)	71
Tween 80 (1 Wash) Duplicate	900	50

Results in milligrams per kilogram (mg/kg).

- (1) PCP concentration by immunoassay test: >51 mg/kg.
- (2) PCP concentration by immunoassay test: >53 mg/kg.

DRAFT

TABLE 5
 PCP Results for Penta/ACA Soil Samples – Soil Washing Study
 Penta Wood Products
 Siren, WI
 May 1994

Treatment	PCP Concentration	Removal (%)
Untreated	1,500 (1)	--
Control – Water (1 Wash)	1,400	7
Control – Water (2 Washes)	1,500	0
Tergitol NP–10 (1 Wash)	1,600	–7
pH 10 (1 Wash)	1,800	–20
pH 10/Tergitol NP–10 (1 Wash)	2,100	–40
pH 10/Tergitol NP–10 (2 Washes)	1,900 (2)	–27
pH 10/Tergitol NP–10 (1 Wash, 1 Rinse)	2,000	–33
Silicate (1 Wash)	2,000	–33

Results in milligrams per kilogram (mg/kg).

- (1) PCP concentration by immunoassay test: >52 mg/kg.
- (2) PCP concentration by immunoassay test: >67 mg/kg.

DRAFT

TABLE 6
 PCP Results for Penta Supernatant Samples – Soil Washing Study
 Penta Wood Products
 Siren, WI
 May 1994

Treatment	PCP Concentration	
	Wash 1	Wash 2 (1)
Control – Water (1 Wash)	190	--
Control – Water (2 Washes)	240	72
Tergitol NP–10 (1 Wash)	48	--
pH 10 (1 Wash)	250	--
pH 10/Tergitol NP–10 (1 Wash)	28	--
pH 10/Tergitol NP–10 (2 Washes)	21	14
pH 10/Tergitol NP–10 (1 Wash, 1 Rinse)	13	18
pH 10/Tergitol NP–10 (1 Wash) Duplicate	18	--
Tween 80 (1 Wash)	51	--
pH 10/Tween 80 (1 Wash)	14	--
pH 10/Tween 80 (2 washes)	21	32
pH 10/Tween 80 (Wash/Rinse)	2.6 J (2)	2.2
Tween 80 (1 wash) Duplicate	51	--

Results in milligrams per liter (mg/l).

J indicates compound detected below MDL.

(1) May consist of wash or rinse step.

(2) PCP concentration by immunoassay test: >20 ug/l.

DRAFT

TABLE 7
PCP Results for Penta/ACA Supernatant Samples – Soil Washing Study
Penta Wood Products
Siren, WI
May 1994

Treatment	PCP Concentration	
	Wash 1	Wash 2 (1)
Control – Water (1 Wash)	7.8	--
Control – Water (2 Washes)	8.1	9.3
Tergitol NP–10 (1 Wash)	43	--
pH 10 (1 Wash)	37	--
pH 10/Tergitol NP–10 (1 Wash)	35	--
pH 10/Tergitol NP–10 (2 Washes)	35 (2)	27
pH 10/Tergitol NP–10 (1 Wash, 1 Rinse)	35	18
Silicate (1 wash)	3.1 J	--

Results in milligrams per liter (mg/l).

J indicates compound detected below MDL.

(1) May consist of wash or rinse step.

(2) PCP concentration by immunoassay test: >31 ug/l.

DRAFT

TABLE 8
 Metals Results for Penta Soil Samples – Soil Washing Study
 Penta Wood Products
 Siren, WI
 May 1994

Treatment	XRF			ICP		
	As	Cu	Zn	As	Cu	Zn
Untreated	ND	119 J	175 J	41.0	79.5	80.1
Control – Water (1 Wash)	ND	ND	73 J	33.8	53.5	54.0
Control – Water (2 Washes)	ND	76 J	93 J	0.19 u	42.3	47.1
Tergitol NP–10 (1 Wash)	ND	79 J	132 J	31.9	47.3	53.8
pH 10 (1 Wash)	ND	98 J	150 J	27.5	64.2	62.3
pH 10/Tergitol NP–10 (1 Wash)	ND	ND	126 J	23.7	49.6	52.7
pH 10/Tergitol NP–10 (2 Washes)	339	865	331	22.1	47.1	53.3
pH 10/Tergitol NP–10 (1 Wash, 1 Rinse)	ND	139 J	104 J	33.8	56.2	59.2
pH 10/Tergitol NP–10 (1 Wash) Duplicate	ND	89 J	78 J	20.2	46.5	54.1
Tween 80 (1 Wash)	ND	97 J	141 J	25.5	101	87.8
pH 10/Tween 80 (1 Wash)	ND	82 J	96 J	17.9	51.2	54.3
pH 10/Tween 80 (2 Washes)	ND	84 J	98 J	13.5	45.9	50.6
pH 10/Tween 80 (Wash/Rinse)	ND	ND	108 J	15.5	69.8	50.9
Tween 80 (1 Wash) Duplicate	ND	ND	108 J	37.0	50.8	54.7

Results in milligrams per kilogram (mg/kg).

ND indicates compound not detected.

DRAFT

TABLE 9
Metals Results for Penta/ACA Soil Samples – Soil Washing Study
Penta Wood Products
Siren, WI
May 1994

Treatment	XRF			ICP		
	As	Cu	Zn	As	Cu	Zn
Untreated	30,100	45,500	26,200	21,200	31,000	18,400
Control – Water (1 Wash)	29,400	44,100	24,200	20,100	28,700	16,500
Control – Water (2 Washes)	30,600	46,700	25,800	23,300	33,400	21,000
Tergitol NP–10 (1 Wash)	34,000	50,300	28,600	22,400	32,000	19,400
pH 10 (1 Wash)	31,900	46,200	25,500	25,000	35,200	22,000
pH 10/Tergitol NP–10 (1 Wash)	35,000	53,700	30,100	21,300	31,300	18,300
pH 10/Tergitol NP–10 (2 Washes)	33,600	50,900	29,400	21,800	31,500	19,200
pH 10/Tergitol NP–10 (1 Wash, 1 Rinse)	29,600	45,600	25,500	22,400	31,800	19,400
Silicate (1 Wash)	28,700	42,800	23,800	24,100	34,800	19,100

Results in milligrams per kilogram (mg/kg).

DRAFT

TABLE 10
 Metals Results for Penta Supernatant Samples – Soil Washing Study
 Penta Wood Products
 Siren, WI
 May 1994

Treatment	Wash 1			Wash 2 (1)		
	As	Cu	Zn	As	Cu	Zn
Control – Water (1 Wash)	0.49	2.13	1.87	--	--	--
Control – Water (2 Washes)	0.53	1.82	1.72	0.39	0.92	0.78
Tergitol NP–10 (1 Wash)	0.61	1.57	1.31	--	--	--
pH 10 (1 Wash)	0.59	1.99	1.90	--	--	--
pH 10/Tergitol NP–10 (1 Wash)	0.60	2.19	2.05	--	--	--
pH 10/Tergitol NP–10 (2 Washes)	0.51	2.02	1.90	0.33	0.97	0.88
pH 10/Tergitol NP–10 (1 Wash, 1 Rinse)	0.36	0.79	0.79	0.37	1.03	0.90
pH 10/Tergitol NP–10 (1 Wash) Duplicate	0.67	1.77	1.69	--	--	--
Tween 80 (1 Wash)	0.86	2.69	2.50	--	--	--
pH 10/Tween 80 1 Wash)	0.58	1.95	1.95	--	--	--
pH 10/Tween 80 (2 Washes)	0.81	2.60	2.56	0.26	0.71	0.66
pH 10/Tween 80 (Wash/Rinse)	0.70	2.10	2.14	0.29	0.73	0.67
Tween 80 (1 Wash) Duplicate	0.65	1.77	1.74	--	--	--

Results in milligrams per liter (mg/l).

(1) May consist of wash or rinse step.

DRAFT

TABLE 11
 Metals Results for Penta/ACA Supernatant Samples – Soil Washing Study
 Penta Wood Products
 Siren, WI
 May 1994

Treatment	Wash 1			Wash 2 (1)		
	As	Cu	Zn	As	Cu	Zn
Control – Water (1 Wash)	94.5	129	82.5	--	--	--
Control – Water (2 Washes)	80.7	111	70.6	72.7	91.1	64.3
Tergitol NP-10 (1 Wash)	43.0	65.8	33.2	--	--	--
pH 10 (1 Wash)	53.1	75.6	46.7	--	--	--
pH 10/Tergitol NP-10 (1 Wash)	76.9	99.1	65.8	--	--	--
pH 10/Tergitol NP-10 (2 Washes)	113	14.4	98.4	58.3	77.8	46.8
pH 10/Tergitol NP-10 (1 Wash, 1 Rinse)	85.1	116	71.5	50.7	63.0	42.8
Silicate (1 Wash)	200	256	183	--	--	--

Results in milligrams per liter (mg/l).

(1) May consist of wash or rinse step.

DRAFT

TABLE 12
PCP and Metals Results for Supernatant Samples from Large Penta/ACA Soil Batch
Penta Wood Products
Siren, WI
May 1994

Treatment	Contaminant Concentration			
	PCP	As	Cu	Zn
pH 10/Tween 80 (1 Wash, 1 Rinse) Wash Liquid	9.6	20.7	29.7	15.9
pH 10/Tween 80 (1 Wash, 1 Rinse) Rinse Liquid	1.3	13.3	16.5	10.5

Results in milligrams per liter (mg/l).

Note: Washed soil from this treatment is "Washed Penta/ACA Untreated Soil" and is summarized in S/S data tables.

DRAFT

TABLE 13
 Immunoassay PCP Results for Penta Seep Soil Samples – Soil Washing Study
 Penta Wood Products
 Siren, WI
 May 1994

Treatment	Optical Density	Estimated PCP Concentration
Negative Control	0.73–0.76	0
10 ppm Calibration Standard	0.38–0.41	10
100 ppm Calibration Standard	0.18–0.19	100
Untreated Seep Soil	0.10	>100
Control – Water (3 Washes)	0.18	100
pH 10 (3 Washes)	0.27	10–100
pH 10 (3 Washes) Duplicate	0.23–0.25	10–100
pH 11 (3 washes)	0.18–0.19	100
pH 10/Air Sparging > 40 Mesh (3 Washes)	0.22	<100
pH 10/Air Sparging > 120 Mesh (3 Washes)	0.19	100
pH 10/Sodium hexametaphosphate (3 Washes)	0.23	10–100
pH 10/Tergitol NP–10 (3 Washes)	0.19	100

Results in milligrams per kilogram (mg/kg).

DRAFT

TABLE 14
Immunoassay PCP Results for Penta Seep Soil Samples – Soil Washing Study
Penta Wood Products
Siren, WI
May 1994

Treatment	Optical Density	Estimated PCP Concentration
Negative Control	0.64	0
10 ppm Calibration Standard	0.41	10
100 ppm Calibration Standard	0.19–0.20	100
Untreated Seep Soil – 10x Dilution	0.21	1,000
Untreated Seep Soil – 100x Dilution	0.34–0.35	>1,000

Results in milligrams per kilogram (mg/kg).

DRAFT

<p style="text-align: center;">TABLE 15 COD Results for Centrifuged Penta Seep Supernatant Samples – Soil Washing Study Penta Wood Products Siren, WI May 1994</p>	
Treatment	COD (mg/l)
Control – Water (3 Washes)	140
Control – Water (3 Washes) Duplicate	130
pH 10 (3 Washes)	130
pH 11 (3 washes)	140
pH 10/Air Sparging (3 Washes)	130
pH 10/Sodium hexametaphosphate (3 Washes)	350
pH 10/Tergitol NP-10 (3 Washes)	2,700 (1)

(1) Value includes COD of surfactant.

DRAFT

TABLE 16
PCP and Metals Results for Untreated Soil Samples-- S/S Study
Penta Wood Products
Siren, WI
May, 1994

Sample	Contaminant			
	PCP	As	Cu	Zn
ACA Untreated	9.3	271	529	69.1
Penta/ACA Untreated	1,600	20,600	30,400	17,900
Washed Penta/ACA Untreated	1,900	24,500	35,000	23,400

Results in milligrams per kilogram (mg/kg).

DRAFT

TABLE 17
 TCLP Results for Untreated Soil Samples – S/S Study
 Penta Wood Products
 Siren, WI
 May, 1994

Sample	Contaminant			
	PCP (ug/l)	As (mg/l)	Cu (mg/l)	Zn (mg/l)
ACA Untreated	10U	1.2	9.0	1.5
Penta/ACA Untreated	250	151	153	244
Washed Penta/ACA Untreated	290	143	143	191

U indicates compound not found below detection limit.

DRAFT

<p style="text-align: center;">TABLE 18 Unconfined Compressive Strength Results for ACA Soil Samples – S/S Study Penta Wood Products Siren, WI May 1994</p>	
Treatment	Maximum Strength (psi)
10% Cement	286
10% Cement Duplicate	213
20% Cement	1,783
20% Cement/5% Silicate	1,910 (1)
20% Cement/0.3% Peroxide	1,194
33% Cement	2,184 (1)

(1) Test discontinued – instrument load limit of approximately 6,000 lb reached before mold broke.

6-8" THICK

DRAFT

<p style="text-align: center;">TABLE 19 Unconfined Compressive Strength Results for Penta/ACA Soil Samples – S/S Study Penta Wood Products Siren, WI May 1994</p>	
Treatment	Maximum Strength (psi)
20% Cement	1.6
20% Cement/5% Carbon	NA (1)
20% Cement/5% Silicate	1.6
20% Cement/5% Clay	1.9
20% Cement/5% Clay/5% Silicate	0.6

(1) Test not conducted – mold lacked physical integrity.

DRAFT

TABLE 20
Unconfined Compressive Strength Results for Washed Penta/ACA Soil Samples – S/S Study
Penta Wood Products
Siren, WI
May 1994

Treatment	Maximum Strength (psi)
20% Cement	4.1
20% Cement/5% Carbon	5.1
20% Cement/5% Clay	3.2

DRAFT

TABLE 21
 Physical Characteristics Results for ACA Soil Samples – S/S Study
 Penta Wood Products
 Siren, WI
 May 1994

Treatment	Moisture (%)		pH (s.u.)		Cured Sample Bulk Density (g/cc)
	Uncured	Cured	Uncured	Cured	
Untreated	6.2	--	5.1 (2)	--	1.46 (3)
10% Cement	11.4/12.2	10.2	11 (1)	12.4 (2)	1.98
20% Cement	10.6	8.1	12 (1)	12.4 (2)	1.97
20% Cement/5% Silicate	10.9/11.3	10.3	12 (1)	12.6 (2)	1.93
20% Cement/0.3% Peroxide	13.0	10.4	11 (1)	12.5 (2)	1.91
33% Cement	10.8	8.4	12 (1)	12.3 (2)	2.03

- (1) Measured using pH paper.
- (2) Measured using pH meter.
- (3) As-received bulk density.

DRAFT

TABLE 22
Physical Characteristics Results for Penta/ACA Soil Samples – S/S Study
Penta Wood Products
Siren, WI
May 1994

Treatment	Moisture (%)		pH (s.u.)		Cured Sample Bulk Density (g/cc)
	Uncured	Cured	Uncured	Cured	
Untreated	8.6	--	9.0 (2)	--	1.28 (3)
20% Cement	23.2	21.9	11 (1)	9.7 (2)	1.73
20% Cement/5% Carbon	23.3/22.3	22.1	11 (1)	10.5 (2)	1.67
20% Cement/5% Silicate	22.9	25.4/23.3	11 (1)	11.8 (2)	1.67
20% Cement/5% Clay	20.0	22.5	11 (1)	10.2 (2)	1.72
20% Cement/5% Clay/5% Silicate	21.9	23.8	11 (1)	10.8 (2)	1.52

- (1) Measured using pH paper.
- (2) Measured using pH meter.
- (3) As-received bulk density.

DRAFT

TABLE 23
Physical Characteristics Results for Washed Penta/ACA Soil Samples – S/S Study
Penta Wood Products
Siren, WI
May 1994

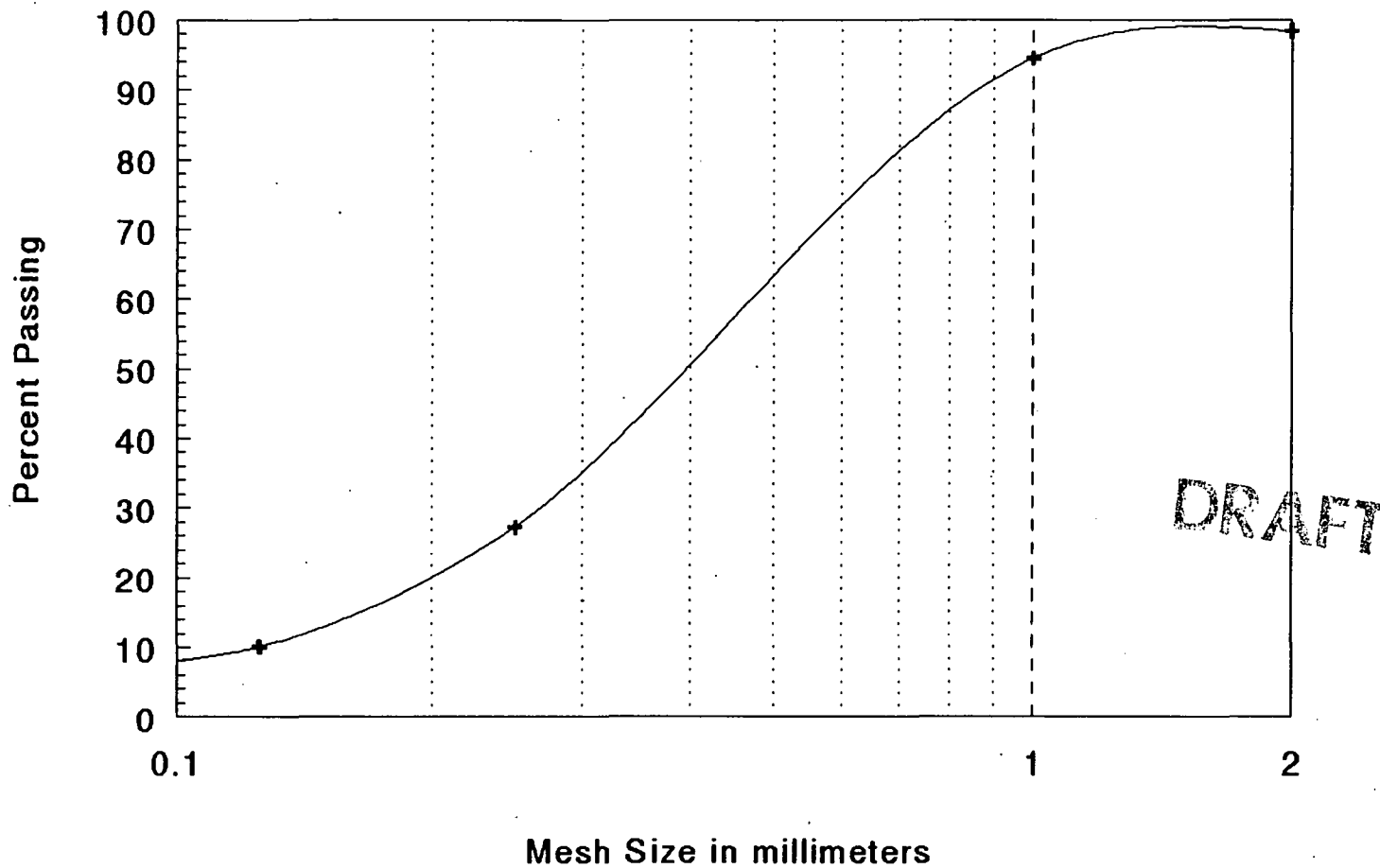
Treatment	Moisture (%)		pH (s.u.)		Cured Sample Bulk Density (g/cc)
	Uncured	Cured	Uncured	Cured	
Untreated	41.9	--	9.0 (2)	11.2 (2)	1.63 (3)
20% Cement	19.8	17.5	11 (1)	11.2 (2)	1.81
20% Cement/5% Carbon	19.8	19.3	11 (1)	10.7 (2)	1.66
20% Cement/5% Clay	18.4	17.6	11 (1)	11.1 (2)	1.76

- (1) Measured using pH paper.
- (2) Measured using pH meter.
- (3) As-received bulk density.

DRAFT

Figures

ACA Grain Size Analysis



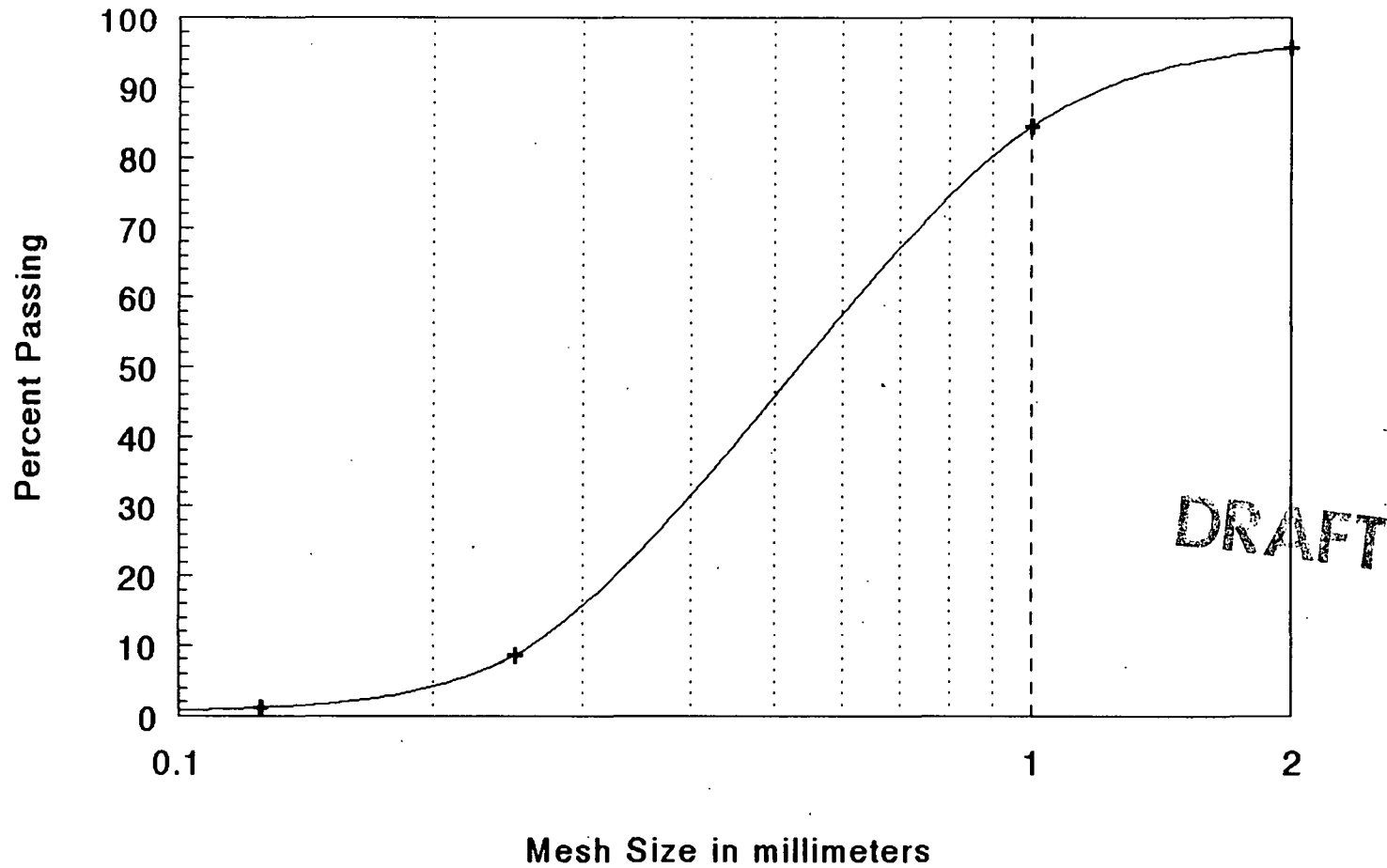
+

U.S. EPA ENVIRONMENTAL RESPONSE TEAM
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
WO# 03347-035-001-6932-01
68-03-3482

FIGURE 1
PENTA WOOD PRODUCTS
SIREN, WISCONSIN
MAY 1994

PCP

Grain Size Analysis



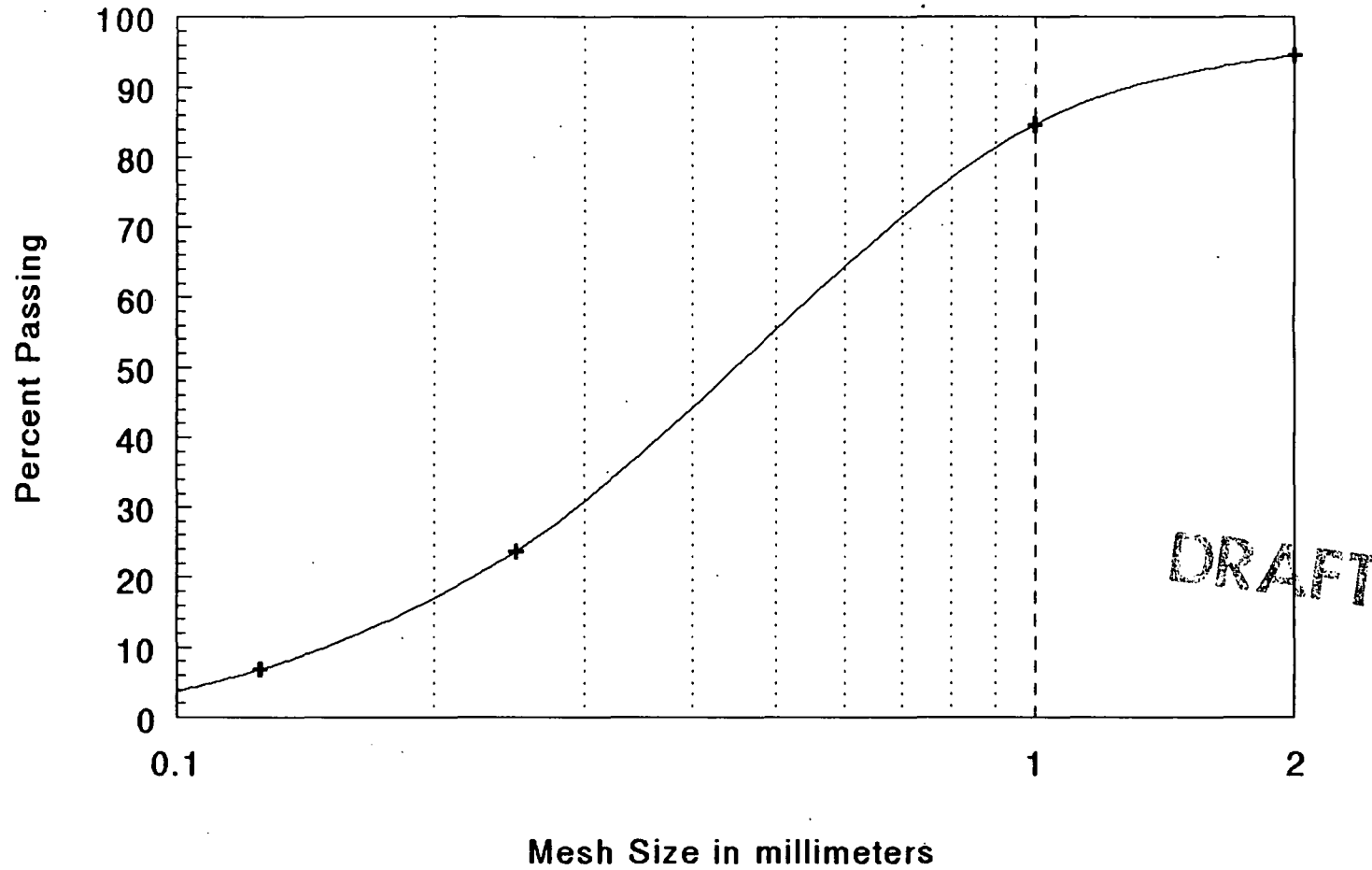
+

U.S. EPA ENVIRONMENTAL RESPONSE TEAM
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
WO# 03347-035-001-6932-01
68-03-3482

FIGURE 2
PENTA WOOD PRODUCTS
SIREN, WISCONSIN
MAY 1994

PCP/ACA

Grain Size Analysis



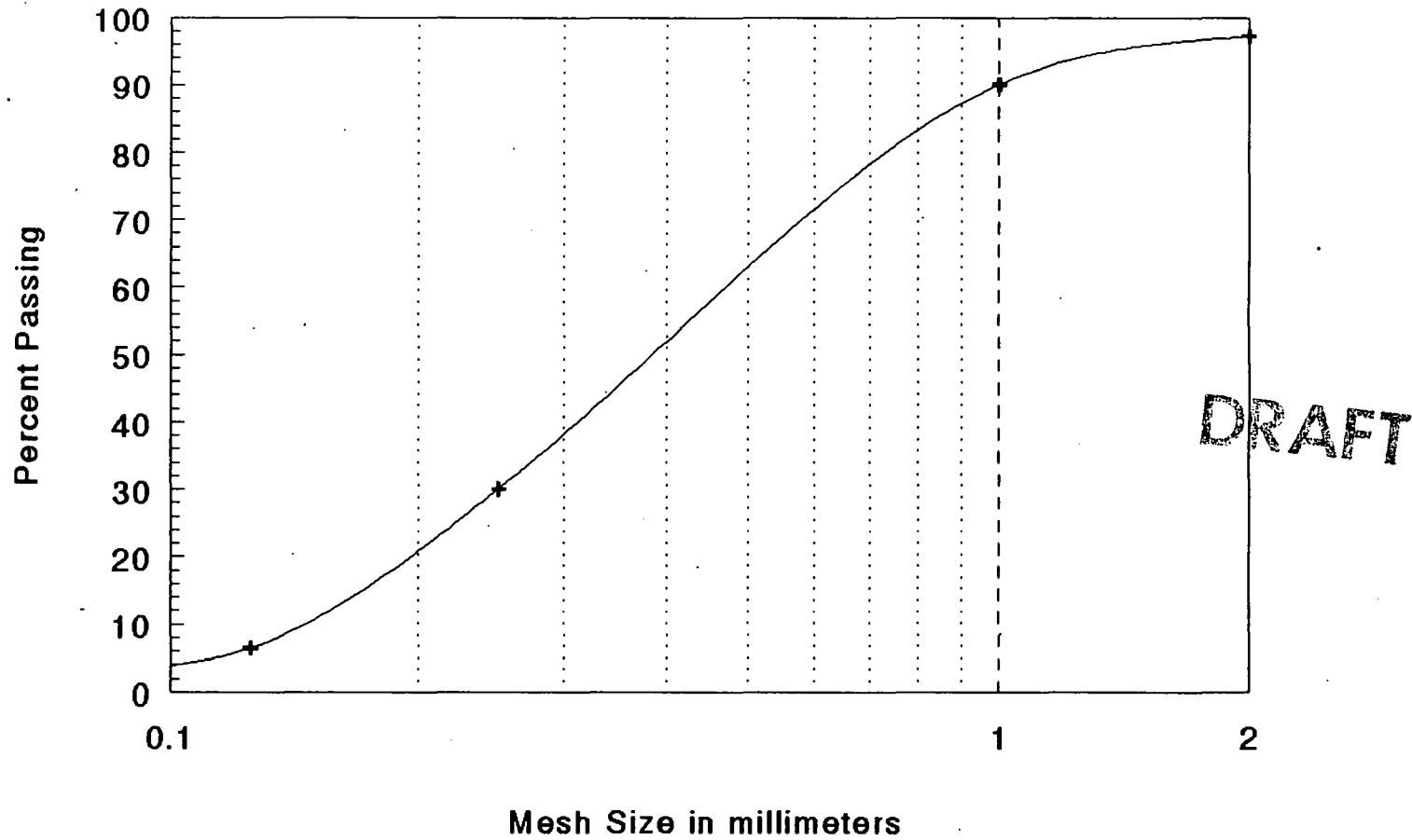
+

U.S. EPA ENVIRONMENTAL RESPONSE TEAM
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
WO# 03347-035-001-6932-01
68-03-3482

FIGURE 3
PENTA WOOD PRODUCTS
SIREN, WISCONSIN
MAY 1994

ASH PILE

Grain Size Analysis



+

U.S. EPA ENVIRONMENTAL RESPONSE TEAM
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
WO# 03347-035-001-6932-01
68-03-3482

FIGURE 4
PENTA WOOD PRODUCTS
SIREN, WISCONSIN
MAY 1994

Appendix A

APPENDIX A
Analytical Reports
Penta Wood Products
May 1994



GSA RARITAN DEPOT
2890 WOODBRIDGE AVENUE
BLDG. 209 ANNEX
EDISON, NJ 08837-3679
908-321-4200 • FAX: 908-494-4021

DATE: 5-6-94
TO: R. Singhvi, ERT/EPA
FROM: Misty Barkley, Analytical Project Control Group Leader *OK for BB*
SUBJECT: Preliminary Results of Project Penta, WA# 6932

Attached please find the preliminary results of the above referenced project for the following samples.

Chain of Custody No.

Analyses

9385

4 soils for TCLP As, Cu, Zn, PCP

cc: Central File
Subcontracting
Misty Barkley
Wam: H, ALLEN
Task Leader: R. HENRY.

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Project Name: PENTA
Project Number: 6932
RFW Contact: M. Mohr Phone: 908-327-4257

No: 9385

SHEET NO. 1 OF 1

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	TCLP*				
	B25558	700 N, 1700 E	S	4/12/94	1	4 DEG/NONE	X	<div style="position: absolute; top: 0; right: 0; font-size: 2em;">MFA</div> <div style="position: absolute; bottom: 0; left: 0; font-size: 2em;">MFA</div>			
	B25559	1100 N, 1100 E	↓	↓	↓	↓					
	B25560	1200 N, 1400 E	↓	↓	↓	↓					
	B25561	PENTA SUMP AREA	↓	↓	↓	↓					

- Matrix:
- Sediment
 - Drum Solids
 - Drum Liquids
 - Other
- PW - Potable Water
GW - Groundwater
SW - Surface Water
SL - Sludge
- S - Soil
W - Water
O - Oil
A - Air

Special Instructions:

X TCLP FOR PCP, As, Cu, Zn

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
Analysis	M. Mohr	4/12/94									

SENT BY: : 5-5-94 : 14:32 : 12015411383- 6062827875: # 2

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6597
SAMPLE NUMBER	9405482
DATA FILE	F6729
CLIENT NAME	WRFI
FIELD ID	B2555B

MATRIX	Leachate
DILUTION FACTOR	20
DATE EXTRACTED	04/25/94
DATE ANALYZED	05/05/94
ANALYZED BY	PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	1300	200

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.**

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER 6597
 SAMPLE NUMBER 9405483
 DATA FILE DF6674
 CLIENT NAME WRFI
 FIELD ID B25559

MATRIX Leachate
 DILUTION FACTOR 1
 DATE EXTRACTED 04/27/94
 DATE ANALYZED 05/02/94
 ANALYZED BY PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	2 J	10

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected,

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.**

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6597	MATRIX	Leachate
SAMPLE NUMBER	9405484	DILUTION FACTOR	1
DATA FILE	EF6675	DATE EXTRACTED	04/27/94
CLIENT NAME	WRF1	DATE ANALYZED	05/02/94
FIELD ID	B25560	ANALYZED BY	PAJL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachloropheno]	21	10

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected,

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.**

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6597</u>	MATRIX	<u>Leachate</u>
SAMPLE NUMBER	<u>9405485</u>	DILUTION FACTOR	<u>100</u>
DATA FILE	<u>>F6728</u>	DATE EXTRACTED	<u>04/25/94</u>
CLIENT NAME	<u>WRF1</u>	DATE ANALYZED	<u>05/05/94</u>
FIELD ID	<u>B25561</u>	ANALYZED BY	<u>PAUL</u>

.....			
CAS #	COMPOUND	UG/L	MDL
.....			
97865	Pentachlorophenol	6800	1000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected,

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.**

3C

WATER SEMI-VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Accredited Labs, Inc.

Matrix Spike - Lab Sample No.: 9405264

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC#	QC LIMITS REC
Pentachlorophenol	100	622	760	138*	9-103

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC#	% RPD#	QC LIMITS RPD	REC
Pentachlorophenol	100	746	124*	11	50	9-103

Column to be used to flag recovery and RPD values with an asterisk values outside of qc limits

RPD: 0 out of 2 outside limits

Spike Recovery: 2 out of 2 outside limits

COMMENTS:

NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

ACCREDITED LABORATORIES INC.

REGULATED TCLP METALS

FIELD ID.

B25558

Client : WRFI

Case No.: 6597

Matrix: EXTRACT

Lab Sample ID: 9405482

Date Received: 04/21/94

Concentration Units (mg/L): MG/L

CAS No.	Analyte	Concentration	C	M	MDL	Regulatory Level
7440-38-2	Arsenic	0.040	U	P	1.00	5.00
7440-39-3	Barium			NR	0.50	100.00
7440-43-9	Cadmium			NR	0.03	1.00
7440-47-3	Chromium			NR	0.03	5.00
7440-50-8	Copper	0.20		P	0.10	
7439-92-1	Lead			NR	0.50	5.00
7439-97-6	Mercury			NR	0.05	0.20
7440-02-0	Nickel			NR	0.10	
7782-49-2	Selenium			NR	0.50	1.00
7440-22-4	Silver			NR	0.03	5.00
7440-28-0	Thallium			NR	0.30	
7440-66-6	Zinc	0.16		P	0.10	
NO OO EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.						

Comments:

DATE ANALYZED: (P) 4/29/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
- U -- less than the IDL
- P -- analyzed by ICP
- CV -- analyzed by cold vapor
- F -- analyzed by GFA
- A -- analyzed by flame AA
- NR -- analysis not requested

ACCREDITED LABORATORIES INC.

REGULATED TCLP METALS

FIELD ID.

B25559

Client : WRFI

Case No.: 6597

Matrix: EXTRACT

Lab Sample ID: 9405483

Date Received: 04/21/94

Concentration Units (mg/L): MG/L

CAS No.	Analyte	Concentration	C	M	MDL	Regulatory Level
7440-38-2	Arsenic	0.19	B	P	1.00	5.00
7440-39-3	Barium			NR	0.50	100.00
7440-43-9	Cadmium			NR	0.03	1.00
7440-47-3	Chromium			NR	0.03	5.00
7440-50-8	Copper	0.43		P	0.10	
7439-92-1	Lead			NR	0.50	5.00
7439-97-6	Mercury			NR	0.05	0.20
7440-02-0	Nickel			NR	0.10	
7782-49-2	Selenium			NR	0.50	1.00
7440-22-4	Silver			NR	0.03	5.00
7440-28-0	Thallium			NR	0.30	
7440-66-6	Zinc	0.17		P	0.10	

**NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.**

Comments:

DATE ANALYZED: (P) 4/29/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
- U -- less than the IDL
- P -- analyzed by ICP
- CV -- analyzed by cold vapor
- F -- analyzed by GFA
- A -- analyzed by flame AA
- NR -- analysis not requested

ACCREDITED LABORATORIES INC.

REGULATED TCLP METALS

FIELD ID.

B25560

Client : WRFI

Case No.: 6597

Matrix: EXTRACT

Lab Sample ID: 9405484

Date Received: 04/21/94

Concentration Units (mg/L): MG/L

CAS No.	Analyte	Concentration	C	M	MDL	Regulatory Level
7440-38-2	Arsenic	0.14	B	P	1.00	5.00
7440-39-3	Barium			NR	0.50	100.00
7440-43-9	Cadmium			NR	0.03	1.00
7440-47-3	Chromium			NR	0.03	5.00
7440-50-8	Copper	0.40		P	0.10	
7439-92-1	Lead			NR	0.50	5.00
7439-97-6	Mercury			NR	0.05	0.20
7440-02-0	Nickel			NR	0.10	
7782-49-2	Selenium			NR	0.50	1.00
7440-22-4	Silver			NR	0.03	5.00
7440-28-0	Thallium			NR	0.30	
7440-66-6	Zinc	0.094	B	P	0.10	

NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/29/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
- U -- less than the IDL
- P -- analyzed by ICP
- CV -- analyzed by cold vapor
- F -- analyzed by GFA
- A -- analyzed by flame AA
- NR -- analysis not requested

ACCREDITED LABORATORIES INC.

REGULATED TCLP METALS

FIELD ID.

B25561

Client : WRFI

Case No.: 6597

Matrix: EXTRACT

Lab Sample ID: 9405485

Date Received: 04/21/94

Concentration Units (mg/L): MG/L

CAS No.	Analyte	Concentration	C	M	MDL	Regulatory Level
7440-38-2	Arsenic	0.30	B	P	1.00	5.00
7440-39-3	Barium			NR	0.50	100.00
7440-43-9	Cadmium			NR	0.03	1.00
7440-47-3	Chromium			NR	0.03	5.00
7440-50-8	Copper			NR	0.10	
7439-92-1	Lead	0.051	U	P	0.50	5.00
7439-97-6	Mercury			NR	0.05	0.20
7440-02-0	Nickel			NR	0.10	
7782-49-2	Selenium			NR	0.50	1.00
7440-22-4	Silver			NR	0.03	5.00
7440-28-0	Thallium			NR	0.30	
7440-66-6	Zinc	0.73		P	0.10	

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:
DATE ANALYZED: (P) 4/29/94

Qualifiers:
B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
F -- analyzed by GFA
A -- analyzed by flame AA
CV -- analyzed by cold vapor
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

REGULATED TCLP METALS
SPIKE SAMPLE RECOVERY

ALI QC SAMPLE#

5453A

ALI QC #: 940428T

Matrix (soil/extract): EXTRACT

Concentration Units (ug/L) : UG/L_

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	3970.0000	39.8000 U	5000.00	79.4	-	P
Barium	75-125	3580.0000	182.0000 B	5000.00	68.0	-	P
Cadmium	75-125	739.0000	20.2000 B	1000.00	71.9	-	P
Chromium	75-125	1500.0000	34.3000 -	2000.00	73.3	-	P
Copper	75-125	2110.0000	386.0000 -	2500.00	69.0	-	P
Lead	75-125	4000.0000	2780.0000 -	2500.00	48.8	-	P
Mercury	75-125	3.9880	0.6000 U	4.00	99.7	-	CV
Nickel	75-125	1870.0000	77.5000 B	2500.00	71.7	-	P
Selenium	75-125	3730.0000	47.8000 U	5000.00	74.6	-	P
Silver	75-125	53.9000	6.8000 U	100.00	53.9	-	P
Thallium	75-125	3550.0000	168.0000 U	5000.00	71.0	-	P
Zinc	75-125	5970.0000	2660.0000	5000.00	66.2	-	P

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION

Comments:

ACCREDITED LABORATORIES INC.

REGULATED TCLP METALS
SPIKE SAMPLE RECOVERY

ALI QC SAMPLE#

5453B

ALI QC #: 940428T

Matrix (soil/extract): EXTRACT

Concentration Units (ug/L) : UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	4930.0000	39.8000 U	5000.00	98.6	-	P
Barium	75-125	4410.0000	182.0000 B	5000.00	84.6	-	P
Cadmium	75-125	934.0000	20.2000 B	1000.00	91.4	-	P
Chromium	75-125	1810.0000	34.3000	2000.00	88.8	-	P
Copper	75-125	2580.0000	386.0000	2500.00	87.8	-	P
Lead	75-125	5230.0000	2780.0000	2500.00	98.0	-	P
Mercury							NR
Nickel	75-125	2380.0000	77.5000 B	2500.00	92.1	-	P
Selenium	75-125	4470.0000	47.8000 U	5000.00	89.4	-	P
Silver	75-125	75.0000	6.8000 U	100.00	75.0	-	P
Thallium							NR
Zinc	75-125	7430.0000	2660.0000	5000.00	95.4	-	P

NO QC EVALUATION HAS BEEN PERFORMED.
 RESULT IS UNSUBSTANTIATED
 THE DATA SHOULD BE USED
 WITH DISCRETION.

Comments:



ROY F. WESTON, INC.
GSA RARITAN DEPOT
2890 WOODBRIDGE AVENUE
BLDG. 209 ANNEX
EDISON, NJ 08837-3679
908-632-9200 • FAX: 908-632-9205

DATE: 5/4/94
TO: R. Singhvi, ERT/EPA
FROM: Misty Barkley, Analytical Project Control Group Leader *MB*
SUBJECT: Preliminary Results of Project Pentg, WA# 6932

Attached please find the preliminary results of the above referenced project for the following samples.

<u>Chain of Custody No.</u>	<u>Analyses</u>
9280	4 soils As, Cu, Zn, TCLP As, Cu, Zn, PCP
9268	2 waters PCP, TCLP As, Cu, Zn

* 25446, 25449, 25416 are in the process of being reanalyzed to see if 1 PPb DL can be reached

cc: Central File
Subcontracting
Misty Barkley
Wam: H. ALLEN
Task Leader: R. HENRY



roy F. West Inc.
 REAC, Edison, N.J.
 EPA Contract 88-03-3482

CHAIN OF CUSTODY RECORD / WORK REQUEST

Project Name: PENTA
 Project Number: 6932
 RFW Contact: M. MOHR Phone: 908-321-4257

No: 9280

SHEET NO. 1 OF 1

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

AC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	As, Cu, Zn	PCP TCLP	As, Cu, Zn TCLP	
	B,C,D 25446	ACA UNTREATED SOIL	S	4/17/94	1	4 OZ G/NONE	X	X	X	9405137
	B,C,D 25447	PENTA/ACA UNTREAT. SOIL	↓	↓	↓	↓	↓	↓	↓	9405138
	B,C,D 25448	WASHED PENTA/ACA UNTREATED SOIL	↓	↓	↓	↓	↓	↓	↓	9405139
MFA										

- Matrix:
- Sediment
 - Drum Solids
 - Drum Liquids
 - Other
- PW - Potable Water
 GW - Groundwater
 SW - Surface Water
 SL - Sludge
- S - Soil
 W - Water
 O - Oil
 A - Air

Special Instructions:
OK Penta 8/2

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
			<u>R. O'Connell</u>	<u>4-19-94</u>	<u>9:45</u>						

C-6513

SENT BY: 5-3-94 15:57 12015411383- 6062827875:# 2 SEA

ACCREDITED LABORATORIES, INC.
SNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6545</u>	MATRIX	<u>Leachate</u>
SAMPLE NUMBER	<u>9405137</u>	DILUTION FACTOR	<u>1</u>
DATA FILE	<u>>85456</u>	DATE EXTRACTED	<u>06/22/94</u>
CLIENT NAME	<u>WRF1</u>	DATE ANALYZED	<u>05/02/94</u>
FIELD ID	<u>B,C,025446</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	U	10

<u>SURROGATE COMPOUNDS</u>	<u>RECOVERY</u>	<u>LIMITS</u>	<u>STATUS</u>
Phenol-c5	<u>35 %</u>	<u>10- 94</u>	<u>OK</u>
2-Fluorophenol	<u>84 %</u>	<u>21-100</u>	<u>OK</u>
2,4,6-Tribromophenol	<u>71 %</u>	<u>10-123</u>	<u>OK</u>

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.**

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6545</u>	MATRIX	<u>Leachate</u>
SAMPLE NUMBER	<u>9405138</u>	DILUTION FACTOR	<u>10</u>
DATA FILE	<u>>85457</u>	DATE EXTRACTED	<u>04/22/94</u>
CLIENT NAME	<u>WRP1</u>	DATE ANALYZED	<u>05/02/94</u>
FIELD ID	<u>B.C.D25447</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	250	100

<u>SURROGATE COMPOUNDS</u>	<u>RECOVERY</u>	<u>LIMITS</u>	<u>STATUS</u>
Phenol-d5	<u>21 %</u>	<u>10- 94</u>	<u>OK</u>
2-Fluorophenol	<u>51 %</u>	<u>21-100</u>	<u>OK</u>
2,4,6-Tribromophenol	<u>34 %</u>	<u>10-123</u>	<u>OK</u>

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6545</u>	MATRIX	<u>Leachate</u>
SAMPLE NUMBER	<u>9405139</u>	DILUTION FACTOR	<u>10</u>
DATA FILE	<u>>B545B</u>	DATE EXTRACTED	<u>04/22/94</u>
CLIENT NAME	<u>WRFI</u>	DATE ANALYZED	<u>05/02/94</u>
FIELD ID	<u>B.C.D2544B</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	290	100

SURROGATE COMPOUNDS	RECOVERY	LIMITS	STATUS
Phenol-d5	<u>24 %</u>	<u>10- 94</u>	<u>OK</u>
2-Fluorophenol	<u>54 %</u>	<u>21-100</u>	<u>OK</u>
2,4,6-Tribromophenol	<u>37 %</u>	<u>10-123</u>	<u>OK</u>

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

3C

WATER SEMI-VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Accredited Labs, Inc.

Matrix Spike - Lab Sample No.:9405263

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC#	QC LIMITS REC
Pentachlorophenol	200	13780	6817	0*	9-103

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC#	% RPD#	QC LIMITS RPD REC
Pentachlorophenol	200	5523	0*	0*	50 9-103

Due to high background levels, spike recovery is 0

* Column to be used to flag recovery and RPD values with an asterisk
Values outside of qc limits

RPD: 2 out of 2 outside limits

Spike Recovery: 2 out of 2 outside limits

COMMENTS:

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B,C,D25446__

Client : WRFI_____
 Case No.: 6545_____
 Matrix: SOIL_____

Lab Sample ID: 9405137
 Date Received: 04/19/94

% Solids: 94.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	M	MDL
7440-36-0	Antimony			NR	
7440-38-2	Arsenic	271		P	100
7440-41-7	Beryllium			NR	
7440-43-9	Cadmium			NR	
7440-47-3	Chromium			NR	
7440-50-8	Copper	529		P	3
7439-92-1	Lead			NR	
7439-97-6	Mercury			NR	
7440-02-0	Nickel			NR	
7782-49-2	Selenium			NR	
7440-22-4	Silver			NR	
7440-28-0	Thallium			NR	
7440-66-6	Zinc	69.1		P	10

NO COU...TION HAS BEEN...
 DATE...
 AND...
 DISCRETION

Comments:

DATE ANALYZED: (P) 4/26/94

Modifiers:

- B -- greater than the IDL but less than the MDL
- U -- less than the IDL
- P -- analyzed by ICP
- CV -- analyzed by cold vapor
- F -- analyzed by GFA
- A -- analyzed by flame AA
- NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B,C,D25447

Client : WRFI
Case No.: 6545
Matrix: SOIL

Lab Sample ID: 9405138
Date Received: 04/19/94

% Solids: 89.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (20600), Beryllium, Cadmium, Chromium, Copper (30400), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (17900). Includes a 'NO CC' stamp and 'WITH DISCRETION' note.

Comments:

DATE ANALYZED: (P) 4/26/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B,C,D25448

Client : WRFI
Case No.: 6545
Matrix: SOIL

Lab Sample ID: 9405139
Date Received: 04/19/94

% Solids: 64.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (24500), Beryllium, Cadmium, Chromium, Copper (35000), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (23400).

Comments:

DATE ANALYZED: (P) 4/26/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

REGULATED TCLP METALS

FIELD ID.

B, C, D25446

Client : WRFI

Case No.: 6545

Matrix: EXTRACT

Lab Sample ID: 9405137

Date Received: 04/19/94

Concentration Units (mg/L): MG/L

CAS No.	Analyte	Concentration	C	M	MDL	Regulatory Level
7440-38-2	Arsenic	1.2		P	1.00	5.00
7440-39-3	Barium			NR	0.50	100.00
7440-43-9	Cadmium			NR	0.03	1.00
7440-47-3	Chromium			NR	0.03	5.00
7440-50-8	Copper	9.0		P	0.10	
7439-92-1	Lead			NR	0.50	5.00
7439-97-6	Mercury			NR	0.05	0.20
7440-02-0	Nickel			NR	0.10	
7782-49-2	Selenium			NR	0.50	1.00
7440-22-4	Silver			NR	0.03	5.00
7440-28-0	Thallium			NR	0.30	
7440-66-6	Zinc	1.5		P	0.10	

NO CC TEST
DATE
AND
WITH DISCRETION

IN REFINED
FRACTIONATED
REUSE

Comments:

DATE ANALYZED: (P) 4/26/94

Qualifiers:

- E -- greater than the IDL but less than the MDL
- U -- less than the IDL
- F -- analyzed by ICP
- CV -- analyzed by cold vapor
- F -- analyzed by GFA
- A -- analyzed by flame AA
- NR -- analysis not requested

ACCREDITED LABORATORIES INC.

REGULATED TCLP METALS

FIELD ID.

B,C,D25448

Client : WRFI

Case No.: 6545

Matrix: EXTRACT

Lab Sample ID: 9405139

Date Received: 04/19/94

Concentration Units (mg/L): MG/L

CAS No.	Analyte	Concentration	C	M	MDL	Regulatory Level
7440-38-2	Arsenic	143		P	1.00	5.00
7440-39-3	Barium			NR	0.50	100.00
7440-43-9	Cadmium			NR	0.03	1.00
7440-47-3	Chromium			NR	0.03	5.00
7440-50-8	Copper	145		P	0.10	
7439-92-1	Lead			NR	0.50	5.00
7439-97-6	Mercury			NR	0.05	0.20
7440-02-0	Nickel			NR	0.10	
7782-49-2	Selenium			NR	0.50	1.00
7440-22-4	Silver			NR	0.03	5.00
7440-28-0	Thallium			NR	0.30	
7440-66-6	Zinc	191		P	0.10	

Comments:

DATE ANALYZED: (P) 4/26/94

NO DATA WAS REPORTED
NADIR: WAS OF THE ORDER OF
NO DATA WAS REPORTED
AND THE ANALYST SHOULD BE USED
WITH DISCRETION.

Qualifiers:

- B -- greater than the IDL but less than the MDL
- U -- less than the IDL
- F -- analyzed by GFA
- P -- analyzed by ICP
- A -- analyzed by flame AA
- CV -- analyzed by cold vapor
- NR -- analysis not requested

ACCREDITED LABORATORIES INC.

SPIKE SAMPLE RECOVERY

ALI QC SAMPLE#

5396A

ALI QC #: 940425B2
Matrix (soil/water): SOIL
% Solids for Sample: 90.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with columns: Analyte, Control Limit %R, Spiked Sample Result (SSR) C, Sample Result (SR) C, Spike Added (SA), %R, Q, M. Rows include Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc. Includes a disclaimer: NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

SENT BY:

: 5- 3-94 : 16:02 :

12015411333

6062827875

SENT

ACCREDITED LABORATORIES INC.

SPIKE SAMPLE RECOVERY

ALI QC SAMPLE#

5396B

ALI QC #: 940425B2
Matrix (soil/water): SOIL
% Solids for Sample: 90.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Antimony	75-125	365.7459	3.8343 U	552.49	66.2		P
Arsenic	75-125	417.6796	3.6685 U	552.49	75.6		P
Beryllium	75-125	100.3315	0.0221 U	110.50	90.8		P
Cadmium	75-125	102.5414	1.6796	110.50	91.3		P
Chromium	75-125	216.5746	0.9381 B	220.99	97.6		P
Copper	75-125	300.5525	55.5801	276.24	88.7		P
Lead	75-125	648.6188	144.7514	276.24	182.4		P
Mercury							NR
Nickel	75-125	260.7735	2.2541 B	276.24	93.6		P
Selenium	75-125	2.3315	0.1105 U	5.52	42.2		F
Silver	75-125	9.6354	0.6077 U	11.05	87.2		P
Thallium	75-125	0.2431 U	0.2431 U	5.52	0.0		F
Zinc	75-125	815.4696	465.1934	552.49	63.4		P

Comments:

ACCREDITED LABORATORIES INC.

REGULATED TCLP METALS SPIKE SAMPLE RECOVERY

ALI QC SAMPLE#

5137A

ALI QC #: 940425T

Matrix (soil/extract): EXTRACT

Concentration Units (ug/L) : UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Arsenic	75-125	6330.0000	1240.0000	5000.00	101.8		P
Barium	75-125	4380.0000	76.1000	5000.00	86.1		P
Cadmium	75-125	1000.0000	3.2200	1000.00	99.7		P
Chromium	75-125	1950.0000	7.1000	2000.00	97.5		P
Copper	75-125	11600.0000	9020.0000	2500.00	103.2		P
Lead	75-125	2520.0000	103.0000	2500.00	96.7		P
Mercury							NR
Nickel	75-125	2460.0000	13.6000	2500.00	98.4		P
Selenium	75-125	5220.0000	63.3000	5000.00	104.4		P
Silver	75-125	78.3000	5.5000	100.00	78.3		P
Thallium	75-125	4150.0000	81.0000	5000.00	83.0		P
Zinc	75-125	6710.0000	1500.0000	5000.00	104.2		P

Comments:

NO OTHER ANALYSES PERFORMED.
 ALL ANALYSES PERFORMED IN ACCORDANCE WITH THE TEST METHODS SPECIFIED.
 ANALYSES PERFORMED WITH DISCRETION.

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Westco., Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

Project Name: Plyba Wood Products
 Project Number: 6932
 RFW Contact: Rich Henry Phone: (908) 321-4200

No: **9268**

SAMPLE IDENTIFICATION

EOC OK

ANALYSES REQUESTED

SHEET NO. 1 OF 1

AC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	As Cu Zn	PCP	Other Metals
	A 25449	ED18W	W	4/16/94	1	10poly/HNO3	X		
	B, C 25449	ED18W	W	4/16/94	2	1amber/4°C		X	
	A 25416	ED15W	W	4/16/94	1	10poly/HNO3	X		
	B, C 25416	ED15W	W	4/16/94	2	1amber/4°C		X	

9405140
 9405141
 9405142
 9405143

- Matrix:
- Sediment
 - Drum Solids
 - Drum Liquids
 - Other
- PW - Potable Water
 GW - Groundwater
 SW - Surface Water
 SL - Sludge
- S - Soil
 W - Water
 O - Oil
 A - ~~Asphalt~~

Special Instructions: *OK PA via JFC*

FOR SUBCONTRACTING USE ONLY
 FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
<i>Analysis</i>	<i>Richard Henry</i>	<i>4/16/94</i>	<i>D. OVM</i>	<i>4/16/94</i>	<i>9:45</i>						

C-6546

SENT BY: : 5-3-94 : 16:04 : 12015411383- 6362827875:17

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER 6546
 SAMPLE NUMBER 9405161
 DATA FILE >85454
 CLIENT NAME HRF1
 FIELD ID B.C25449

MATRIX Aqueous
 DILUTION FACTOR 1
 DATE EXTRACTED 04/21/94
 DATE ANALYZED 05/02/94
 ANALYZED BY PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	U	10

SURROGATE COMPOUNDS	RECOVERY	LIMITS	STATUS
Phenol-d5	36 %	10- 94	OK
2-Fluorophenol	53 %	21-100	OK
2,4,6-Tribromophenol	59 %	10-123	OK

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
 DATA PRESENTED IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6346</u>	MATRIX	<u>AQUEOUS</u>
SAMPLE NUMBER	<u>9409143</u>	DILUTION FACTOR	<u>1</u>
DATA FILE	<u>>B5455</u>	DATE EXTRACTED	<u>04/21/94</u>
CLIENT NAME	<u>WRF1</u>	DATE ANALYZED	<u>05/02/94</u>
FIELD ID	<u>B.C25416</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	U	10

<u>SURROGATE COMPOUNDS</u>	<u>RECOVERY</u>	<u>LIMITS</u>	<u>STATUS</u>
Phenol-c5	<u>30 %</u>	<u>10- 94</u>	<u>OK</u>
2-Fluorophenol	<u>56 %</u>	<u>21-100</u>	<u>OK</u>
2,4,6-Tribromophenol	<u>51 %</u>	<u>10-123</u>	<u>OK</u>

J - Indicates compound concentration found below MDL.
 J - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Accredited Labs, Inc.

Matrix Spike - Lab Sample No.:9405262

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC#	GC LIMITS REC
pentachlorophenol	200	25721	7211	0*	9-103

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC#	% RPD#	GC LIMITS RPD REC
pentachlorophenol	200	14254	0*	0*	50 9-103

Due to high background levels, spike recovery is 0

Column to be used to flag recovery and RPD values with an asterisk
Values outside of qc limits

RPD: 2 out of 2 outside limits

Spike Recovery: 2 out of 2 outside limits

COMMENTS:

NO GC EVALUATION HAS BEEN PERFORMED.
 DATA REPORTED IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

A25449

Client : WRFI
Case No.: 6546
Matrix: WATER

Lab Sample ID: 9405140
Date Received: 04/19/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (190), Beryllium, Cadmium, Chromium, Copper (112), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (68.0). Includes a large stamp: 'NO QUALIFICATION HAS BEEN PERFORMED. DATA VALUE IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.'

Comments:

DATE ANALYZED: (P) 4/25/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

INORGANIC ANALYSIS DATA SHEET

FIELD ID.

A25416

Client : WRFI
Case No.: 6546
Matrix: WATER

Lab Sample ID: 9405142
Date Received: 04/19/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (2.4), Beryllium, Cadmium, Chromium, Copper (4.4), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (68.5).

NO COEFFICIENTS HAVE BEEN PERFORMED
THE DATA SHOULD BE USED WITH DISCRETION

Comments:

DATE ANALYZED: (P) 4/25/94 (F) 4/29/94

Modifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

SPIKE SAMPLE RECOVERY

ALI QC SAMPLE#

5059A

ALI QC #: 940422A
Matrix (soil/water): WATER
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with columns: Analyte, Control Limit %R, Spiked Sample Result (SSR) C, Sample Result (SR) C, Spike Added (SA), %R, Q, M. Rows include Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc.

REPRODUCED.
UNCLASSIFIED
DATE 08-11-2001
WITH DISCRETION

Comments:

ACCREDITED LABORATORIES INC.

SPIKE SAMPLE RECOVERY

ALI QC SAMPLE#

5059B

ALI QC #: 940422A
Matrix (soil/water): WATER
Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Antimony	75-125	4270.0000	--	35.4000	U	5000.00	85.4	--	P
Arsenic	75-125	45.0000	--	1.9000	U	50.00	90.0	--	F
Beryllium	75-125	1000.0000	--	0.2000	U	1000.00	100.0	--	P
Cadmium	75-125	851.0000	--	2.0000	U	1000.00	85.1	--	P
Chromium	75-125	1670.0000	--	16.9000	B	2000.00	82.7	--	P
Copper	75-125	2030.0000	--	15.2000	B	2500.00	80.6	--	P
Lead	75-125	2160.0000	--	51.0000	U	2500.00	86.4	--	P
Mercury									NR
Nickel	75-125	2100.0000	--	21.6000	B	2500.00	83.1	--	P
Selenium	75-125	29.8000	--	2.3000	U	50.00	59.6	--	F
Silver	75-125	75.4000	--	6.8000	U	100.00	75.4	--	P
Thallium									NR
Zinc	75-125	4460.0000	--	44.1000	B	5000.00	88.3	--	P

NO ANALYSIS PERFORMED.
ANALYSIS PERFORMED
RESULTS REPORTED
WITH DISCRETION.

Comments:



ROY F. WESTON, INC.
GSA RARITAN DEPOT
2890 WOODBRIDGE AVENUE
BLDG. 209 ANNEX
EDISON, NJ 08837-3679
908-632-9200 • FAX: 908-632-9205

DATE: 5/6/94
TO: R. Singhvi, ERT/EPA
FROM: Misty Barkley, Analytical Project Control Group Leader *MK for MB*
SUBJECT: Preliminary Results of Project Penta, WA# 6932

Attached please find the preliminary results of the above referenced project for the following samples.

<u>Chain of Custody No.</u>	<u>Analyses</u>
9286, 9374	34 waters for PCP, As, Cu, Zn
9375, 9376	

cc: Central File
Subcontracting
Misty Barkley
Wam: H. ALLEN
Task Leader: R. HENRY



00202101017 Z

12U154113657

5-4-94 10:48

SENT BY:

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Project Name: Kenta Wood Site
Project Number: 3347035001693201
RFW Contact: Rich Idenny Phone: 908 321-4200

No: 9286

SAMPLE IDENTIFICATION

SOIL EOC

As, Cu, Zn ANALYSES REQUESTED

SHEET NO. 1 OF 1

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	As, Cu, Zn	PCP	Other
	A25460	SEEP POND AREA	W	4/18/94	1	100% / HNO ₃	X		9405231
	B-C 25460	SEEP POND AREA	W	4/18/94	2	32oz Amber / 4%		X	9405232
(A large diagonal line is drawn across the remaining empty rows of the table.)									

- Matrix:
- SD - Sediment
 - DS - Drum Solids
 - DL - Drum Liquids
 - X - Other
 - PW - Potable Water
 - GW - Groundwater
 - SW - Surface Water
 - SL - Sludge
 - S - Soil
 - W - Water
 - O - Air
 - A - Air EX

Special Instructions:

QR's MFA vintm

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all packages	Speckling	4/19/94	Boon	4-20-94	10:00						

657

ENGINEERING - 2011 - 10/15/11
CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

Project Name: PENTA
 Project Number: 6932
 RFW Contact: M. MOHN Phone: 908-321-9257

No: 9374

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

SHEET NO. 2 OF 7

EAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCP	As, Cu, Zn
	A25530	LS3PAT3W2	W	4/18/94	1	32 OZG/NONE	X	9405253
	A25531	LS3PAT4						9405254
	A25532	LS4PT1						9405255
	A25533	LS4PT2						9405256
	A25534	LS4PT3W1						9405257
	A25535	LS4PT3W2						9405258
	A25536	LS4PT4W1						9405259
	A25537	LS4PT4W2						9405260
	A25538	LS4PT5						9405261
	A25539	LS4PT5						9405262
	A,B25540	LSPILOTW1						9405263
	A,B25541	LSPILOTW2						9405264
	B25507	LS1PT1				1L POLY/HNO3		9405265
	B25508	LS1PT2W1					X	9405266
	B25509	LS1PT2W2						9405267
	B25510	LS1PT3						9405268
	B25511	LS1PT4						9405269
	B25512	LS1PT5						9405270
	B25513	LS1PT6W1						9405271
	B25514	LS1PT6W2						9405272

- Matrix:
- Sediment
 - Drum Solids
 - Drum Liquids
 - Other
- PW - Potable Water
 GW - Groundwater
 SW - Surface Water
 SL - Sludge
- S - Soil
 W - Water
 O - Oil
 A - Air

Special Instructions: **NEED MSD ON ALL SAMPLES, A,B 25539, A,B 25540, A,B 25541**

**FOR SUBCONTRACTING USE ONLY
 FROM CHAIN OF CUSTODY #**

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
1/Analysis	M. Mohn	4/18/94	B. O'Connell	4-20-94	10:50						

C-6571
 (Signature)

SENT BY: : 5-4-94 : 17:00 : 12015411383- 6062827875: # 3

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Project Name: Penta
Project Number: 6932
RFW Contact: M. Mohr Phone: 908-34-9257

No: 9373

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

SHEET NO. 1 OF 4

LOC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCP		
	A25507	LS1PT1	W	4/18/94	1	32 OZ G/NONE	X		9405233
	A25508	LS1PT2W1							9405234
	A25509	LS1PT2W2							9405235
	A25510	LS1PT3							9405236
	A25511	LS1PT4							9405237
	A25512	LS1PT5							9405238
	A25513	LS1PT6W1							9405239
	A25514	LS1PT6W2							9405240
	A25515	LS2PT1W1							9405241
	A25516	LS2PT1W2							9405242
	A25517	LS2PT2							9405243
	A25518	LS2PAT3							9405244
	A25519	LS2PAT4W1							9405245
	A25520	LS2PAT4W2							9405246
	A25521	LS2PAT5							9405247
	A25522	LS2PAT6							9405248
	A25523	LS3PAT1							9405249
	A25524	LS3PAT2W1							9405250
	A25525	LS3PAT2W2							9405251
	A25526	LS3PAT3W1							9405252

Matrix: MFW
 - Sediment PW - Potable Water S - Soil
 - Drum Solids GW - Groundwater W - Water
 - Drum Liquids SW - Surface Water O - Oil
 - Other SL - Sludge A - Air EX

Special Instructions: Mix Samples well to Obtain representative SAMPLE 1

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
<u>11/Analysis</u>	<u>M. Mohr</u>	<u>4/19/94</u>	<u>B. Oxman</u>	<u>4-20-94</u>	<u>10:00</u>						

CL571
Q#1

SENT BY: : 5-4-94 : 17:00 : 12015411383- 6062827875: # 2

ENGINEERING SOIL WASTEWATER
CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

Project Name: PENTA
 Project Number: 6932
 RFW Contact: M. MOHA Phone: 909-321-4257

No: 9375

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

SHEET NO. 3 OF 4

EAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	As, Cu, Zn		
	B25515	LS2 PT 1W1	W	4/18/94	1	1L POLY/HNO ₃	X		9405273
	B25516	LS2 PT 2W2							9405274
	B25517	LS2 PT 2							9405275
	B25518	LS2 PAT 3							9405276
	B25519	LS2 PAT 4W1							9405277
	B25520	LS2 PAT 4W2							9405278
	B25521	LS2 PAT 5							9405279
	B25522	LS2 PAT 6							9405280
	B25523	LS3 PAT 1							9405281
	B25524	LS3 PAT 2W1							9405282
	B25525	LS3 PAT 2W2							9405283
	B25529	LS3 PAT 3W1							9405284
	B25530	LS3 PAT 3W2							9405285
	B25531	LS3 PAT 4							9405286
	B25532	LS4 PT 1							9405287
	B25533	LS4 PT 2							9405288
	B25534	LS4 PT 3W1							9405289
	B25535	LS4 PT 3W2							9405290
	B25536	LS4 PT 4W1							9405291
	B25537	LS4 PT 4W2							9405292

Special Instructions:

- Matrix:
- Sediment
 - Drum Solids
 - Drum Liquids
 - Other
- PW - Potable Water
 GW - Groundwater
 SW - Surface Water
 SL - Sludge
- S - Soil
 W - Water
 O - Oil
 A - EX

(Handwritten initials)

**FOR SUBCONTRACTING USE ONLY
 FROM CHAIN OF
 CUSTODY #**

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
11/Analyses	M. Moha	4/19/94	D. UK	4-20-94	10:00						

C-6571

SENT BY: _____
 : 5-4-94 : 17:01 : _____
 12015411383-
 6062827875: # 4

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

Project Name: PENTA
 Project Number: 6932
 RFW Contact: M. MOHN Phone: 908-321-4257

No: 9376

SHEET NO. 4 OF 4

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

EAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	As, Cu, Zn		
	B25538	LS4PT5	W	4/18/99	1	1L POLY/HNO ₃	↓		9405293
	CB25539	LS5PT2	↓	↓	↓	↓	↓		9405294
	CB25540	LSPILOTW1	↓	↓	↓	↓	↓		9405295
	CB25541	LSPILOTW2	↓	↓	↓	↓	↓		9405296
MFM									

- trix:
- Sediment
 - Drum Solids
 - Drum Liquids
 - Other
- PW - Potable Water
 GW - Groundwater
 SW - Surface Water
 SL - Sludge
- S - Soil
 W - Water
 O - Oil
 A - Air

Special Instructions: NEED MS/MSD ON: B
C25539, C25540, C25541

FOR SUBCONTRACTING USE ONLY
 FROM CHAIN OF
 CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
11/Analysis	M. Mohn	4/18/99	BOK	4-20-99	10:00						

C-657

SENT BY:

: 5-4-94 : 17:02 :

12015411383-

6062827875: # 5

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6570</u>	MATRIX	<u>AQUEOUS</u>
SAMPLE NUMBER	<u>9405232</u>	DILUTION FACTOR	<u>1</u>
DATA FILE	<u>>B5459</u>	DATE EXTRACTED	<u>06/21/94</u>
CLIENT NAME	<u>WRF1</u>	DATE ANALYZED	<u>05/02/94</u>
FIELD ID	<u>B.C25460</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	U	10

SURROGATE COMPOUNDS	RECOVERY	LIMITS	STATUS
Phenol-d5	<u>55 %</u>	10- 94	<u>OK</u>
2-Fluorophenol	<u>109 %</u>	21-100	<u>OUT</u>
2,4,6-Tribromophenol	<u>63 %</u>	10-123	<u>OK</u>

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.**

3C

WATER SEMI-VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Accredited Labs, Inc.

Matrix Spike - Lab Sample No.:9405262

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC#	QC LIMITS REC
Pentachlorophenol	200	25721	7211	0*	9-103

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC#	% RPD#	QC LIMITS RPD	REC
Pentachlorophenol	200	14254	0*	0*	50	9-103

Due to high background levels, spike recovery is 0

* Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 2 out of 2 outside limits

Spike Recovery: 2 out of 2 outside limits

COMMENTS:

NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

A25460

Client : WRFI

Case No.: 6570

Matrix: WATER

Lab Sample ID: 9405231

Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	M	MDL
7440-36-0	Antimony			NR	100
7440-38-2	Arsenic	1.9	U	F	10
7440-41-7	Beryllium			NR	5
7440-43-9	Cadmium			NR	10
7440-47-3	Chromium			NR	30
7440-50-8	Copper	4.4	U	P	30
7439-92-1	Lead			NR	10
7439-97-6	Mercury			NR	0.5
7440-02-0	Nickel			NR	40
7782-49-2	Selenium			NR	5
7440-22-4	Silver			NR	30
7440-28-0	Thallium			NR	10
7440-66-6	Zinc	6.6	U	P	100

RESULTS BEEN PERFORMED. UNSUBSTANTIATED SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/25/94 (F) 4/29/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
- U -- less than the IDL
- F -- analyzed by GFA
- P -- analyzed by ICP
- A -- analyzed by flame AA
- CV -- analyzed by cold vapor
- NR -- analysis not requested

ACCREDITED LABORATORIES INC.

SPIKE SAMPLE RECOVERY

ALI QC SAMPLE#

5059A

ALI QC #: 940422A
Matrix (soil/water): WATER
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with columns: Analyte, Control Limit %R, Spiked Sample Result (SSR) C, Sample Result (SR) C, Spike Added (SA), %R, Q, M. Rows include Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc. Includes a disclaimer: NO QC EVALUATION HAS BEEN PERFORMED...

Comments:

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER 6571
 SAMPLE NUMBER 9495233 1/50
 DATA FILE >F6694
 CLIENT NAME BRF I
 FIELD ID 025507

MATRIX Aqueous
 DILUTION FACTOR 500
 DATE EXTRACTED 04/21/94
 DATE ANALYZED 05/03/94
 ANALYZED BY PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	190000	5000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
 DATA RELIABILITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6571</u>	MATRIX	<u>Aqueous</u>
SAMPLE NUMBER	<u>9405234 1/50</u>	DILUTION FACTOR	<u>500</u>
DATA FILE	<u>>F6695</u>	DATE EXTRACTED	<u>04/21/94</u>
CLIENT NAME	<u>URF1</u>	DATE ANALYZED	<u>05/03/94</u>
FIELD ID	<u>A2550B</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	240000	5000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

**NO GC EVALUATION HAS BEEN PERFORMED.
 RELIABILITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.**

ACCREDITED LABORATORIES, INC.
SMA ORGANIC ANALYSIS DATA

CASE NUMBER 6571
 SAMPLE NUMBER 9405235 1/50
 DATA FILE >F6696
 CLIENT NAME WREL
 FIELD ID A25509

MATRIX SEAWATER
 DILUTION FACTOR 500
 DATE EXTRACTED 04/21/94
 DATE ANALYZED 05/03/94
 ANALYZED BY PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	72000	5000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	AQUAQUE
SAMPLE NUMBER	9405236 1/50	DILUTION FACTOR	500
DATA FILE	>F6697	DATE EXTRACTED	04/21/94
CLIENT NAME	WREI	DATE ANALYZED	05/03/94
FIELD ID	A25510	ANALYZED BY	PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	48000	5000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD NOT BE USED
 WITH DISCRETION.**

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	Aqueous
SAMPLE NUMBER	9405237 1/50	DILUTION FACTOR	500
DATA FILE	>F6698	DATE EXTRACTED	04/21/94
CLIENT NAME	WRF1	DATE ANALYZED	05/03/94
FIELD ID	A25511	ANALYZED BY	PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	250000	5000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION WAS PERFORMED ON THIS DATA. THE DATA IS PRESENTED AS IS AND THE USER SHOULD USE WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER
SAMPLE NUMBER
DATA FILE
CLIENT NAME
FIELD ID

6571
9405238 1/50
>F6699
WRF1
A25512

MATRIX
DILUTION FACTOR
DATE EXTRACTED
DATE ANALYZED
ANALYZED BY

Aqueous
500
04/21/94
05/03/94
PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachloropheno	28000	5000

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH CAUTION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	Aqueous
SAMPLE NUMBER	9405239 1/50	DILUTION FACTOR	500
DATA FILE	>F6700	DATE EXTRACTED	04/21/94
CLIENT NAME	WRF1	DATE ANALYZED	05/03/94
FIELD ID	A25513	ANALYZED BY	PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	21000	5000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
 DATA RELIABILITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	Aqueous
SAMPLE NUMBER	9405240	DILUTION FACTOR	1
DATA FILE	05504	DATE EXTRACTED	04/22/94
CLIENT NAME	WRF1	DATE ANALYZED	05/04/94
FIELD ID	025514	ANALYZED BY	PAUL

CAS #	COMPOUND	UG/L	MDL
07065	Pentachlorophenol	14000	10

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.**

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER 6571
 SAMPLE NUMBER 9405241 1/50
 DATA FILE XF6702
 CLIENT NAME WRFI
 FIELD ID A25515

MATRIX Aqueous
 DILUTION FACTOR 500
 DATE EXTRACTED 04/22/94
 DATE ANALYZED 05/03/94
 ANALYZED BY PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	13000	5000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.**

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	Aqueous
SAMPLE NUMBER	9405242 1/50	DILUTION FACTOR	500
DATA FILE	2F6203	DATE EXTRACTED	04/22/94
CLIENT NAME	WRFI	DATE ANALYZED	05/03/94
FIELD ID	A25516	ANALYZED BY	PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	18000	5000

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ALL ANALYSIS HAS BEEN PERFORMED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571
SAMPLE NUMBER	9405243 1/50
DATA FILE	>F6704
CLIENT NAME	WRF1
FIELD ID	625517

MATRIX	Aqueous
DILUTION FACTOR	500
DATE EXTRACTED	04/22/94
DATE ANALYZED	05/03/94
ANALYZED BY	PAJL

```

=====
CAS #   COMPOUND           UG/L   MDL
=====
87865   Pentachlorophenol      14000  5000
=====

```

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED.
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER
SAMPLE NUMBER
DATA FILE
CLIENT NAME
FIELD ID

4571
9405244 1:50
>B5472
WRF1
A25518

MATRIX
DILUTION FACTOR
DATE EXTRACTED
DATE ANALYZED
ANALYZED BY

AQUEOUS
500
04/22/94
05/03/94
PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	7800	5000

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO RECOVERY FACTION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	Aqueous
SAMPLE NUMBER	9405245 1:50	DILUTION FACTOR	500
DATA FILE	285473	DATE EXTRACTED	04/22/94
CLIENT NAME	WRF1	DATE ANALYZED	05/03/94
FIELD ID	A25519	ANALYZED BY	PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	8100	5000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ALL RESULTS SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6571</u>	MATRIX	<u>Aqueous</u>
SAMPLE NUMBER	<u>9405246 1:20</u>	DILUTION FACTOR	<u>20</u>
DATA FILE	<u>2F6679</u>	DATE EXTRACTED	<u>04/22/94</u>
CLIENT NAME	<u>WRF1</u>	DATE ANALYZED	<u>05/02/94</u>
FIELD ID	<u>625520</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	9300	200

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ALL DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	AQUADUS
SAMPLE NUMBER	9405247 1:20	DILUTION FACTOR	20
DATA FILE	>F6680	DATE EXTRACTED	04/22/94
CLIENT NAME	WRFI	DATE ANALYZED	05/02/94
FIELD ID	A25521	ANALYZED BY	PALL

CAS #	COMPOUND	US/L	MDL
87865	Pentachlorophenol	43000	200

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ANALYSIS HAS BEEN PERFORMED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER
SAMPLE NUMBER
DATA FILE
CLIENT NAME
FIELD ID

6571
9405248 1:20
>F6681
WRF1
A25522

MATRIX
DILUTION FACTOR
DATE EXTRACTED
DATE ANALYZED
ANALYZED BY

Aqueous
20
04/22/94
05/02/94
PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachloropheno	37000	200

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	Aqueous
SAMPLE NUMBER	9405249 1:20	DILUTION FACTOR	20
DATA FILE	>F6682	DATE EXTRACTED	04/22/94
CLIENT NAME	WRF1	DATE ANALYZED	05/02/94
FIELD ID	A25523	ANALYZED BY	PAUL

CAS #	COMPOUND	US/L	MDL
87865	Pentachlorophenol	35000	200

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ALL DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	Aqueous
SAMPLE NUMBER	9405250 1:20	DILUTION FACTOR	20
DATA FILE	F6693	DATE EXTRACTED	04/22/94
CLIENT NAME	WRFI	DATE ANALYZED	05/02/94
FIELD ID	A25524	ANALYZED BY	PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	35000	200

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ALL DATA ARE SUBJECT TO THE LABORATORY'S QUALITY CONTROL PROGRAMS.
 DATA ACCURACY IS UNGUARANTEED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6571</u>	MATRIX	<u>AQUEOUS</u>
SAMPLE NUMBER	<u>9405251 1:20</u>	DILUTION FACTOR	<u>20</u>
DATA FILE	<u>F6684</u>	DATE EXTRACTED	<u>04/22/94</u>
CLIENT NAME	<u>WRFI</u>	DATE ANALYZED	<u>05/03/94</u>
FIELD ID	<u>A25525</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	27000	200

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ALL RESULTS SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6521</u>	MATRIX	<u>Aqueous</u>
SAMPLE NUMBER	<u>9405252 1:20</u>	DILUTION FACTOR	<u>20</u>
DATA FILE	<u>>F6685</u>	DATE EXTRACTED	<u>04/22/94</u>
CLIENT NAME	<u>WREI</u>	DATE ANALYZED	<u>05/03/94</u>
FIELD ID	<u>A25529</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	35000	200

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

THIS HAS BEEN PERFORMED
 AND IS UNSUBSTANTIATED
 DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER 6571
 SAMPLE NUMBER 9405253 1:20
 DATA FILE >F6686
 CLIENT NAME WRF1
 FIELD ID 825530

MATRIX Aqueous
 DILUTION FACTOR 20
 DATE EXTRACTED 04/22/94
 DATE ANALYZED 05/03/94
 ANALYZED BY PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	18000	200

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

**NO QC EVALUATION HAS BEEN PERFORMED.
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.**

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6571</u>	MATRIX	<u>Aqueous</u>
SAMPLE NUMBER	<u>9405254 1:50</u>	DILUTION FACTOR	<u>500</u>
DATA FILE	<u>DB5482</u>	DATE EXTRACTED	<u>04/25/94</u>
CLIENT NAME	<u>WRF1</u>	DATE ANALYZED	<u>05/03/94</u>
FIELD ID	<u>A25531</u>	ANALYZED BY	<u>PAUL</u>

=====			
CAS #	COMPOUND	US/L	MDL
=====			
87865	Pentachlorophenol	3100 J	5000

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6571</u>	MATRIX	<u>Aqueous</u>
SAMPLE NUMBER	<u>9405255 1/50</u>	DILUTION FACTOR	<u>500</u>
DATA FILE	<u>>F6705</u>	DATE EXTRACTED	<u>04/25/94</u>
CLIENT NAME	<u>WRFI</u>	DATE ANALYZED	<u>05/03/94</u>
FIELD ID	<u>825532</u>	ANALYZED BY	<u>PAUL</u>

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	51000	5000

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER
SAMPLE NUMBER
DATA FILE
CLIENT NAME
FIELD ID

6571
9405256 1:50
>F6711
WRF1
625533

MATRIX Aqueous
DILUTION FACTOR 500
DATE EXTRACTED 04/25/94
DATE ANALYZED 05/04/94
ANALYZED BY PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	14000	5000

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	Aqueous
SAMPLE NUMBER	9405257 1:50	DILUTION FACTOR	500
DATA FILE	>F6712	DATE EXTRACTED	04/25/94
CLIENT NAME	WREJ	DATE ANALYZED	05/04/94
FIELD ID	A25534	ANALYZED BY	PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	21000	5000

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER 6971
 SAMPLE NUMBER 9405258 1:20
 DATA FILE >F6717
 CLIENT NAME WREI
 FIELD ID A25535

MATRIX AQUEOUS
 DILUTION FACTOR 20
 DATE EXTRACTED 04/25/94
 DATE ANALYZED 05/04/94
 ANALYZED BY PAUL

CAS #	COMPOUND	UQ/L	MDL
87865	Pentachlorophenol	32000	200

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6571</u>	MATRIX	<u>Aqueous</u>
SAMPLE NUMBER	<u>9405259 1:50</u>	DILUTION FACTOR	<u>500</u>
DATA FILE	<u>>E6714</u>	DATE EXTRACTED	<u>04/25/94</u>
CLIENT NAME	<u>WRFI</u>	DATE ANALYZED	<u>05/04/94</u>
FIELD ID	<u>A25536</u>	ANALYZED BY	<u>PAUL</u>

=====			
CAS #	COMPOUND	UG/L	MDL
=====			
87865	Pentachlorophenol	2600 J	5000

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	<u>6571</u>	MATRIX	<u>Aqueous</u>
SAMPLE NUMBER	<u>9405260</u>	DILUTION FACTOR	<u>20</u>
DATA FILE	<u>185508</u>	DATE EXTRACTED	<u>04/25/94</u>
CLIENT NAME	<u>WRFI</u>	DATE ANALYZED	<u>05/04/94</u>
FIELD ID	<u>A25537</u>	ANALYZED BY	<u>PALL</u>

```

=====
CAS #   COMPOUND                UG/L   MDL
=====
87865   Pentachlorophenol            2200   200
=====

```

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ALL RESULTS ARE SUBJECT TO
VERIFICATION BY THE
LABORATORY AND SHOULD BE
USED WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER
SAMPLE NUMBER
DATA FILE
CLIENT NAME
FIELD ID

6571
9405261 1:50
F6716
WRF
A25538

MATRIX
DILUTION FACTOR
DATE EXTRACTED
DATE ANALYZED
ANALYZED BY

AQUOUS
500
04/25/94
05/04/94
PAUL

```

=====
CAS #   COMPOUND                US/L   MDL
=====
87865   Pentachlorophenol           51000  5000
=====

```

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 05-10-2001 BY 60322
UCBAW/SJS

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER
SAMPLE NUMBER
DATA FILE
CLIENT NAME
FIELD ID

6571
9405262 1:20
>F6710
WRF1
A,B25539

MATRIX
DILUTION FACTOR
DATE EXTRACTED
DATE ANALYZED
ANALYZED BY

Aqueous
200
04/21/94
05/04/94
PAUL

CAS #	COMPOUND	US/L	MDL
87865	Pentachloropheno!	4900	2000

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER	6571	MATRIX	Aqueous
SAMPLE NUMBER	9405263 1:20	DILUTION FACTOR	200
DATA FILE	>F6709	DATE EXTRACTED	04/22/94
CLIENT NAME	WRF1	DATE ANALYZED	05/04/94
FIELD ID	A.825540	ANALYZED BY	PAH

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	4500	2000

J - Indicates compound concentration found below MDL.
U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

ACCREDITED LABORATORIES, INC.
BNA ORGANIC ANALYSIS DATA

CASE NUMBER 6571
 SAMPLE NUMBER 9405264 1/20
 DATA FILE >F6693
 CLIENT NAME WRF1
 FIELD ID A.B25541

MATRIX Aqueous
 DILUTION FACTOR 20
 DATE EXTRACTED 04/25/94
 DATE ANALYZED 05/03/94
 ANALYZED BY PAUL

CAS #	COMPOUND	UG/L	MDL
87865	Pentachlorophenol	620	200

J - Indicates compound concentration found below MDL.
 U - Indicates compound analyzed for but not detected.

B - Indicates compound found in associated blank.

ANALYSIS HAS BEEN PERFORMED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Accredited Labs, Inc.

Matrix Spike - Lab Sample No.:9405264

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC#	QC LIMITS REC
Pentachlorophenol	100	622	760	138*	9-103

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC#	% RPD#	QC LIMITS RPD	REC
Pentachlorophenol	100	746	124*	11	50	9-103

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

: 0 out of 2 outside limits

Spike Recovery: 2 out of 2 outside limits

COMMENTS:

NO ANALYSIS HAS BEEN PERFORMED.
 THE RESULTS IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Accredited Labs, Inc.

Matrix Spike - Lab Sample No.:9405262

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC#	QC LIMITS REC
Pentachlorophenol	100	25721	7211	0*	9-103

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC#	% RPD#	QC LIMITS RPD	REC
Pentachlorophenol	100	14254	0*	0*	50	9-103

** Due to high background levels, spike recovery is 0

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 2 out of 2 outside limits

Spike Recovery: 2 out of 2 outside limits

COMMENTS:

ANALYSIS HAS BEEN PERFORMED.
 QUALITY IS UNSUBSTANTIATED
 THE DATA SHOULD BE USED
 WITH DISCRETION.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Accredited Labs, Inc.

Matrix Spike - Lab Sample No.:9405263

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC#	QC LIMITS REC
Pentachlorophenol	100	13780	6817	0*	9-103

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC#	% RPD#	QC LIMITS RPD	REC
Pentachlorophenol	100	5523	0*	0*	50	9-103

** Due to high background levels, spike recovery is 0

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

N.D: 2 out of 2 outside limits

Spike Recovery: 2 out of 2 outside limits

COMMENTS:

ANALYSIS HAS BEEN PERFORMED.
 VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED
 WITH DISCRETION.

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25507

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405265
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (493), Beryllium, Cadmium, Chromium, Copper (2130), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (1870).

NO ANALYSIS HAS BEEN PERFORMED.
THEIR VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/3/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25508

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405266
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	M	MDL
7440-36-0	Antimony			NR	
7440-38-2	Arsenic	528		F	10
7440-41-7	Beryllium			NR	
7440-43-9	Cadmium			NR	
7440-47-3	Chromium			NR	
7440-50-8	Copper	1820		P	300
7439-92-1	Lead			NR	
7439-97-6	Mercury			NR	
7440-02-0	Nickel			NR	
7782-49-2	Selenium			NR	
7440-22-4	Silver			NR	
7440-28-0	Thallium			NR	
7440-66-6	Zinc	1720		P	200

ANALYSIS HAS BEEN PERFORMED
RESULTS ARE UNSUBSTANTIATED
DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
- U -- less than the IDL
- P -- analyzed by ICP
- CV -- analyzed by cold vapor
- F -- analyzed by GFA
- A -- analyzed by flame AA
- NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25509

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405267
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (389), Beryllium, Cadmium, Chromium, Copper (915), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (785).

ANALYSIS HAS BEEN PERFORMED
VALIDITY IS UNSUBSTANTIATED
DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

INORGANIC ANALYSIS DATA SHEET

FIELD ID.

B25510

Client : WRFI

Case No.: 6571

Matrix: WATER

Lab Sample ID: 9405268

Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	M	MDL
7440-36-0	Antimony			NR	
7440-38-2	Arsenic	610		F	10
7440-41-7	Beryllium			NR	
7440-43-9	Cadmium			NR	
7440-47-3	Chromium			NR	
7440-50-8	Copper	1570		P	300
7439-92-1	Lead			NR	
7439-97-6	Mercury			NR	
7440-02-0	Nickel			NR	
7782-49-2	Selenium			NR	
7440-22-4	Silver			NR	
7440-28-0	Thallium			NR	
7440-66-6	Zinc	1310		P	200

REPERMITS
 EVALUATION HAS BEEN INITIATED
 NO DATA SHOULD BE USED
 WITHOUT DISCRETION

Comments: DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

- Qualifiers:
- B -- greater than the IDL but less than the MDL
 - U -- less than the IDL
 - P -- analyzed by ICP
 - CV -- analyzed by cold vapor
 - F -- analyzed by GFA
 - A -- analyzed by flame AA
 - NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25511

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405269
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (587), Beryllium, Cadmium, Chromium, Copper (1990), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (1900).

ICP ANALYSIS HAS BEEN PERFORMED
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE_ANALYZED: (P) 4/26/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25512

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405270
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (601), Beryllium, Cadmium, Chromium, Copper (2190), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (2050).

SEEN PERFORMED
SUBSTANTIATED
SHOULD BE USED
DISCRETION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25513

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405271
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (505), Beryllium, Cadmium, Chromium, Copper (2020), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (1900). Qualifiers include NR, F, and P.

QUALITY CONTROL HAS BEEN PERFORMED... DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/3/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25514

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405272
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (333), Beryllium, Cadmium, Chromium, Copper (966), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (875). A large stamp is overlaid on the table: 'NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.'

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/3/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25515

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405273
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (357), Beryllium, Cadmium, Chromium, Copper (791), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (791).

NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25516

Client : WRFI
Case No.: 6571
Matrix: WATER_

Lab Sample ID: 9405274
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (368), Beryllium, Cadmium, Chromium, Copper (1030), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (901).

DATA VALIDATED AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25517

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405275
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (665), Beryllium, Cadmium, Chromium, Copper (1770), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (1690). MDL values include 10, 300, and 200.

THIS REPORT SHOULD BE USED WITH DISCRETION.

Comments:
DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25518

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405276
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (94500), Beryllium, Cadmium, Chromium, Copper (129000), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (82500).

NOT BEEN PERFORMED
UNQUALIFIED
SHOULD BE USED

Comments:

DATE ANALYZED: (P) 4/26,27/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
F -- analyzed by GFA
P -- analyzed by ICP
A -- analyzed by flame AA
CV -- analyzed by cold vapor
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25519

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405277
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (80700), Beryllium, Cadmium, Chromium, Copper (111000), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (70600).

Comments:

DATE_ANALYZED: (P) 4/26,27/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25520

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405278
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (72700), Beryllium, Cadmium, Chromium, Copper (91100), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (64300).

Comments:

DATE ANALYZED: (P) 4/26, 27/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25521

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405279
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (43000), Beryllium, Cadmium, Chromium, Copper (65800), Lead, Mercury, Nickel, Selenium, silver, Thallium, and Zinc (33200).

Comments:

DATE ANALYZED: (P) 4/26/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25522

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405280
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (53100), Beryllium, Cadmium, Chromium, Copper (75600), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (46700).

Comments:

DATE ANALYZED: (P) 4/26/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

INORGANIC ANALYSIS DATA SHEET

FIELD ID.

B25523

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405281
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (76900), Beryllium, Cadmium, Chromium, Copper (99100), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (65800).

Handwritten note: DATA REPORTED AS IS. CHECKED BY [signature] AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/26, 27/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25524

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405282
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (113000), Beryllium, Cadmium, Chromium, Copper (14400), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (98400).

Comments:

DATE ANALYZED: (P) 4/26, 27/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
F -- analyzed by GFA
P -- analyzed by ICP
A -- analyzed by flame AA
CV -- analyzed by cold vapor
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25525

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405283
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (58300), Beryllium, Cadmium, Chromium, Copper (77800), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (46800).

RESULTS SHOULD BE USED IN DISCRETION

Comments:

DATE ANALYZED: (P) 4/26/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25529

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405284
Date Received: 04/20/94

* Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (85100), Beryllium, Cadmium, Chromium, Copper (116000), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (71500).

NO DUPLICATIONS TO BE USED

Comments:

DATE ANALYZED: (P) 4/26, 27/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25530

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405285
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (50700), Beryllium, Cadmium, Chromium, Copper (63000), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (42800).

NO EVALUATION HAS BEEN PERFORMED ON THIS SUBSTANCE... DATA VALIDITY...

Comments:

DATE ANALYZED: (P) 4/26/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25531

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405286
Date Received: 04/20/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (200000), Beryllium, Cadmium, Chromium, Copper (256000), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (183000).

NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/27/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25532

Client : WRFI

Case No.: 6571

Matrix: WATER

Lab Sample ID: 9405287

Date Received: 04/20/94

* Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	M	MDL
7440-36-0	Antimony			NR	
7440-38-2	Arsenic	862		F	10
7440-41-7	Beryllium			NR	
7440-43-9	Cadmium			NR	
7440-47-3	Chromium			NR	
7440-50-8	Copper	2690		P	300
7439-92-1	Lead			NR	
7439-97-6	Mercury			NR	
7440-02-0	Nickel			NR	
7782-49-2	Selenium			NR	
7440-22-4	Silver			NR	
7440-28-0	Thallium			NR	
7440-66-6	Zinc	2500		P	200

NO QC EVALUATION HAS BEEN PERFORMED
 DATA VALIDITY IS UNSUBSTANTIATED
 AND THE DATA SHOULD BE USED WITH CAUTION

Comments: DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

- Qualifiers:
- B -- greater than the IDL but less than the MDL
 - U -- less than the IDL
 - P -- analyzed by ICP
 - CV -- analyzed by cold vapor
 - F -- analyzed by GFA
 - A -- analyzed by flame AA
 - NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25534

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405289
Date Received: 04/20/94

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (808), Beryllium, Cadmium, Chromium, Copper (2600), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (2560).

NO HAS BEEN PERFORMED
IS UNSUBSTANTIATED
DATA SHOULD BE USED AT
DISCRETION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25535

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405290
Date Received: 04/20/94

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (255), Beryllium, Cadmium, Chromium, Copper (710), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (658).

BEEN PER
UNSUBSTANT
SHOULD BE UC
CRETION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/3/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25536

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405291
Date Received: 04/20/94

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc.

NO EVALUATION HAS BEEN PERFORMED
DATA VALIDITY IS UNDETERMINED
AND THE DATA SHOULD BE USED
WITH CAUTION.

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/3/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
F -- analyzed by GFA
P -- analyzed by ICP
A -- analyzed by flame AA
CV -- analyzed by cold vapor
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25537

Client : WRFI
Case No.: 6571
Matrix: WATER_

Lab Sample ID: 9405292
Date Received: 04/20/94

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (286), Beryllium, Cadmium, Chromium, Copper (728), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (666).

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/2/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

C25539

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405294
Date Received: 04/20/94

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (438), Beryllium, Cadmium, Chromium, Copper (1150), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (981).

Comments:

DATE ANALYZED: (P) 4/26/94 (F) 5/3/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

C25540

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405295
Date Received: 04/20/94

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (9670), Beryllium, Cadmium, Chromium, Copper (13900), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (7450).

Comments:

DATE ANALYZED: (P) 4/26/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

C25541

Client : WRFI
Case No.: 6571
Matrix: WATER

Lab Sample ID: 9405296
Date Received: 04/20/94

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (6200), Beryllium, Cadmium, Chromium, Copper (7700), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (4910).

Comments:

DATE ANALYZED: (P) 4/26/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested



ROY F. WESTON, INC.
GSA RARITAN DEPOT
2890 WOODBRIDGE AVENUE
BLDG. 209 ANNEX
EDISON, NJ 08837-3679
908-632-9200 • FAX: 908-632-9205

DATE: 5-6-94
TO: R. Singhvi, ERT/EPA
FROM: Misty Barkley, Analytical Project Control Group Leader *MB 5/6/94*
SUBJECT: Preliminary Results of Project Penta, WA# 6932

Attached please find the preliminary results of the above referenced project for the following samples.

<u>Chain of Custody No.</u>	<u>Analyses</u>
9257	23 soils for As, Cu, Zn
9258	

cc: Central File
Subcontracting
Misty Barkley
Wam: H. ALLEN
Task Leader: R. HENRY



CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Project Name: PENTA
Project Number: 6932
RFW Contact: M. Mohr Phone: 908-321-4257

No: 9257

SHEET NO. 1 OF 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	As, Cu, Zn	
	B25421	SERIES 1P, TEST 1	S	4/16/94	1	4 OZ G/ NONE	X	9405413
	B25422	SERIES 1P, TEST 2						9405414
	B25423	SERIES 1P, TEST 3						9405415
	B25424	SERIES 1P, TEST 4						9405416
	B25425	SERIES 1P, TEST 5						9405417
	B25426	SERIES 1P, TEST 6						9405418
	B25427	SERIES 2P, TEST 1						9405419
	B25428	SERIES 2P, TEST 2						9405420
	B25429	SERIES 2PA, TEST 3						9405421
	B25430	SERIES 2PA, TEST 4						9405422
	B25431	SERIES 2PA, TEST 5						9405423
	B25432	SERIES 2PA, TEST 6						9405424
	B25433	SERIES 3PA, TEST 1						9405425
	B25434	SERIES 3PA, TEST 2						9405426
	B25435	SERIES 3PA, TEST 3						9405427
	B25436	SERIES 3PA, TEST 4						9405428
	B25437	SERIES 4P, TEST 1						9405429
	B25438	SERIES 4P, TEST 2						9405430
	B25439	SERIES 4P, TEST 3						9405431
	B25440	SERIES 4P, TEST 4						9405432

- Matrix:
- Sediment
 - Drum Solids
 - Drum Liquids
 - Other

- PW - Potable Water
- GW - Groundwater
- SW - Surface Water
- SL - Sludge

Special Instructions: DO MS/MSD ON B25432, B25442, B25443

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
U/Analysis	M. Mohr	4/16/94	B. Okubo	4-21-94	N.A.						

clac 1

SENT BY: : 5-5-94 : 15:47 : 12015411383- 6062827875: # 2

CHAIN OF CUSTODY RI ORD/LAB WORK REQUEST

Roy F. Weir, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

Project Name: PENTA
 Project Number: 6932
 RFW Contact: M. Mohr Phone: 908-321-4257

No: 9258

SHEET NO. 2 OF 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	As, Cu, Zn		
	B25441	SERIES 4P, TEST 5	S	4/16/94	1	4 OZ 6/NONE	↓		9405433
	B25442	PENTA UNTREATED	↓	↓	↓	↓	↓		9405434
	B25443	PENTA/PCA UNTREATED	↓	↓	↓	↓	↓		9405435
MEM									
MEM									

- Matrix:
- S - Sediment
 - GS - Drum Solids
 - DL - Drum Liquids
 - Other
 - PW - Potable Water
 - GW - Groundwater
 - SW - Surface Water
 - SL - Sludge
 - S - Soil
 - W - Water
 - O - Oil
 - A - Air

Special Instructions: DO MS/MSD ON B25432, B25442, B25443
AP'd by MS

FOR SUBCONTRACTING USE ONLY
 FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
Analysis	M. Mohr	4/16/94	B. Mohr	4/16/94	N/A						

C-6594

SENT BY: : 5-5-94 : 15:47 : 12015411383- 5062827375: 3

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25421

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405413
Date Received: 04/21/94

% Solids: 76.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (33.8), Beryllium, Cadmium, Chromium, Copper (53.5), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (54.0).

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/27/94

FURTHER DILUTIONS NEEDED

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25422

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405414
Date Received: 04/21/94

% Solids: 78.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (0.19), Beryllium, Cadmium, Chromium, Copper (42.3), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (47.1).

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH CAUTION.

Comments:

DATE ANALYZED: (P) 4/27/94 (F) 5/4/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25423

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405415
Date Received: 04/21/94

% Solids: 77.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (31.9), Beryllium, Cadmium, Chromium, Copper (47.3), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (53.8).

NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/27/94 (F) 5/4/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
F -- analyzed by GFA
P -- analyzed by ICP
A -- analyzed by flame AA
CV -- analyzed by cold vapor
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25424

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405416
Date Received: 04/21/94

% Solids: 77.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (27.5), Beryllium, Cadmium, Chromium, Copper (64.2), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (62.3). Includes a large 'NO QC EVALUATION HAS BEEN PERFORMED...' stamp.

Comments:

DATE ANALYZED: (P) 4/27/94

FURTHER DILUTION NEEDED

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25425

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405417
Date Received: 04/21/94

% Solids: 76.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.

NO QC EVALUATION HAS BEEN PERFORMED.
DATE VALIDITY IS UNDETERMINED
RESULTS SHOULD NOT BE USED

Comments:

DATE_ANALYZED: (P) 4/27/94 (F) 5/4/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25426

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405418
Date Received: 04/21/94

% Solids: 78.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (22.1), Beryllium, Cadmium, Chromium, Copper (47.1), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (53.3).

NO OF EVALUATION HAS BEEN PERFORMED
DATE: 04/27/94

Comments:

DATE ANALYZED: (P) 4/27/94

FURTHER DILUTIONS NEEDED

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25427

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405419
Date Received: 04/21/94

% Solids: 75.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (33.8), Beryllium, Cadmium, Chromium, Copper (56.2), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (59.2).

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED

Comments:

DATE ANALYZED: (P) 4/27/94

FURTHER DILUTION NEEDED

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25428

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405420
Date Received: 04/21/94

% Solids: 78.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (20.2), Beryllium, Cadmium, Chromium, Copper (46.5), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (54.1).

NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH CAUTION.

Comments:

DATE ANALYZED: (P) 4/27/94

FURTHER DILUTIONS NEEDED

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25429

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405421
Date Received: 04/21/94

% Solids: 62.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (20100), Beryllium, Cadmium, Chromium, Copper (28700), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (16500).

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/28/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25430

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405422
Date Received: 04/21/94

% Solids: 63.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (23300), Beryllium, Cadmium, Chromium, Copper (33400), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (21000).

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE_ANALYZED: (P) 4/28/94

Modifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25431

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405423
Date Received: 04/21/94

% Solids: 63.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (22400), Beryllium, Cadmium, Chromium, Copper (32000), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (19400).

NO GC... HAS BEEN PERFORMED... UNSUBSTANTIATED... SHOULD BE... (mirrored text)

Comments:

DATE ANALYZED: (P) 4/28/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25432

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405424
Date Received: 04/21/94

% Solids: 63.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (25000), Beryllium, Cadmium, Chromium, Copper (35200), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (22000).

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/28/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25433

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405425
Date Received: 04/21/94

% Solids: 67.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (21300), Beryllium, Cadmium, Chromium, Copper (31300), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (18300).

NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/28/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25434

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405426
Date Received: 04/21/94

% Solids: 65.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, N, MDL. Rows include Antimony, Arsenic (21800), Beryllium, Cadmium, Chromium, Copper (31500), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (19200).

NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/28/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25436

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405428
Date Received: 04/21/94

% Solids: 61.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 6 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (24100), Beryllium, Cadmium, Chromium, Copper (34800), Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc (19100).

DATA HAS BEEN PERFORMED.
UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/28/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
F -- analyzed by GFA
P -- analyzed by ICP
A -- analyzed by flame AA
CV -- analyzed by cold vapor
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25437

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405429
Date Received: 04/21/94

* Solids: 76.5

Concentration Units (ug/L or mg/kg dry weight): NG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.

NO ANALYSIS HAS BEEN PERFORMED.
RESULTS ARE UNRELIABLE AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/27/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25438

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405430
Date Received: 04/21/94

% Solids: 77.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (17.9), Beryllium, Cadmium, Chromium, Copper (51.2), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (54.3).

NO QC EVALUATION HAS BEEN PERFORMED. DATA VALIDITY IS UNSUBSTANTIATED AND THE DATA SHOULD BE USED WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/27/94 (F) 5/4/94

Modifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
F -- analyzed by GFA
P -- analyzed by ICP
A -- analyzed by flame AA
CV -- analyzed by cold vapor
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25439

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405431
Date Received: 04/21/94

% Solids: 76.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (13.5), Beryllium, Cadmium, Chromium, Copper (45.9), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (50.6).

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/27/94

Further Dilutions Needed

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25440

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405432
Date Received: 04/21/94

% Solids: 78.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (15.5), Beryllium, Cadmium, Chromium, Copper (69.8), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (50.9).

... HAS BEEN PERFORMED.
... IS UNSUBSTANTIATED
... THE DATA SHOULD BE USED
... WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/27/94 (F) 5/4/94

Modifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25441

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405433
Date Received: 04/21/94

% Solids: 77.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (37.0), Beryllium, Cadmium, Chromium, Copper (50.8), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (54.7).

NO ANALYSIS HAS BEEN PERFORMED.
DATE VALIDITY IS NOT SUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/27/94

FURTHER DILUTIONS NEEDED

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25442

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405434
Date Received: 04/21/94

% Solids: 93.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C, M, MDL. Rows include Antimony, Arsenic (4.0), Beryllium, Cadmium, Chromium, Copper (79.5), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (80.1).

NO EVALUATION HAS BEEN PERFORMED.
RESULTS ARE UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/27/94

FURTHER DILUTIONS NEEDED

Modifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

B25443

Client : WRFI
Case No.: 6594
Matrix: SOIL

Lab Sample ID: 9405435
Date Received: 04/21/94

* Solids: 81.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (21200), Beryllium, Cadmium, Chromium, Copper (31000), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (18400).

AS BEEN PERFORMED:
UNSUBSTANTIATED
DATA SHOULD BE USED
WITH DISCRETION.

Comments:

DATE ANALYZED: (P) 4/28/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

ACCREDITED LABORATORIES INC.

SPIKE SAMPLE RECOVERY

ALI QC SAMPLE#

5428B

ALI QC #: 940427B
Matrix (soil/water): SOIL
% Solids for Sample: 61.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with columns: Analyte, Control Limit %R, Spiked Sample Result (SSR) C, Sample Result (SR) C, Spike Added (SA), %R, Q, M. Rows include Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc.

C# 6594 AND THE DATA WITH

QUESTIONS SHOULD BE USED WITH DISCRETION.

Comments:



ROY F. WESTON, INC.
GSA RARITAN DEPOT
2890 WOODBRIDGE AVENUE
BLDG. 209 ANNEX
EDISON, NJ 08837-3679
908-632-9200 • FAX: 908-632-9205

DATE: 5-12-94
TO: R. Singhvi, ERT/EPA
FROM: Misty Barkley, Analytical Project Control Group Leader *OK for MB*
SUBJECT: Preliminary Results of Project Penta, WA# 693'2

Attached please find the preliminary results of the above referenced project for the following samples.

Chain of Custody No.

Analyses

8440

6 soils for TPH
3 soils for As, Cu, Zn
3 soils for TCLP As, Cu, Zn

cc: Central File
Subcontracting
Misty Barkley
Wam: H. ALLEN
Task Leader: R. HENRY



Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 8440

Project Name: Penta Wood Products
 Project Number: 03347-035-001-6932-01
 RFW Contact: T.E. Miller Phone: (610) 701-6189
(908) 321-4200

SHEET NO. 1 OF 1

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	TPH	As, Cu, Zn	TC, PA, Se, Zn	
	1	Lagoon 2	S	4/6/94	1	4oz. amber glass / 4°C	X			9405741
	2	Penta Drain 1	↓	↓	↓	↓	↓			9405742
	3	Sleep area 20'N	↓	↓	↓	↓	↓			9405743
	4	Sleep area 15'N	↓	↓	↓	↓	↓			9405744
	5	Sleep area 5'N	↓	↓	↓	↓	↓			9405745
	6	stain area 1-5 (0 to 10')	↓	↓	↓	↓	↓			9405745
	A22634	Quarry sand	↓	↓	↓	4oz. clear glass / 4°C		X		9405747
	A22635	Sleep area 1	↓	↓	↓	↓		↓		9405748
	A22636	Chemonite area 1	↓	↓	↓	↓			X	9405749

Matrix: SD - Sediment PW - Potable Water S - Soil
 DS - Drum Solids GW - Groundwater W - Water
 DL - Drum Liquids SW - Surface Water O - Oil
 X - Other SL - Sludge A - Air

Special Instructions:
 * Use sample #3 as matrix spike source for TPH analysis.

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
9/analysis	T.E. Miller	4/22/94	Fedex	4/25/94					[Signature]	4/26/94	10:00

C-004

ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

A22636

Client : WRFI
Case No.: 6644
Matrix: SOIL

Lab Sample ID: 9405749
Date Received: 04/26/94

* Solids: 91.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (9900), Beryllium, Cadmium, Chromium, Copper (21400), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (5840).

AND THE DATA SHOULD BE USED WITH DISCRETION

Comments:
DATE ANALYZED: (P) 5/10/94

Qualifiers:

- B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested



ROY F. WESTON, INC.
GSA RARITAN DEPOT
2890 WOODBRIDGE AVENUE
BLDG. 209 ANNEX
EDISON, NJ 08837-3679
908-632-9200 • FAX: 908-632-9205

DATE: 4-29-94
TO: R. Singhvi, ERT/EPA
FROM: Misty Barkley, Analytical Project Control Group Leader *MB*
SUBJECT: Preliminary Results of Project Penta, WA# 6432

Attached please find the preliminary results of the above referenced project for the following samples.

<u>Chain of Custody No.</u>	<u>Analyses</u>
9241	2 soils for TCLP As, Cu, Zn and As, Cu, Zn

cc: Central File
Subcontracting
Misty Barkley
Wam: M. ALLEN
Task Leader: R. HENRY



ACCREDITED LABORATORIES INC.

FIELD ID.

INORGANIC ANALYSIS DATA SHEET

A22644

Client : WRFI
Case No.: 6472
Matrix: SOIL

Lab Sample ID: 9404838
Date Received: 04/13/94

% Solids: 91.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Table with 5 columns: CAS No., Analyte, Concentration, C M, MDL. Rows include Antimony, Arsenic (3.6), Beryllium, Cadmium, Chromium, Copper (32.6), Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc (99.5).

NO QC EVALUATION HAS BEEN PERFORMED.
DATA VALIDITY IS UNSUBSTANTIATED
AND THE DATA SHOULD BE USED
WITH DISCRETION.

Comments:
DATE ANALYZED: (P) 4/22, 25/94

- Qualifiers:
B -- greater than the IDL but less than the MDL
U -- less than the IDL
P -- analyzed by ICP
CV -- analyzed by cold vapor
F -- analyzed by GFA
A -- analyzed by flame AA
NR -- analysis not requested

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

Project Name: PENTA WOOD PRODUCTS
 Project Number: 03347-035-001-6932-01
 R-W Contact: DEBBIE BROOKS Phone: 208-321-4200 4200
(NO)

No: **9241**

SHEET NO. 1 OF 1

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

EAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Containers/Preservative	As, Cu + Zn	TC/P As, Cu + Zn	Lab #
	A 22644	ASH PILE	S	4-7-94	1	9g / 4°C	✓	✓	9404838
	A 22645	AKA WOOD STORAGE AREA	S	4-7-94	1	9g / 4°C	✓	✓	9404839
<div style="position: absolute; top: 0; left: 0; right: 0; bottom: 0; border: 2px solid black; transform: rotate(45deg); opacity: 0.5;"></div>									

- Matrix:
- Sediment FW - Potable Water S - Soil
 - Drum Solids GW - Groundwater W - Water
 - Drum Liquids SW - Surface Water O - Oil
 - Other SL - Sludge A - Air

Special Instructions:

FOR SUBCONTRACTING USE ONLY
 FROM CHAIN OF
 CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
Analysis	<i>[Signature]</i>	4/12/94	Michael Van Cleef	4/12/94	14:10	Analysis	Michael Van Cleef	4/12/94	B. Oxm	4-13-94	NO

C-6472

SENT BY:

: 4-27-94 : 13:49 :

12015411383-

6062827875: # 2

Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

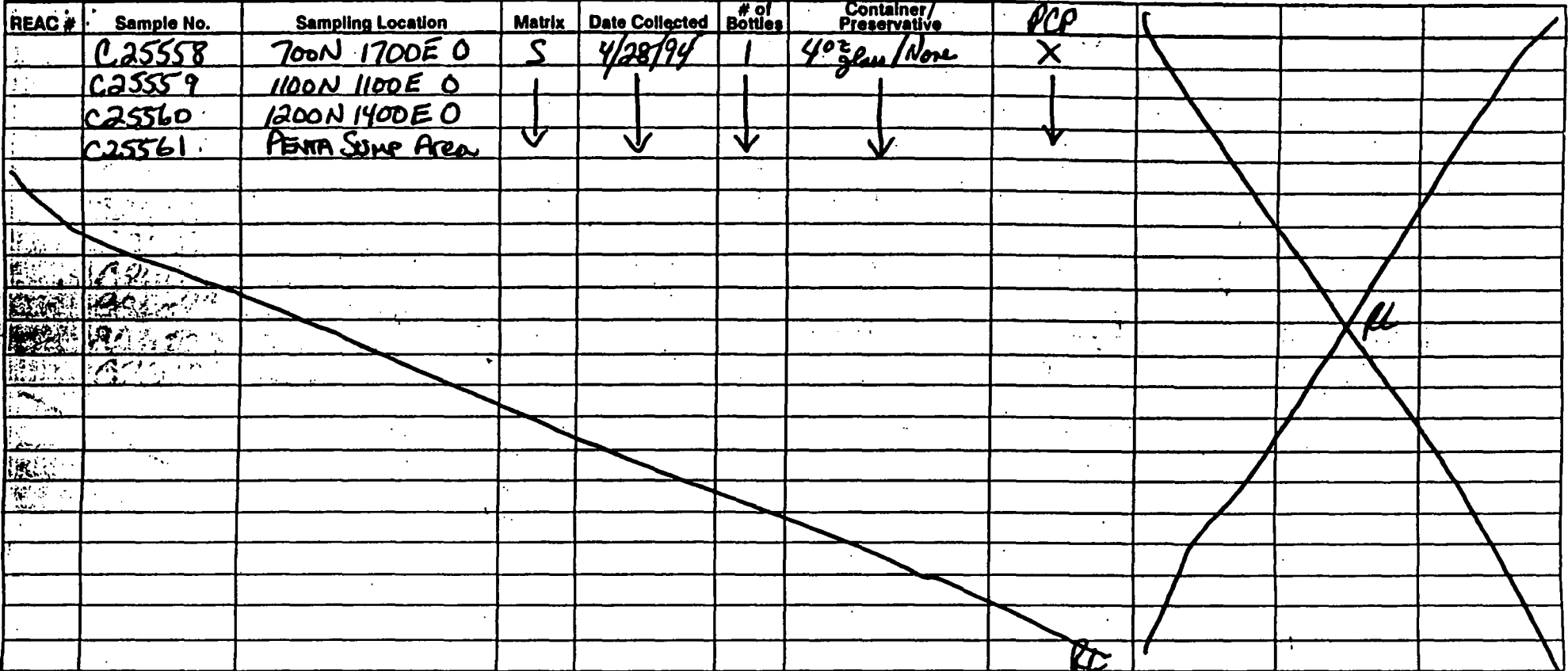
Project Name: PENTA Wood Products
 Project Number: 03347035001693201
 RFW Contact: Rich Henry Phone: 908 321 4200

No: 9435

SHEET NO. 1 OF 1

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCP			
	C25558	700N 1700E 0	S	4/28/94	1	4oz glass/None	X			
	C25559	1100N 1100E 0	↓	↓	↓	↓				
	C25560	1200N 1400E 0	↓	↓	↓	↓				
	C25561	PENTA Sump Area	↓	↓	↓	↓				

Matrix:
 SD - Sediment PW - Potable Water S - Soil
 DS - Drum Solids GW - Groundwater W - Water
 DL - Drum Liquids SW - Surface Water O - Oil
 X - Other SL - Sludge A - Air

Special Instructions:

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analysis	<i>[Signature]</i>	4/28/94	<i>[Signature]</i>	4/29/94	10:20						

Table 1.1 Results of the Pentachlorophenol Analysis
 WA # 5-932 Penta Wood Products
 (Results are Based on Dry Weight)

SAMPLE ID	LOCATION	CONC (MG/KG)	MDL (MG/KG)
BLANK 158	SAND BLANK	ND	5.0
B26196	356 N 1147 E 0	ND	5.5
B26198	356 N 1147 E 1	ND	5.3
B26197	356 N 1147 E 2	ND	4.9
B26198	356 N 1147 E 3	ND	4.6
B26199	356 N 1147 E 5	ND	4.8
B26200	356 N 1147 E 7	ND	5.0
B26201	356 N 1147 E 9	ND	4.4
B26202	356 N 1147 E 11	ND	4.9
B26203	356 N 1147 E 15	ND	5.1
B26204	356 N 1147 E 20	ND	4.7
B26205	356 N 1147 E 40	ND	5.0
B26208	356 N 1147 E 80	ND	5.5
B26207	356 N 1147 E 80	ND	4.9
B26208	356 N 1147 E 100	ND	4.7
B26209	356 N 1147 E 120	ND	4.9
B26210	356 N 1147 E 140	ND	4.3
B26211	356 N 1147 E 160	ND	5.2
B26212	356 N 1147 E 180	ND	4.1
B26213	1286 N 1816 E 65	1.6 J	5.2
B26215	356 N 1147 E 200	ND	5.6
B26216	356 N 1147 E 215	ND	5.2
B26214	356 N 1147 E 183	ND	4.7
B26087	1286 N 1816 E 85	180	25.0
B26088	1286 N 1816 E 55	ND	4.6
B26089	1286 N 1816 E 75	ND	4.4
BLANK 159	SAND BLANK	ND	5.0
B26217	1657 N 184 E 1	ND	4.9
B26218	1657 N 184 E 2	ND	4.6
B26219	1657 N 184 E 3	ND	4.7
B26220	1657 N 184 E 5	ND	4.9
B26221	1657 N 184 E 7	ND	4.3
B26222	1657 N 184 E 9	ND	5.0
B26223	1657 N 184 E 11	ND	5.1
B26224	1657 N 184 E 15	ND	4.2
B26225	1657 N 184 E 20	ND	5.2
B26226	1657 N 184 E 40	ND	4.8
B26227	1657 N 184 E 80	ND	5.0
B26228	1657 N 184 E 80	ND	4.9
BLANK 160	SAND BLANK	ND	5.2
B26090	1286 N 1816 E 25	1.4 J	5.7
B26092	1872 N 1815 E 0	4.1 J	5.9
B26093	1872 N 1815 E 1	8.2 J	7.4
B26094	1872 N 1815 E 2	1.5 J	5.3
B26095	1872 N 1815 E 3	ND	5.6
B26096	1872 N 1815 E 5	ND	5.2
B26097	1872 N 1815 E 7	ND	5.5
B26098	1872 N 1815 E 9	ND	4.9
B26099	1872 N 1815 E 11	ND	5.5
B26100	1872 N 1815 E 15	ND	5.7
B26101	1872 N 1815 E 20	ND	4.5
C25558	700 N 1700 E 0	34	4.7
C25559	1100 N 1100 E	1.7 J	5.4
C25560	1200 N 1400 E	37	5.2
C25561	PENTA SUMP AREA	1100	28.0

ND Denotes Not Detected

J Denotes that the value is estimated

MDL Denotes method detection limit

COC #'s: 9109, 9430, 9111, 9435, 9433

C:\123R31\PENTA\PENRES15.WE3

Weston, Inc.
 Edison, N.J.
 EPA Contract 68-03-3482

Project Name: Pentaco Products, Siren WI.
 Project Number: 03347 35001 6932
 RFW Contact: Mike Moran Phone: 908-321-4257

No: 9437

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

SHEET NO. 1 OF 1

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative			
	A26102	Pentaco Seep >200 mesh	Soil	4/14/94	1	4oz Jar/None	Pentachlorophenol		
	A26103	" <200 mesh	"	"	1	"	"		
	A26104	" >120 mesh	"	"	1	"	"		
	A26105	P " >60 mesh	"	"	1	"	"		
	A26106	" >18 mesh	"	"	1	"	"		
	A26107	ACA Trent. Area >200m	"	"	1	"	"		
	A26108	" <200 mesh	"	"	1	"	"		
	A26109	" >120 mesh	"	"	1	"	"		
	A26110	" >60 mesh	"	"	1	"	"		
	A26111	" >18 mesh	"	"	1	"	"		

Matrix:
 SD - Sediment PW - Potable Water S - Soil
 DS - Drum Solids GW - Groundwater W - Water
 DL - Drum Liquids SW - Surface Water O - Oil
 X - Other SL - Sludge A - Air

Special Instructions:

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF
CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
<i>As/Analysis</i>	<i>A. Allen</i>	<i>4/29/94</i>	<i>[Signature]</i>	<i>4/29/94</i>	<i>9:30</i>						

**Table 1.1 Results of the Pentachlorophenol Analysis
WA # 5-932 Penta Wood Products
(Results are Based on Dry Weight)**

SAMPLE ID	LOCATION	CONC (MG/KG)	MDL (MG/KG)
BLANK 161	SAND BLANK	ND	5.0
A26102	PENTA SEEP >200 MESH	2800	74.0
A26103	PENTA SEEP <200 MESH	3500	160.0
A26104	PENTA SEEP >120 MESH	1300	48.0
A26105	PENTA SEEP >60 MESH	950	50.0
A26106	PENTA SEEP >18 MESH	1600	50.0
A26107	ACA TREAT. AREA >200 MESH	1900	69.0
A26108	ACA TREAT. AREA <200 MESH	2300	150.0
A26109	ACA TREAT. AREA >120 MESH	1000	59.0
A26110	ACA TREAT. AREA >60 MESH	520	51.0
A26111	ACA TREAT. AREA >18 MESH	1100	57.0
B26229	1657 N 154 E 100	ND	4.8
B26230	1657 N 154 E 104	ND	4.7
B26231	1657 N 154 E 105	ND	5.2
B26232	1657 N 154 E 106	ND	4.9
B26233	1657 N 154 E 107	ND	5.1
B26234	1657 N 154 E 109	ND	5.2
BLANK 162	SAND BLANK	ND	5.0
B26117	1657 N 154 E 40	ND	5.9
B26116	1657 N 154 E 20	ND	4.7
B26115	1657 N 154 E 15	ND	5.4
B26114	1657 N 154 E 11	ND	4.8
B26118	1657 N 154 E 60	ND	5.3

ND Denotes Not Detected

J Denotes that the value is estimated

MDL Denotes method detection limit

COC#'s: 9436, 9115, 9439

C:\123R31\PENTA\PENRES17.WK3

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
200N1000E0	1000	200	0	ND (75)	ND (56)	ND (49)
400N1000E0	1000	400	0	ND (75)	ND (56)	ND (49)
400N1000E1	1000	400	1	ND (75)	ND (56)	ND (49)
570N1000E0	1000	570	0	110 J	89 J	ND (49)
600N1000E0	1000	600	0	ND (75)	ND (56)	ND (49)
600N1000E0	1000	600	0	ND (75)	70 J	ND (49)
625N1000E0D	1000	625	0	ND (75)	69 J	ND (49)
625N1000E0	1000	625	0	ND (75)	ND (56)	ND (49)
835N1000E1	1000	835	1	300	250	240
835N1000E0	1000	835	0	1400	720	580
835N1000E1	1000	835	1	240 J	210	240
1000N1000E0	1000	1000	0	ND (75)	63 J	ND (49)
1200N1000E0	1000	1200	0	ND (75)	ND (56)	ND (49)
1200N1000E1	1000	1200	1	ND (75)	70 J	ND (49)
1400N1000E0	1000	1400	0	ND (75)	67 J	ND (49)
846N1027E0	1027	846	0	390	200	65 J
846N1027E1	1027	846	1	320	660	1000
846N1027E2	1027	846	2	390	510	260
846N1027E3	1027	846	3	710	530	330
846N1027E5	1027	846	5	ND (75)	170 J	ND (49)
846N1027E10	1027	846	10	ND (75)	70 J	ND (49)
731N1040E0	1040	731	0	ND (75)	110 J	ND (49)
731N1040E1	1040	731	1	ND (75)	120 J	ND (49)
731N1040E1	1040	731	1	ND (75)	80 J	ND (49)
731N1040E2	1040	731	2	ND (75)	70 J	ND (49)
731N1040E3	1040	731	3	ND (75)	ND (56)	ND (49)
731N1040E5	1040	731	5	ND (75)	ND (56)	ND (49)
714N1076E0	1076	714	0	ND (75)	62 J	ND (49)
714N1076E1	1076	714	1	ND (75)	ND (56)	ND (49)
714N1076E2	1076	714	2	ND (75)	ND (56)	ND (49)
714N1076E3	1076	714	3	83 J	ND (56)	ND (49)
714N1076E5	1076	714	5	ND (75)	ND (56)	ND (49)
714N1076E5D	1076	714	5	ND (75)	ND (56)	ND (49)
822N1098E0	1098	822	0	290	210	110 J
822N1098E1	1098	822	1	2800	600	630
822N1098E2	1098	822	2	2100	230	660
822N1098E3D	1098	822	3	1600	200	690
822N1098E3	1098	822	3	1400	210	660
822N1098E5	1098	822	5	210 J	ND (56)	640
600N1100E0	1100	600	0	ND (75)	62 J	ND (49)
1100N1100E0	1100	1100	0	110 J	70 J	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, and Arsenic = 160

Table 3 (Cont'd)
 Spectrace 9000 FPXRF Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
914N1285E0	1285	914	0	280	150 J	120 J
914N1285E1	1285	914	1	ND (75)	65 J	ND (49)
914N1285E2	1285	914	2	ND (75)	108 J	ND (49)
914N1285E3	1285	914	3	ND (75)	60 J	ND (49)
914N1285E5	1285	914	5	ND (75)	ND (56)	ND (49)
910N1290E0D	1290	910	0	84 J	68 J	ND (49)
910N1290E1	1290	910	1	ND (75)	94 J	ND (49)
1065N1336E0	1336	1065	0	650	94 J	160 J
1065N1336E1	1336	1065	1	300	150 J	190
1065N1336E2	1336	1065	2	ND (75)	75 J	99 J
1065N1336E3	1336	1065	3	ND (75)	83 J	ND (49)
1065N1336E5	1336	1065	5	ND (75)	ND (56)	ND (49)
1015N1385E0	1385	1015	0	ND (75)	150 J	130 J
1015N1385E1	1385	1015	1	ND (75)	ND (56)	ND (49)
1015N1385E2	1385	1015	2	ND (75)	ND (56)	ND (49)
1015N1385E3	1385	1015	3	ND (75)	100 J	ND (49)
1015N1385E5	1385	1015	5	ND (75)	79 J	ND (49)
600N1400E0	1400	600	0	ND (75)	79 J	ND (49)
800N1400E0	1400	800	0	580	150 J	130 J
800N1400E1	1400	800	1	ND (75)	130 J	ND (49)
800N1400E2	1400	800	2	ND (75)	61 J	ND (49)
800N1400E3D	1400	800	3	ND (75)	ND (56)	ND (49)
800N1400E3	1400	800	3	ND (75)	ND (56)	ND (49)
800N1400E5	1400	800	5	ND (75)	ND (56)	ND (49)
945N1400E0	1400	945	0	ND (75)	59 J	ND (49)
1000N1400E0D	1400	1000	0	160 J	64 J	130 J
1000N1400E0	1400	1000	0	400	ND (56)	430
1200N1400E0	1400	1200	0	ND (75)	ND (56)	100 J
1200N1400E1	1400	1200	1	ND (75)	110 J	210
1200N1400E0D	1400	1200	0	170 J	64 J	170
1200N1400E0	1400	1200	0	130 J	ND (56)	310
1400N1400E0	1400	1400	0	120 J	ND (56)	ND (49)
995N1405E0	1405	995	0	ND (75)	130 J	ND (49)
995N1405E1	1405	995	1	ND (75)	98 J	ND (49)
995N1405E2	1405	995	2	ND (75)	ND (56)	ND (49)
995N1405E3	1405	995	3	ND (75)	67 J	ND (49)
955N1405E5D	1405	955	5	ND (75)	ND (56)	ND (49)
955N1405E5	1405	955	5	ND (75)	86 J	ND (49)
1178N1420E0	1420	1178	0	ND (75)	ND (56)	ND (49)
1178N1420E1	1420	1178	1	ND (75)	85 J	57 J
1178N1420E2	1420	1178	2	ND (75)	110 J	ND (49)
1178N1420E3	1420	1178	3	110 J	150 J	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
1675N1690E0	1690	1675	0	ND (75)	ND (56)	ND (49)
1675N1690E1	1690	1675	1	ND (75)	ND (56)	ND (49)
1675N1690E2	1690	1675	2	ND (75)	ND (56)	51 J
1675N1690E3	1690	1675	3	93 J	87 J	83 J
1675N1690E5	1690	1675	5	ND (75)	72 J	ND (49)
700N1700E1	1700	700	1	240 J	ND (56)	50 J
700N1700E1D	1700	700	1	170 J	ND (56)	ND (49)
700N1700E0	1700	700	0	ND (75)	ND (56)	ND (49)
700N1700E0	1700	700	0	ND (75)	ND (56)	130 J
900N1700E0	1700	900	0	ND (75)	ND (56)	ND (49)
900N1700E1	1700	900	1	ND (75)	ND (56)	ND (49)
1100N1700E1	1700	1100	1	ND (75)	63 J	ND (49)
1100N1700E0D	1700	1100	0	170 J	ND (56)	320
1100N1700E0	1700	1100	0	100 J	120 J	400
600N1800E0	1800	600	0	ND (75)	ND (56)	ND (49)
800N1800E1	1800	800	1	ND (75)	ND (56)	130 J
800N1800E0	1800	800	0	ND (75)	88 J	ND (49)
1000N1800E0	1800	1000	0	150 J	61 J	170
1200N1800E0	1800	1200	0	98 J	ND (56)	64 J
1200N1800E1	1800	1200	1	ND (75)	68 J	78 J
1400N1800E0	1800	1400	0	ND (75)	76 J	ND (49)
800N1865E0	1865	800	0	ND (75)	72 J	ND (49)
820N1865E0	1865	820	0	ND (75)	130 J	ND (49)
1330N1867E0	1867	1330	0	ND (75)	82 J	ND (49)
1330N1867E1	1867	1330	1	ND (75)	70 J	ND (49)
1330N1867E1	1867	1330	1	ND (75)	ND (56)	ND (49)
1330N1867E2	1867	1330	2	ND (75)	ND (56)	ND (49)
1330N1867E3	1867	1330	3	ND (75)	ND (56)	ND (49)
1330N1867E5	1867	1330	5	220 J	150 J	200
624N2000E0	2000	624	0	ND (75)	ND (56)	ND (49)
800N2000E0	2000	800	0	630	ND (56)	340
1000N2000E1	2000	1000	1	140 J	ND (56)	120 J
1000N2000E0	2000	1000	0	570	63 J	140 J
1200N2000E0	2000	1200	0	ND (75)	83 J	93 J
1200N2000E0	2000	1200	0	100 J	ND (56)	82 J
1400N2000E0	2000	1400	0	ND (75)	80 J	130 J

All Results in Parts Per Million; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, and Arsenic = 160

Table 4 (Cont'd)
 Spectrace 9000 FPXRF Results
 Non-Coordinate Labelled Samples
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Sample	Copper	Zinc	Arsenic
A25438	82 J	96 J	ND (49)
A25439	84 J	98 J	ND (49)
A25440	ND (75)	108 J	ND (49)
A25441	ND (75)	108 J	ND (49)
A25442	119 J	175 J	ND (49)
A25443	45507	26178	30067
A25444TAT	32383	8021	19029
A25445TAT	9821	722	1363
A25446	738	88 J	417
A25447	44251	24819	28463
A25448	39267	22695	24949
A25453	100 J	156 J	ND (49)
A25499	727	1544	113 J
A25526	168600	ND (56)	230531
A25527	145480	575	247061
A25528	ND (75)	534	ND (49)
C25561	ND (75)	101 J	ND (49)
ED1-0	159 J	ND (56)	55 J
ED10-0	ND (75)	116 J	ND (49)
ED10-0D	ND (75)	153 J	ND (49)
ED10-1	ND (75)	ND (56)	ND (49)
ED1-0D	143 J	62 J	65 J
ED1-1	ND (75)	69 J	66 J
ED11-0	ND (75)	75 J	ND (49)
ED11-1	ND (75)	ND (56)	ND (49)
ED11-2	ND (75)	69 J	51 J
ED12-0	ND (75)	56 J	ND (49)
ED12-1	ND (75)	ND (56)	ND (49)
ED13-0	76 J	57 J	ND (49)
ED13-1	ND (75)	ND (56)	92 J
ED14-0	ND (75)	157 J	95 J

All Results in parts per million

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, Arsenic = 160

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Joy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Project Name: PENTA
Project Number: 6932
RFW Contact: M. MOHN Phone: 908-321-4257

No: 9278

SHEET NO. 1 OF 1

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCP			
	A25446	ACA UNTREATED SOIL	S	4/17/94	1	4 OZ G/NONE	X	MEM	MEM	MEM
	A25447	PENTR/ACA UNTREATED SOIL	↓	↓	↓	↓				
	A25448	WASHED PENTA/ACA UNTREATED SOIL	↓	↓	↓	↓				

Matrix:

- SD - Sediment PW - Potable Water S - Soil
- DS - Drum Solids GW - Groundwater W - Water
- DL - Drum Liquids SW - Surface Water O - Oil
- X - Other SL - Sludge A - Air

Special Instructions:

Ref. COC # 9279
QAed by RA

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF
CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
31 Analysis	M. Mohn	4/17/94	J. Doyle	4/19/94	12:20						

roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Project Name: PENTA
Project Number: 6932
RFW Contact: M. MOHN Phone: 908-321-4257

No: **9253**

SHEET NO. 1 OF 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCP			
	A25421	SERIES 1P, TEST 1	S	4/16/94	1	4 OZ G / NONE	X	NEM		
	A25422	SERIES 1P, TEST 2								
	A25423	SERIES 1P, TEST 3								
	A25424	SERIES 1P, TEST 4								
	A25425	SERIES 1P, TEST 5								
	A25426	SERIES 1P, TEST 6								
	A25427	SERIES 2P, TEST 1								
	A25428	SERIES 2P, TEST 2								
	A25429	SERIES 2PA, TEST 3								
	A25430	SERIES 2PA, TEST 4								
	A25431	SERIES 2PA, TEST 5								
	A25432	SERIES 2PA, TEST 6								
	A25433	SERIES 3PA, TEST 1								
	A25434	SERIES 3PA, TEST 2								
	A25435	SERIES 3PA, TEST 3								
	A25436	SERIES 3PA, TEST 4								
	A25437	SERIES 4P, TEST 1								
	A25438	SERIES 4P, TEST 2								
	A25439	SERIES 4P, TEST 3								
	A25440	SERIES 4P, TEST 4	↓	↓	↓	↓	↓			

Matrix: SD - Sediment PW - Potable Water S - Soil
 DS - Drum Solids GW - Groundwater W - Water
 DL - Drum Liquids SW - Surface Water O - Oil
 X - Other SL - Sludge A - Air

Special Instructions: Ref COC# 9255

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
All Analysis	M. Mohn	4/17/94	J. Lopez	4/19/94	12:30						

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

4/19-11

Woy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Project Name: PENTA
Project Number: 6932
RFW Contact: M. MOAN Phone: 908-321-9257

No: 9254

SHEET NO. 2 OF 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCP			
	A 25441	SERIES 4P, TEST 5	S	4/16/94	1	4 OZ G / NONE	X			
	A 25442	SERIES PENTA MFA UNTREATED	↓	↓	↓	↓	↓			
	A 25443	PENTA/ACA UNTREATED	↓	↓	↓	↓	↓			
MFA										
MFA										

Matrix: SD - Sediment, DS - Drum Solids, DL - Drum Liquids, X - Other, PW - Potable Water, GW - Groundwater, SW - Surface Water, SL - Sludge, S - Soil, W - Water, O - Oil, A - Air

Special Instructions: Ref COC # 9256
Q'd by [signature]

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
3/Analysis	M. Moan	4/17/94	[Signature]	4/19/94	12:30						

**Table 1.1 Results of the Pentachlorophenol Analysis
WA # 5-932 Penta Wood Products
(Results are Based on Dry Weight)**

SAMPLE ID	LOCATION	CONC (MG/KG)	MDL (MG/KG)
BLANK 154	SAND BLANK	ND	5.0
A25421	SERIES 1P TEST 1	980	60.0
A25422	SERIES 1P TEST 2	900	57.0
A25423	SERIES 1P TEST 3	890	57.0
A25424	SERIES 1P TEST 4	830	52.0
A25425	SERIES 1P TEST 5	790	56.0
A25426	SERIES 1P TEST 6	480	55.0
A25427	SERIES 2P TEST 1	600	57.0
A25428	SERIES 2P TEST 2	800	56.0
A25429	SERIES 2PA TEST 3	1400	62.0
A25430	SERIES 2PA TEST 4	1500	62.0
A25431	SERIES 2PA TEST 5	1600	57.0
A25432	SERIES 2PA TEST 6	1800	61.0
A25433	SERIES 3PA TEST 1	2100	62.0
A25434	SERIES 3PA TEST 2	1900	65.0
A25435	SERIES 3PA TEST 3	2000	75.0
A25436	SERIES 3PA TEST 4	2000	70.0
A25437	SERIES 4P TEST 1	760	49.0
A25438	SERIES 4P TEST 2	790	55.0
A25439	SERIES 4P TEST 3	420	51.0
A25440	SERIES 4P TEST 4	520	51.0
A25441	SERIES 4P TEST 5	900	55.0
A25442	PENTA UNTREATED	1800	55.0
A25443	PENTA/ACA UNTREATED	1500	56.0
A25446	ACA UNTREATED SOIL	9.3	5.3
A25447	PENTA/ACA UNTREATED SOIL	1600	55.0
A25448	WASHED PENTA/ACA UNTREATED	1900	71.0

ND Denotes Not Detected

J Denotes that the value is estimated

MDL Denotes method detection limit

COC#'s: 9253, 9254, 9278

CA\123R31\PENTA\PENRES16.WK3

Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Project Name: PENTA
 Project Number: 6932
 RFW Contact: M. MAHN Phone: 908-321-4257

No: 9255

SHEET NO. 1 OF 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	XRF
✓	A25421	SERIES 1P, TEST 1	S	4/16/94	1	4 OZ G/NONE	X
✓	A25422	SERIES 1P, TEST 2					
✓	A25423	SERIES 1P, TEST 3					
✓	A25424	SERIES 1P, TEST 4					
✓	A25425	SERIES 1P, TEST 5					
✓	A25426	SERIES 1P, TEST 6					
✓	A25427	SERIES 2P, TEST 1					
✓	A25428	SERIES 2P, TEST 2					
✓	A25429	SERIES 2PA, TEST 3					
✓	A25430	SERIES 2PA, TEST 4					
✓	A25431	SERIES 2PA, TEST 5					
✓	A25432	SERIES 2PA, TEST 6					
✓	A25433	SERIES 3PA, TEST 1					
✓	A25434	SERIES 3PA, TEST 2					
✓	A25435	SERIES 3PA, TEST 3					
✓	A25436	SERIES 3PA, TEST 4					
✓	A25437	SERIES 4P, TEST 1					
✓	A25438	SERIES 4P, TEST 2					
✓	A25439	SERIES 4P, TEST 3					
✓	A25440	SERIES 4P, TEST 4					

Matrix:

- SD - Sediment PW - Potable Water S - Soil
- DS - Drum Solids GW - Groundwater W - Water
- DL - Drum Liquids SW - Surface Water O - Oil
- X - Other SL - Sludge A - Air

Special Instructions:

Ref C069253

**FOR SUBCONTRACTING USE ONLY
 FROM CHAIN OF
 CUSTODY #**

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
20 Analysis	M. Mohr	4/17/94	William W. [Signature]	4/17/94	0745						
20	J. Mosby	4/17/94	[Signature]	4/17/94	859						

XRF complete as 4/17/94

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Weston, Inc.
 REAG, Edison, N.J.
 EPA Contract 68-03-3482

Project Name: PENTA
 Project Number: 6932
 RFW Contact: M. MOHN Phone: 908-321-4257

No: **9256**

SHEET NO. 2 OF 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	XRF	
✓	A25441	SERIES 4P, TEST 5	S	4/16/94	1	4 OZ G/MONE	X	
✓	A25442	PENTA UNTREATED	↓	↓	↓	↓		
✓	A25443	PENTA/ACA UNTREATED	↓	↓	↓	↓		

- Matrix:**
- SD - Sediment
 - DS - Drum Solids
 - DL - Drum Liquids
 - X - Other
 - PW - Potable Water
 - GW - Groundwater
 - SW - Surface Water
 - SL - Sludge
 - S - Soil
 - W - Water
 - O - Oil
 - A - Air

Special Instructions:
Ref COC 9254

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
3 / Analytical	M. Mohn	4/17/94	[Signature]	4/17/94	0745						
3	[Signature]	4/17/94	[Signature]	4/17/94	859						

XRF complete per 4/17/94

Table 3
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
800N0E0D	0	800	0	ND (75)	63 J	ND (49)
800N0E0	0	800	0	ND (75)	ND (56)	ND (49)
1000N0E0	0	1000	0	ND (75)	100 J	ND (49)
1000N0E1	0	1000	1	ND (75)	160 J	ND (49)
1200N0E0	0	1200	0	ND (75)	56 J	ND (49)
1400N0E0	0	1400	0	ND (75)	170 J	ND (49)
1400N0E1	0	1400	1	ND (75)	120 J	ND (49)
600N200E0	200	600	0	ND (75)	ND (56)	ND (49)
800N200E0	200	800	0	ND (75)	ND (56)	ND (49)
800N200E1	200	800	1	ND (75)	93 J	ND (49)
1000N200E0	200	1000	0	ND (75)	ND (56)	ND (49)
1200N200E1	200	1200	1	92 J	73 J	ND (49)
1200N200E1	200	1200	1	ND (75)	78 J	ND (49)
1200N200E0	200	1200	0	ND (75)	120 J	ND (49)
1400N200E0	200	1400	0	2200	320	75 J
1400N200E0	200	1400	0	2400	410	71 J
1600N200E0	200	1600	0	110 J	190 J	ND (49)
1800N200E1	200	1800	1	ND (75)	300	53 J
1800N200E0	200	1800	0	ND (75)	310	ND (49)
1830N200E0D	200	1830	0	ND (75)	83 J	ND (49)
1830N200E1	200	1830	1	ND (75)	73 J	ND (49)
1830N200E0	200	1830	0	ND (75)	ND (56)	ND (49)
1960N250E1	250	1960	1	ND (75)	110 J	ND (49)
1960N250E0D	250	1960	0	ND (75)	79 J	ND (49)
1960N250E0	250	1960	0	ND (75)	ND (56)	ND (49)
1110N257E0	257	1110	0	ND (75)	ND (56)	ND (49)
1367N273E0	273	1367	0	ND (75)	ND (56)	ND (49)
1367N273E1	273	1367	1	ND (75)	ND (56)	ND (49)
1367N273E3	273	1367	3	ND (75)	ND (56)	ND (49)
1110N276E0	276	1110	0	ND (75)	72 J	ND (49)
1110N276E1D	276	1110	1	ND (75)	ND (56)	ND (49)
1110N276E1	276	1110	1	ND (75)	74 J	ND (49)
1110N276E2	276	1110	2	ND (75)	68 J	ND (49)
1110N276E3	276	1110	3	100 J	57 J	ND (49)
1110N276E5	276	1110	5	ND (75)	ND (56)	ND (49)
904N300E0	300	904	0	ND (75)	81 J	ND (49)
904N300E1	300	904	1	ND (75)	65 J	ND (49)
904N300E2	300	904	2	ND (75)	68 J	ND (49)
904N300E3	300	904	3	ND (75)	58 J	ND (49)
904N300E5	300	904	5	ND (75)	ND (56)	ND (49)
600N400E0	400	600	0	ND (75)	ND (56)	ND (49)

All Results in Parts Per Million ; X, Y, and Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, and Arsenic = 160

Table 3 (Cont'd)
 Spectrace 9000 FPXRF Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
600N400E1	400	600	1	ND (75)	63 J	ND (49)
800N400E0	400	800	0	ND (75)	ND (56)	ND (49)
1000N400E1	400	1000	1	ND (75)	65 J	50 J
1000N400E0	400	1000	0	ND (75)	61 J	ND (49)
1200N400E0	400	1200	0	ND (75)	60 J	ND (49)
1400N400E0	400	1400	0	ND (75)	ND (56)	ND (49)
1400N400E1	400	1400	1	ND (75)	67 J	ND (49)
1600N400E0	400	1600	0	ND (75)	98 J	ND (49)
1800N400E0	400	1800	0	ND (75)	59 J	ND (49)
1800N400E1	400	1800	1	ND (75)	ND (56)	ND (49)
818N480E0	480	818	0	ND (75)	ND (56)	ND (49)
818N480E1D	480	818	1	ND (75)	ND (56)	ND (49)
818N480E1	480	818	1	ND (75)	ND (56)	ND (49)
818N480E2	480	818	2	ND (75)	ND (56)	ND (49)
818N480E3	480	818	3	ND (75)	ND (56)	ND (49)
818N480E5	480	818	5	ND (75)	ND (56)	ND (49)
665N481E0	481	665	0	ND (75)	84 J	ND (49)
679N481E0	481	679	0	ND (75)	ND (56)	ND (49)
679N481E0D	481	679	0	ND (75)	ND (56)	ND (49)
665N481E1	481	665	1	ND (75)	ND (56)	ND (49)
665N481E2	481	665	2	ND (75)	63 J	ND (49)
665N481E3	481	665	3	ND (75)	62 J	ND (49)
665N481E5	481	665	5	ND (75)	ND (56)	ND (49)
1081N482E0	482	1081	0	ND (75)	84 J	ND (49)
1081N482E1	482	1081	1	ND (75)	58 J	ND (49)
1081N482E2	482	1081	2	ND (75)	ND (56)	ND (49)
1081N482E3	482	1081	3	ND (75)	ND (56)	ND (49)
1081N482E5	482	1081	5	ND (75)	62 J	ND (49)
600N600E0	600	600	0	ND (75)	88 J	ND (49)
800N600E1	600	800	1	ND (75)	ND (56)	ND (49)
800N600E0	600	800	0	ND (75)	84 J	ND (49)
1000N600E0	600	1000	0	ND (75)	ND (56)	ND (49)
1200N600E0	600	1200	0	ND (75)	58 J	ND (49)
1200N600E1	600	1200	1	ND (75)	ND (56)	ND (49)
1400N600E0	600	1400	0	ND (75)	ND (56)	ND (49)
1600N600E0	600	1600	0	78 J	ND (56)	68 J
1600N600E1	600	1600	1	ND (75)	ND (56)	ND (49)
1800N600E0	600	1800	0	ND (75)	110 J	ND (49)
708N676E3D	676	708	3	ND (75)	ND (56)	ND (49)
708N676E0	676	708	0	ND (75)	120 J	ND (49)
708N676E1	676	708	1	ND (75)	ND (56)	ND (49)

All Results in Parts Per Million ; X, Y, and Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, and Arsenic = 160

Table 3 (Cont'd)
 Spectrace 9000 FPXRF Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
708N676E2	676	708	2	ND (75)	ND (56)	ND (49)
708N676E3	676	708	3	ND (75)	ND (56)	ND (49)
708N676E5	676	708	5	ND (75)	ND (56)	ND (49)
857N703E0	703	857	0	650	670	ND (49)
857N703E1	703	857	1	ND (75)	110 J	ND (49)
857N703E2	703	857	2	ND (75)	73 J	ND (49)
857N703E3	703	857	3	ND (75)	78 J	ND (49)
857N703E5	703	857	5	ND (75)	ND (56)	ND (49)
1056N705E0	705	1056	0	ND (75)	67 J	ND (49)
1056N705E0D	705	1056	0	ND (75)	84 J	ND (49)
1056N705E1	705	1056	1	ND (75)	ND (56)	ND (49)
1056N705E2	705	1056	2	ND (75)	ND (56)	ND (49)
1056N705E3	705	1056	3	ND (75)	ND (56)	ND (49)
1056N705E5	705	1056	5	ND (75)	62 J	ND (49)
2030N705E0	705	2030	0	290	150 J	77 J
2030N705E1	705	2030	1	ND (75)	120 J	ND (49)
805N1360E1	1360	805	1	ND (75)	ND (56)	ND (49)
756N760E1	760	756	1	ND (75)	ND (56)	ND (49)
805N1360E5	1360	805	5	ND (75)	ND (56)	ND (49)
756N760E0	760	756	0	100 J	ND (56)	ND (49)
756N760E5	760	756	5	ND (75)	ND (56)	ND (49)
805N1360E3	1360	805	3	ND (75)	ND (56)	ND (49)
805N1360E0	1360	805	0	ND (75)	ND (56)	ND (49)
756N760E2	760	756	2	ND (75)	ND (56)	ND (49)
756N760E3	760	756	3	ND (75)	ND (56)	ND (49)
805N1360E2	1360	805	2	ND (75)	ND (56)	ND (49)
756N760E5	760	756	5	ND (75)	ND (56)	ND (49)
1056N772E0	772	1056	0	ND (75)	ND (56)	ND (49)
800N800E0	800	800	0	ND (75)	ND (56)	ND (49)
1000N800E1	800	1000	1	ND (75)	63 J	ND (49)
1000N800E0	800	1000	0	ND (75)	ND (56)	ND (49)
1200N800E0	800	1200	0	ND (75)	ND (56)	ND (49)
1400N800E1	800	1400	1	ND (75)	60 J	ND (49)
1400N800E0	800	1400	0	ND (75)	ND (56)	49 J
1400N800E0D	800	1400	0	ND (75)	ND (56)	ND (49)
1600N800E0	800	1600	0	160 J	67 J	84 J
1805N800E0	800	1805	0	ND (75)	ND (56)	ND (49)
1805N800E1	800	1805	1	ND (75)	ND (56)	ND (49)
1000N833E0	833	1000	0	ND (75)	83 J	ND (49)
756N835E0	835	756	0	ND (75)	ND (56)	ND (49)
756N835E1	835	756	1	ND (75)	ND (56)	ND (49)

All Results in Parts Per Million ; X, Y, and Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
756N835E2	835	756	2	ND (75)	85 J	ND (49)
756N835E3	835	756	3	ND (75)	79 J	ND (49)
756N835E5	835	756	5	ND (75)	ND (56)	ND (49)
978N848E0	848	978	0	140 J	190 J	ND (49)
731N870E0	870	731	0	80 J	ND (56)	ND (49)
731N870E1	870	731	1	ND (75)	ND (56)	ND (49)
731N870E2	870	731	2	ND (75)	ND (56)	ND (49)
731N870E3	870	731	3	ND (75)	64 J	ND (49)
731N870E5	870	731	5	ND (75)	ND (56)	ND (49)
900N891E0	891	900	0	ND (75)	200	ND (49)
900N891E1	891	900	1	ND (75)	210	ND (49)
900N891E2	891	900	2	ND (75)	98 J	ND (49)
900N891E3	891	900	3	ND (75)	92 J	ND (49)
900N891E5	891	900	5	ND (75)	ND (56)	ND (49)
828N894E0	894	828	0	ND (75)	110 J	ND (49)
828N894E1	894	828	1	ND (75)	61 J	50 J
828N894E2	894	828	2	ND (75)	ND (56)	ND (49)
828N894E3	894	828	3	ND (75)	ND (56)	ND (49)
828N894E5	894	828	5	86 J	ND (56)	ND (49)
756N910E0	910	756	0	ND (75)	ND (56)	ND (49)
756N910E1	910	756	1	ND (75)	ND (56)	ND (49)
756N910E2	910	756	2	ND (75)	82 J	ND (49)
756N910E3	910	756	3	ND (75)	ND (56)	ND (49)
756N910E3D	910	756	3	ND (75)	ND (56)	ND (49)
756N910E5	910	756	5	ND (75)	ND (56)	ND (49)
826N910E0	910	826	0	ND (75)	ND (56)	ND (49)
826N910E1	910	826	1	83 J	ND (56)	ND (49)
826N910E2	910	826	2	ND (75)	ND (56)	ND (49)
826N910E3	910	826	3	ND (75)	ND (56)	ND (49)
826N910E5	910	826	5	ND (75)	ND (56)	ND (49)
825N924E0	924	825	0	ND (75)	69 J	ND (49)
825N924E1	924	825	1	ND (75)	ND (56)	ND (49)
825N924E2	924	825	2	ND (75)	66 J	ND (49)
825N924E3	924	825	3	ND (75)	ND (56)	ND (49)
825N924E3D	924	825	3	ND (75)	ND (56)	ND (49)
825N924E5	924	825	5	ND (75)	63 J	ND (49)
787N932E0	932	787	0	ND (75)	97 J	ND (49)
787N932E1	932	787	1	ND (75)	66 J	ND (49)
787N932E2	932	787	2	ND (75)	ND (56)	ND (49)
787N932E3	932	787	3	ND (75)	ND (56)	ND (49)
787N932E5D	932	787	5	ND (75)	ND (56)	ND (49)
787N932E5	932	787	5	ND (75)	ND (56)	ND (49)

All Results in Parts Per Million ; X, Y, and Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Conner = 250. Zinc = 190. and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
787N932E10	932	787	10	ND (75)	ND (56)	ND (49)
787N932E13	932	787	13	ND (75)	ND (56)	ND (49)
787N932E15D	932	787	15	ND (75)	76 J	ND (49)
787N932E15	932	787	15	ND (75)	76 J	ND (49)
787N932E17	932	787	17	ND (75)	ND (56)	ND (49)
787N932E19	932	787	19	ND (75)	ND (56)	ND (49)
820N935E0D	935	820	0	ND (75)	ND (56)	ND (49)
820N935E0	935	820	0	95 J	ND (56)	ND (49)
820N935E1	935	820	1	ND (75)	ND (56)	ND (49)
820N935E2	935	820	2	ND (75)	ND (56)	ND (49)
820N935E3	935	820	3	ND (75)	ND (56)	ND (49)
820N935E5	935	820	5	ND (75)	ND (56)	ND (49)
820N935E5D	935	820	5	ND (75)	ND (56)	ND (49)
820N935E7	935	820	7	ND (75)	ND (56)	ND (49)
820N935E9	935	820	9	ND (75)	100 J	ND (49)
820N935E11	935	820	11	ND (75)	68 J	ND (49)
820N935E15	935	820	15	ND (75)	ND (56)	ND (49)
820N935E20	935	820	20	ND (75)	ND (56)	ND (49)
820N935E30	935	820	30	ND (75)	ND (56)	ND (49)
820N940E35	940	820	35	ND (75)	ND (56)	ND (49)
820N935E40	935	820	40	ND (75)	ND (56)	ND (49)
820N935E60	935	820	60	ND (75)	96 J	ND (49)
820N935E80	935	820	80	ND (75)	69 J	ND (49)
820N935E100	935	820	100	ND (75)	64 J	ND (49)
820N935E102	935	820	102	ND (75)	ND (56)	ND (49)
820N935E120	935	820	120	ND (75)	64 J	ND (49)
820N935E120D	935	820	120	ND (75)	ND (56)	ND (49)
820N935E124	935	820	124	ND (75)	75 J	ND (49)
820N935E125	935	820	125	ND (75)	75 J	ND (49)
820N935E127	935	820	127	ND (75)	ND (56)	ND (49)
820N935E129	935	820	129	ND (75)	78 J	ND (49)
820N935E130	935	820	130	ND (75)	57 J	ND (49)
820N935E131	935	820	131	ND (75)	91 J	ND (49)
820N935E133	935	820	133	ND (75)	94 J	ND (49)
820N935E135	935	820	135	ND (75)	ND (56)	ND (49)
731N955E0	955	731	0	ND (75)	ND (56)	ND (49)
731N955E1	955	731	1	ND (75)	ND (56)	ND (49)
731N955E1	955	731	1	ND (75)	67 J	ND (49)
731N955E2	955	731	2	ND (75)	61 J	ND (49)
731N955E3	955	731	3	ND (75)	ND (56)	ND (49)
731N955E5	955	731	5	ND (75)	ND (56)	ND (49)

All Results in Parts Per Million ; X, Y, and Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Conner = 250. Zinc = 190. and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
200N1000E0	1000	200	0	ND (75)	ND (56)	ND (49)
400N1000E0	1000	400	0	ND (75)	ND (56)	ND (49)
400N1000E1	1000	400	1	ND (75)	ND (56)	ND (49)
570N1000E0	1000	570	0	110 J	89 J	ND (49)
600N1000E0	1000	600	0	ND (75)	ND (56)	ND (49)
600N1000E0	1000	600	0	ND (75)	70 J	ND (49)
625N1000E0D	1000	625	0	ND (75)	69 J	ND (49)
625N1000E0	1000	625	0	ND (75)	ND (56)	ND (49)
835N1000E1	1000	835	1	300	250	240
835N1000E0	1000	835	0	1400	720	580
835N1000E1	1000	835	1	240 J	210	240
1000N1000E0	1000	1000	0	ND (75)	63 J	ND (49)
1200N1000E0	1000	1200	0	ND (75)	ND (56)	ND (49)
1200N1000E1	1000	1200	1	ND (75)	70 J	ND (49)
1400N1000E0	1000	1400	0	ND (75)	67 J	ND (49)
846N1027E0	1027	846	0	390	200	65 J
846N1027E1	1027	846	1	320	660	1000
846N1027E2	1027	846	2	390	510	260
846N1027E3	1027	846	3	710	530	330
846N1027E5	1027	846	5	ND (75)	170 J	ND (49)
846N1027E10	1027	846	10	ND (75)	70 J	ND (49)
731N1040E0	1040	731	0	ND (75)	110 J	ND (49)
731N1040E1	1040	731	1	ND (75)	120 J	ND (49)
731N1040E1	1040	731	1	ND (75)	80 J	ND (49)
731N1040E2	1040	731	2	ND (75)	70 J	ND (49)
731N1040E3	1040	731	3	ND (75)	ND (56)	ND (49)
731N1040E5	1040	731	5	ND (75)	ND (56)	ND (49)
714N1076E0	1076	714	0	ND (75)	62 J	ND (49)
714N1076E1	1076	714	1	ND (75)	ND (56)	ND (49)
714N1076E2	1076	714	2	ND (75)	ND (56)	ND (49)
714N1076E3	1076	714	3	83 J	ND (56)	ND (49)
714N1076E5	1076	714	5	ND (75)	ND (56)	ND (49)
714N1076E5D	1076	714	5	ND (75)	ND (56)	ND (49)
822N1098E0	1098	822	0	290	210	110 J
822N1098E1	1098	822	1	2800	600	630
822N1098E2	1098	822	2	2100	230	660
822N1098E3D	1098	822	3	1600	200	690
822N1098E3	1098	822	3	1400	210	660
822N1098E5	1098	822	5	210 J	ND (56)	640
600N1100E0	1100	600	0	ND (75)	62 J	ND (49)
1100N1100E0	1100	1100	0	110 J	70 J	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Conner = 250. Zinc = 190. and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
1300N1100E0	1100	1300	0	ND (75)	ND (56)	ND (49)
1300N1100E1	1100	1300	1	ND (75)	ND (56)	ND (49)
1300N1100E2	1100	1300	2	ND (75)	ND (56)	ND (49)
1300N1100E3	1100	1300	3	ND (75)	ND (56)	ND (49)
1300N1100E5	1100	1300	5	ND (75)	ND (56)	ND (49)
806N1102E0	1102	806	0	43000	29000	36000
806N1102E0D	1102	806	0	43000	30000	36000
806N1102E1	1102	806	1	3500	3000	2500
806N1102E2	1102	806	2	3700	2400	2400
806N1102E3	1102	806	3	2800	2000	2100
806N1102E5	1102	806	5	3100	920	1600
806N1102E10	1102	806	10	2100	65 J	930
806N1102E13	1102	806	13	810	ND (56)	290
806N1102E15	1102	806	15	100 J	81 J	520
810N1102E0D	1102	810	0	73000	41000	51000
810N1102E0	1102	810	0	72000	40000	52000
810N1102E1	1102	810	1	32000	9800	18000
810N1102E2	1102	810	2	220000	1300	91000
810N1102E3	1102	810	3	270000	250	150000
820N1102E0	1102	820	0	11000	1200	4100
820N1102E1	1102	820	1	ND (75)	59 J	410
820N1102E2	1102	820	2	450	ND (56)	380
820N1102E3	1102	820	3	400	ND (56)	ND (49)
820N1102E5	1102	820	5	ND (75)	ND (56)	ND (49)
800N1122E0	1122	800	0	2800	730	1100
800N1122E1	1122	800	1	650	100 J	250
800N1122E2	1122	800	2	ND (75)	60 J	ND (49)
800N1122E3	1122	800	3	ND (75)	ND (56)	ND (49)
800N1122E5	1122	800	5	ND (75)	57 J	ND (49)
800N1122E7	1122	800	7	ND (75)	ND (56)	ND (49)
924N1123E0	1123	924	0	130 J	180 J	ND (49)
924N1123E1	1123	924	1	ND (75)	60 J	ND (49)
924N1123E2	1123	924	2	ND (75)	ND (56)	ND (49)
924N1123E3	1123	924	3	ND (75)	96 J	ND (49)
924N1123E5D	1123	924	5	ND (75)	110 J	150 J
924N1123E5	1123	924	5	ND (75)	72 J	250
1035N1130E0	1130	1035	0	ND (75)	ND (56)	ND (49)
1035N1130E1	1130	1035	1	ND (75)	77 J	ND (49)
1035N1130E2	1130	1035	2	ND (75)	ND (56)	ND (49)
1035N1130E3	1130	1035	3	ND (75)	94 J	ND (49)
1035N1130E5	1130	1035	5	ND (75)	76 J	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250. Zinc = 190. and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
731N1142E0	1142	731	0	87 J	ND (56)	ND (49)
731N1142E1	1142	731	1	ND (75)	ND (56)	ND (49)
731N1142E2	1142	731	2	ND (75)	ND (56)	ND (49)
731N1142E3	1142	731	3	ND (75)	ND (56)	ND (49)
731N1142E5	1142	731	5	ND (75)	ND (56)	ND (49)
920N1150E0	1150	920	0	670	250	150 J
920N1150E1	1150	920	1	ND (75)	110 J	ND (49)
920N1150E2	1150	920	2	ND (75)	ND (56)	ND (49)
920N1150E3	1150	920	3	ND (75)	86 J	ND (49)
920N1150E5	1150	920	5	ND (75)	ND (56)	ND (49)
1065N1160E0	1160	1065	0	99 J	82 J	61 J
1065N1160E1	1160	1065	1	ND (75)	ND (56)	ND (49)
1065N1160E2	1160	1065	2	ND (75)	88 J	ND (49)
1065N1160E3	1160	1065	3	ND (75)	ND (56)	ND (49)
1065N1160E3	1160	1065	3	ND (75)	130 J	ND (49)
1065N1160E5	1160	1065	5	ND (75)	ND (56)	ND (49)
731N1166E0	1166	731	0	93 J	59 J	ND (49)
731N1166E1	1166	731	1	ND (75)	78 J	ND (49)
731N1166E2	1166	731	2	ND (75)	73 J	ND (49)
731N1166E3	1166	731	3	ND (75)	ND (56)	ND (49)
731N1166E5D	1166	731	5	ND (75)	ND (56)	ND (49)
731N1166E5	1166	731	5	ND (75)	ND (56)	ND (49)
0N1200E0	1200	0	0	ND (75)	110 J	ND (49)
200N1200E1	1200	200	1	ND (75)	ND (56)	ND (49)
200N1200E0	1200	200	0	ND (75)	84 J	ND (49)
400N1200E0	1200	400	0	ND (75)	100 J	ND (49)
581N1200E0	1200	581	0	ND (75)	61 J	ND (49)
600N1200E0	1200	600	0	ND (75)	ND (56)	ND (49)
600N1200E1	1200	600	1	ND (75)	ND (56)	ND (49)
625N1200E0	1200	625	0	ND (75)	76 J	ND (49)
800N1200E0	1200	800	0	160 J	ND (56)	89 J
1000N1200E0	1200	1000	0	230 J	ND (56)	ND (49)
1000N1200E1	1200	1000	1	1400	80 J	340
1000N1200E2	1200	1000	2	ND (75)	88 J	ND (49)
1000N1200E3	1200	1000	3	ND (75)	92 J	ND (49)
1000N1200E5	1200	1000	5	ND (75)	80 J	ND (49)
1000N1200E5	1200	1000	5	ND (75)	ND (56)	ND (49)
1200N1200E0	1200	1200	0	ND (75)	ND (56)	ND (49)
1400N1200E1	1200	1400	1	ND (75)	ND (56)	ND (49)
1400N1200E0	1200	1400	0	ND (75)	ND (56)	ND (49)
1400N1200E0D	1200	1400	0	ND (75)	ND (56)	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250. Zinc = 190. and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
1400N1200E1	1200	1400	1	ND (75)	ND (56)	ND (49)
812N1206E0	1206	812	0	ND (75)	ND (56)	ND (49)
812N1206E1	1206	812	1	ND (75)	80 J	ND (49)
812N1206E2D	1206	812	2	ND (75)	71 J	64 J
812N1206E2	1206	812	2	ND (75)	57 J	ND (49)
812N1206E3	1206	812	3	ND (75)	ND (56)	ND (49)
812N1206E5	1206	812	5	ND (75)	ND (56)	ND (49)
1427N1210E0	1210	1427	0	ND (75)	ND (56)	ND (49)
1427N1210E1	1210	1427	1	ND (75)	84 J	ND (49)
1427N1210E2	1210	1427	2	ND (75)	ND (56)	ND (49)
1427N1210E3	1210	1427	3	ND (75)	71 J	ND (49)
1427N1210E5	1210	1427	5	ND (75)	ND (56)	ND (49)
1427N1210E7D	1210	1427	7	ND (75)	ND (56)	ND (49)
1427N1210E7	1210	1427	7	ND (75)	ND (56)	ND (49)
1427N1210E9	1210	1427	9	ND (75)	ND (56)	ND (49)
1427N1210E11	1210	1427	11	ND (75)	ND (56)	ND (49)
1427N1210E15	1210	1427	15	ND (75)	ND (56)	ND (49)
1427N1210E20	1210	1427	20	ND (75)	ND (56)	ND (49)
1187N1215E0	1215	1187	0	ND (75)	75 J	ND (49)
1187N1215E1	1215	1187	1	ND (75)	58 J	ND (49)
1187N1215E2	1215	1187	2	ND (75)	ND (56)	ND (49)
1187N1215E3	1215	1187	3	ND (75)	ND (56)	ND (49)
1187N1215E5	1215	1187	5	ND (75)	ND (56)	ND (49)
1180N1227E0	1227	1180	0	360	170 J	180
1180N1227E1	1227	1180	1	ND (75)	ND (56)	ND (49)
1180N1227E2	1227	1180	2	ND (75)	ND (56)	ND (49)
1180N1227E3D	1227	1180	3	ND (75)	64 J	ND (49)
1180N1227E3	1227	1180	3	ND (75)	76 J	ND (49)
1180N1227E5D	1227	1180	5	ND (75)	ND (56)	ND (49)
1180N1227E5	1227	1180	5	ND (75)	ND (56)	ND (49)
1245N1245E0	1245	1245	0	520	ND (56)	680
1245N1245E1	1245	1245	1	ND (75)	ND (56)	ND (49)
1245N1245E1	1245	1245	1	ND (75)	ND (56)	50 J
1245N1245E2	1245	1245	2	ND (75)	66 J	ND (49)
1245N1245E3	1245	1245	3	ND (75)	ND (56)	ND (49)
1245N1245E5	1245	1245	5	ND (75)	ND (56)	ND (49)
948N1255E0	1255	948	0	100 J	ND (56)	320
948N1255E1	1255	948	1	ND (75)	59 J	ND (49)
948N1255E2	1255	948	2	ND (75)	80 J	ND (49)
948N1255E3	1255	948	3	ND (75)	71 J	ND (49)
948N1255E4	1255	948	4	ND (75)	110 J	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250. Zinc = 190. and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
810N1258E0	1258	810	0	87 J	69 J	ND (49)
810N1258E1	1258	810	1	ND (75)	ND (56)	ND (49)
810N1258E2	1258	810	2	ND (75)	56 J	ND (49)
810N1258E3	1258	810	3	ND (75)	ND (56)	ND (49)
810N1258E5	1258	810	5	ND (75)	ND (56)	ND (49)
1400N1266E0	1266	1400	0	ND (75)	ND (56)	ND (49)
1417N1266E0	1266	1417	0	79 J	92 J	ND (49)
1096N1279E0	1279	1096	0	110 J	70 J	ND (49)
1096N1279E1	1279	1096	1	130 J	ND (56)	72 J
1096N1279E1D	1279	1096	1	ND (75)	96 J	61 J
1096N1279E2	1279	1096	2	92 J	120 J	69 J
1023N1279E4	1279	1096	4	300	82 J	59 J
1096N1279E5	1279	1096	5	ND (75)	ND (56)	93 J
1096N1279E7	1279	1096	7	ND (75)	ND (56)	ND (49)
1096N1279E9	1279	1096	9	ND (75)	ND (56)	ND (49)
1096N1279E11	1279	1096	11	ND (75)	ND (56)	ND (49)
1096N1279E13	1279	1096	13	ND (75)	ND (56)	ND (49)
1096N1279E13D	1279	1096	13	ND (75)	ND (56)	ND (49)
1096N1279E15	1279	1096	15	ND (75)	80 J	ND (49)
1096N1279E17	1279	1096	17	ND (75)	78 J	ND (49)
1096N1279E20	1279	1096	20	ND (75)	85 J	ND (49)
1096N1279E30	1279	1096	30	ND (75)	ND (56)	ND (49)
1096N1279E40	1279	1096	40	ND (75)	61 J	ND (49)
1096N1279E60D	1279	1096	60	ND (75)	ND (56)	ND (49)
1096N1279E60	1279	1096	60	ND (75)	ND (56)	ND (49)
1096N1279E65	1279	1096	65	ND (75)	ND (56)	ND (49)
1096N1279E80	1279	1096	80	ND (75)	56 J	ND (49)
1096N1279E95	1279	1096	95	ND (75)	ND (56)	ND (49)
1096N1279E100	1279	1096	100	ND (75)	100 J	ND (49)
1096N1279E100D	1279	1096	100	ND (75)	ND (56)	ND (49)
1280N1280E0	1280	1280	0	130 J	ND (56)	99 J
1280N1280E1	1280	1280	1	ND (75)	70 J	ND (49)
1280N1280E2	1280	1280	2	ND (75)	ND (56)	ND (49)
1280N1280E2	1280	1280	2	ND (75)	57 J	ND (49)
1280N1280E3	1280	1280	3	ND (75)	ND (56)	ND (49)
1280N1280E5	1280	1280	5	ND (75)	ND (56)	ND (49)
808N1282E0	1282	808	0	140 J	ND (56)	ND (49)
808N1282E1	1282	808	1	ND (75)	ND (56)	ND (49)
808N1282E02	1282	808	2	ND (75)	ND (56)	ND (49)
808N1282E5	1282	808	5	ND (75)	ND (56)	ND (49)
910N1285E0	1285	910	0	ND (75)	70 J	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250. Zinc = 190. and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
914N1285E0	1285	914	0	280	150 J	120 J
914N1285E1	1285	914	1	ND (75)	65 J	ND (49)
914N1285E2	1285	914	2	ND (75)	108 J	ND (49)
914N1285E3	1285	914	3	ND (75)	60 J	ND (49)
914N1285E5	1285	914	5	ND (75)	ND (56)	ND (49)
910N1290E0D	1290	910	0	84 J	68 J	ND (49)
910N1290E1	1290	910	1	ND (75)	94 J	ND (49)
1065N1336E0	1336	1065	0	650	94 J	160 J
1065N1336E1	1336	1065	1	300	150 J	190
1065N1336E2	1336	1065	2	ND (75)	75 J	99 J
1065N1336E3	1336	1065	3	ND (75)	83 J	ND (49)
1065N1336E5	1336	1065	5	ND (75)	ND (56)	ND (49)
1015N1385E0	1385	1015	0	ND (75)	150 J	130 J
1015N1385E1	1385	1015	1	ND (75)	ND (56)	ND (49)
1015N1385E2	1385	1015	2	ND (75)	ND (56)	ND (49)
1015N1385E3	1385	1015	3	ND (75)	100 J	ND (49)
1015N1385E5	1385	1015	5	ND (75)	79 J	ND (49)
600N1400E0	1400	600	0	ND (75)	79 J	ND (49)
800N1400E0	1400	800	0	580	150 J	130 J
800N1400E1	1400	800	1	ND (75)	130 J	ND (49)
800N1400E2	1400	800	2	ND (75)	61 J	ND (49)
800N1400E3D	1400	800	3	ND (75)	ND (56)	ND (49)
800N1400E3	1400	800	3	ND (75)	ND (56)	ND (49)
800N1400E5	1400	800	5	ND (75)	ND (56)	ND (49)
945N1400E0	1400	945	0	ND (75)	59 J	ND (49)
1000N1400E0D	1400	1000	0	160 J	64 J	130 J
1000N1400E0	1400	1000	0	400	ND (56)	430
1200N1400E0	1400	1200	0	ND (75)	ND (56)	100 J
1200N1400E1	1400	1200	1	ND (75)	110 J	210
1200N1400E0D	1400	1200	0	170 J	64 J	170
1200N1400E0	1400	1200	0	130 J	ND (56)	310
1400N1400E0	1400	1400	0	120 J	ND (56)	ND (49)
995N1405E0	1405	995	0	ND (75)	130 J	ND (49)
995N1405E1	1405	995	1	ND (75)	98 J	ND (49)
995N1405E2	1405	995	2	ND (75)	ND (56)	ND (49)
995N1405E3	1405	995	3	ND (75)	67 J	ND (49)
955N1405E5D	1405	955	5	ND (75)	ND (56)	ND (49)
955N1405E5	1405	955	5	ND (75)	86 J	ND (49)
1178N1420E0	1420	1178	0	ND (75)	ND (56)	ND (49)
1178N1420E1	1420	1178	1	ND (75)	85 J	57 J
1178N1420E2	1420	1178	2	ND (75)	110 J	ND (49)
1178N1420E3	1420	1178	3	110 J	150 J	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250. Zinc = 190. and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
1178N1420E5	1420	1178	5	96 J	120 J	ND (49)
1178N1425E0	1425	1178	0	270	ND (56)	110 J
1178N1425E0D	1425	1178	0	290	ND (56)	120 J
1178N1425E1	1425	1178	1	ND (75)	140 J	ND (49)
1178N1425E2	1425	1178	2	ND (75)	78 J	ND (49)
1178N1425E3	1425	1178	3	78 J	140 J	ND (49)
1178N1425E5D	1425	1178	5	110 J	95 J	ND (49)
1178N1425E5	1425	1178	5	120 J	120 J	ND (49)
945N1428E0	1428	945	0	ND (75)	67 J	ND (49)
1114N1488E0	1488	1114	0	ND (75)	83 J	ND (49)
1114N1488E1	1488	1114	1	83 J	90 J	60 J
1114N1488E2	1488	1114	2	710	150 J	240
1114N1488E3	1488	1114	3	460	110 J	110 J
1100N1495E0	1495	1100	0	120 J	74 J	59 J
1110N1495E1	1495	1110	1	ND (75)	88 J	100 J
1110N1495E2	1495	1110	2	ND (75)	ND (56)	ND (49)
1110N1495E3	1495	1110	3	94 J	ND (56)	210
1110N1495E5	1495	1110	5	ND (75)	ND (56)	ND (49)
1100N1500E0	1500	1100	0	240 J	ND (56)	190
1100N1500E1	1500	1100	1	ND (75)	85 J	ND (49)
1100N1500E2	1500	1100	2	ND (75)	58 J	ND (49)
1100N1500E3	1500	1100	3	ND (75)	ND (56)	ND (49)
600N1600E1	1600	600	1	ND (75)	ND (56)	ND (49)
600N1600E0D	1600	600	0	ND (75)	100 J	ND (49)
600N1600E0	1600	600	0	ND (75)	67 J	ND (49)
800N1600E0	1600	800	0	ND (75)	ND (56)	53 J
1000N1600E0	1600	1000	0	ND (75)	73 J	71 J
1000N1600E1	1600	1000	1	ND (75)	69 J	62 J
1200N1600E0	1600	1200	0	ND (75)	62 J	52 J
1200N1600E0	1600	1200	0	130 J	ND (56)	86 J
1400N1600E1	1600	1400	1	ND (75)	80 J	64 J
1400N1600E0	1600	1400	0	99 J	ND (56)	ND (49)
1023N1614E0	1614	1023	0	ND (75)	59 J	ND (49)
1023N1614E1	1614	1023	1	ND (75)	ND (56)	ND (49)
1023N1614E2	1614	1023	2	ND (75)	ND (56)	ND (49)
1023N1614E3	1614	1023	3	ND (75)	ND (56)	ND (49)
1023N1614E5	1614	1023	5	ND (75)	ND (56)	ND (49)
1023N1614E5D	1614	1023	5	ND (75)	ND (56)	ND (49)
1023N1614E7	1614	1023	7	ND (75)	ND (56)	ND (49)
1023N1614E9	1614	1023	9	ND (75)	56 J	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
1023N1614E11	1614	1023	11	ND (75)	ND (56)	ND (49)
1023N1614E15	1614	1023	15	ND (75)	68 J	ND (49)
1023N1614E20	1614	1023	20	ND (75)	ND (56)	ND (49)
1023N1614E40	1614	1023	40	ND (75)	ND (56)	ND (49)
1023N1614E60	1614	1023	60	ND (75)	ND (56)	ND (49)
1023N1614E80	1614	1023	80	ND (75)	ND (56)	ND (49)
1023N1614E100	1614	1023	100	ND (75)	72 J	ND (49)
1023N1614E117	1614	1023	117	ND (75)	ND (56)	ND (49)
1023N1614E118	1614	1023	118	ND (75)	ND (56)	ND (49)
1023N1614E119	1614	1023	119	ND (75)	75 J	ND (49)
1023N1614E120	1614	1023	120	ND (75)	ND (56)	ND (49)
1023N1614E121	1614	1023	121	ND (75)	ND (56)	ND (49)
1023N1614E122	1614	1023	122	ND (75)	ND (56)	ND (49)
1023N1614E123D	1614	1023	123	ND (75)	ND (56)	ND (49)
1023N1614E123	1614	1023	123	ND (75)	ND (56)	ND (49)
1023N1614E125	1614	1023	125	ND (75)	ND (56)	ND (49)
1023N1614E127	1614	1023	127	ND (75)	ND (56)	ND (49)
1023N1614E129	1614	1023	129	ND (75)	68 J	ND (49)
1023N1614E131	1614	1023	131	ND (75)	76 J	ND (49)
1023N1614E135	1614	1023	135	ND (75)	ND (56)	ND (49)
1023N1614E140	1614	1023	140	ND (75)	ND (56)	ND (49)
1023N1614E144	1614	1023	144	ND (75)	ND (56)	ND (49)
1023N1614E156	1614	1023	156	ND (75)	78 J	ND (49)
1023N1614E160	1614	1023	160	ND (75)	ND (56)	ND (49)
1023N1614E172	1614	1023	172	ND (75)	61 J	ND (49)
1463N1614E0	1614	1463	0	ND (75)	ND (56)	ND (49)
1463N1614E1	1614	1463	1	ND (75)	ND (56)	ND (49)
1463N1614E2	1614	1463	2	ND (75)	ND (56)	ND (49)
1463N1614E2	1614	1463	2	ND (75)	ND (56)	ND (49)
1463N1614E3	1614	1463	3	ND (75)	ND (56)	ND (49)
1463N1614E5	1614	1463	5	ND (75)	68 J	ND (49)
1450N1638E0	1638	1450	0	80 J	ND (56)	ND (49)
1450N1638E1	1638	1450	1	ND (75)	ND (56)	ND (49)
1450N1638E2	1638	1450	2	130 J	ND (56)	ND (49)
1450N1638E3	1638	1450	3	ND (75)	ND (56)	ND (49)
1450N1638E5	1638	1450	5	ND (75)	ND (56)	ND (49)
1440N1652E0	1652	1440	0	ND (75)	ND (56)	ND (49)
1440N1652E1	1652	1440	1	ND (75)	ND (56)	ND (49)
1440N1652E2	1652	1440	2	ND (75)	ND (56)	ND (49)
1440N1652E3	1652	1440	3	ND (75)	ND (56)	ND (49)
1440N1652E3	1652	1440	3	ND (75)	ND (56)	ND (49)
1440N1652E5	1652	1440	5	ND (75)	ND (56)	ND (49)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Conner = 250. Zinc = 190. and Arsenic = 160

Table 3 (Cont'd)
 Spectrace 9000 FPXRF Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
1675N1690E0	1690	1675	0	ND (75)	ND (56)	ND (49)
1675N1690E1	1690	1675	1	ND (75)	ND (56)	ND (49)
1675N1690E2	1690	1675	2	ND (75)	ND (56)	51 J
1675N1690E3	1690	1675	3	93 J	87 J	83 J
1675N1690E5	1690	1675	5	ND (75)	72 J	ND (49)
700N1700E1	1700	700	1	240 J	ND (56)	50 J
700N1700E1D	1700	700	1	170 J	ND (56)	ND (49)
700N1700E0	1700	700	0	ND (75)	ND (56)	ND (49)
700N1700E0	1700	700	0	ND (75)	ND (56)	130 J
900N1700E0	1700	900	0	ND (75)	ND (56)	ND (49)
900N1700E1	1700	900	1	ND (75)	ND (56)	ND (49)
1100N1700E1	1700	1100	1	ND (75)	63 J	ND (49)
1100N1700E0D	1700	1100	0	170 J	ND (56)	320
1100N1700E0	1700	1100	0	100 J	120 J	400
600N1800E0	1800	600	0	ND (75)	ND (56)	ND (49)
800N1800E1	1800	800	1	ND (75)	ND (56)	130 J
800N1800E0	1800	800	0	ND (75)	88 J	ND (49)
1000N1800E0	1800	1000	0	150 J	61 J	170
1200N1800E0	1800	1200	0	98 J	ND (56)	64 J
1200N1800E1	1800	1200	1	ND (75)	68 J	78 J
1400N1800E0	1800	1400	0	ND (75)	76 J	ND (49)
800N1865E0	1865	800	0	ND (75)	72 J	ND (49)
820N1865E0	1865	820	0	ND (75)	130 J	ND (49)
1330N1867E0	1867	1330	0	ND (75)	82 J	ND (49)
1330N1867E1	1867	1330	1	ND (75)	70 J	ND (49)
1330N1867E1	1867	1330	1	ND (75)	ND (56)	ND (49)
1330N1867E2	1867	1330	2	ND (75)	ND (56)	ND (49)
1330N1867E3	1867	1330	3	ND (75)	ND (56)	ND (49)
1330N1867E5	1867	1330	5	220 J	150 J	200
624N2000E0	2000	624	0	ND (75)	ND (56)	ND (49)
800N2000E0	2000	800	0	630	ND (56)	340
1000N2000E1	2000	1000	1	140 J	ND (56)	120 J
1000N2000E0	2000	1000	0	570	63 J	140 J
1200N2000E0	2000	1200	0	ND (75)	83 J	93 J
1200N2000E0	2000	1200	0	100 J	ND (56)	82 J
1400N2000E0	2000	1400	0	ND (75)	80 J	130 J

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, and Arsenic = 160

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
1657N154E1	154	1657	1	ND (63)	ND (51)	ND (30)
1657N154E2	154	1657	2	1000	94 J	440
1657N154E2D	154	1657	2	560	ND (51)	260
1657N154E3	154	1657	3	ND (63)	ND (51)	ND (30)
1657N154E5	154	1657	5	ND (63)	86 J	ND (30)
1657N154E7	154	1657	7	ND (63)	57 J	ND (30)
1657N154E9	154	1657	9	ND (63)	59 J	ND (30)
1657N154E11	154	1657	11	ND (63)	56 J	ND (30)
1657N154E11	154	1657	11	ND (63)	ND (51)	ND (30)
1657N154E15	154	1657	15	ND (63)	ND (51)	ND (30)
1657N154E15	154	1657	15	ND (63)	ND (51)	ND (30)
1657N154E20	154	1657	20	ND (63)	ND (51)	ND (30)
1657N154E20	154	1657	20	ND (63)	55 J	ND (30)
1657N154E40	154	1657	40	ND (63)	ND (51)	ND (30)
1657N154E40	154	1657	40	ND (63)	68 J	ND (30)
1657N154E60	154	1657	60	ND (63)	80 J	ND (30)
1657N154E60	154	1657	60	ND (63)	84 J	ND (30)
1657N154E80	154	1657	80	ND (63)	ND (51)	ND (30)
1657N154E100	154	1657	100	ND (63)	120 J	ND (30)
1657N154E104	154	1657	104	ND (63)	59 J	ND (30)
1657N154E105	154	1657	105	ND (63)	83 J	ND (30)
1657N154E106	154	1657	106	ND (63)	84 J	ND (30)
1657N154E107	154	1657	107	ND (63)	100 J	ND (30)
1657N154E109	154	1657	109	ND (63)	ND (51)	ND (30)
356N1147E0D	1147	356	0	ND (63)	ND (51)	ND (30)
356N1147E0	1147	356	0	ND (63)	ND (51)	ND (30)
356N1147E1	1147	356	1	ND (63)	79 J	ND (30)
356N1147E2	1147	356	2	ND (63)	72 J	ND (30)
356N1147E3	1147	356	3	ND (63)	68 J	ND (30)
356N1147E5	1147	356	5	ND (63)	ND (51)	ND (30)
356N1147E7D	1147	356	7	ND (63)	ND (51)	ND (30)
356N1147E7	1147	356	7	ND (63)	65 J	ND (30)
356N1147E9	1147	356	9	ND (63)	ND (51)	ND (30)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 210, Zinc = 170, and Arsenic = 100

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
356N1147E11	1147	356	11	ND (63)	ND (51)	ND (30)
356N1147E15	1147	356	15	ND (63)	ND (51)	ND (30)
356N1147E20	1147	356	20	ND (63)	52 J	ND (30)
356N1147E40	1147	356	40	ND (63)	ND (51)	ND (30)
356N1147E60	1147	356	60	ND (63)	ND (51)	ND (30)
356N1147E80	1147	356	80	ND (63)	ND (51)	ND (30)
356N1147E100	1147	356	100	ND (63)	ND (51)	ND (30)
356N1147E120	1147	356	120	ND (63)	84 J	ND (30)
356N1147E140	1147	356	140	ND (63)	ND (51)	ND (30)
356N1147E160D	1147	356	160	ND (63)	ND (51)	ND (30)
356N1147E160	1147	356	160	ND (63)	ND (51)	ND (30)
356N1147E180	1147	356	180	ND (63)	79 J	ND (30)
356N1147E193	1147	356	193	ND (63)	89 J	ND (30)
356N1147E200	1147	356	200	ND (63)	ND (51)	ND (30)
356N1147E215	1147	356	215	ND (63)	89 J	ND (30)
1427N1210E40	1210	1427	40	ND (63)	ND (51)	ND (30)
1427N1210E64	1210	1427	64	ND (63)	91 J	ND (30)
1427N1210E80	1210	1427	80	ND (63)	53 J	ND (30)
1427N1210E97	1210	1427	97	ND (63)	71 J	ND (30)
1427N1210E97D	1210	1427	97	ND (63)	ND (51)	ND (30)
1427N1210E98	1210	1427	98	ND (63)	73 J	ND (30)
1427N1210E101	1210	1427	101	ND (63)	ND (51)	ND (30)
1427N1210E102	1210	1427	102	ND (63)	67 J	ND (30)
1427N1210E103	1210	1427	103	ND (63)	ND (51)	ND (30)
1427N1210E104	1210	1427	104	ND (63)	72 J	ND (30)
1427N1210E106	1210	1427	106	ND (63)	56 J	ND (30)
1427N1210E108	1210	1427	108	ND (63)	ND (51)	ND (30)
1427N1210E110	1210	1427	110	ND (63)	66 J	ND (30)
1427N1210E112	1210	1427	112	ND (63)	88 J	ND (30)
1427N1210E116	1210	1427	116	ND (63)	99 J	ND (30)
1427N1210E120	1210	1427	120	ND (63)	ND (51)	ND (30)
1427N1210E135	1210	1427	135	ND (63)	ND (51)	ND (30)
1096N1279E35	1279	1096	35	ND (63)	66 J	ND (30)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 210; Zinc = 170, and Arsenic = 100

Table 3 (Cont'd)
Spectrace 9000 FPXRF Results
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	X	Y	Z	Copper	Zinc	Arsenic
1286N1516E0	1516	1286	0	130 J	ND (51)	ND (30)
1286N1516E1	1516	1286	1	110 J	100 J	62 J
1286N1516E2	1516	1286	2	ND (63)	65 J	32 J
1286N1516E3	1516	1286	3	160 J	68 J	64 J
1286N1516E5	1516	1286	5	140 J	73 J	ND (30)
1286N1516E7D	1516	1286	7	ND (63)	ND (51)	88 J
1286N1516E7	1516	1286	7	ND (63)	57 J	96 J
1286N1516E9	1516	1286	9	ND (63)	ND (51)	ND (30)
1286N1516E11	1516	1286	11	ND (63)	ND (51)	ND (30)
1286N1516E14.5	1516	1286	14	840	ND (51)	400
1286N1516E20	1516	1286	20	76 J	100 J	ND (30)
1286N1516E25	1516	1286	25	ND (63)	93 J	ND (30)
1286N1516E45	1516	1286	45	ND (63)	77 J	ND (30)
1286N1516E45D	1516	1286	45	ND (63)	85 J	ND (30)
1286N1516E55D	1516	1286	55	ND (63)	ND (51)	ND (30)
1286N1516E55	1516	1286	55	ND (63)	62 J	ND (30)
1286N1516E65	1516	1286	65	ND (63)	66 J	ND (30)
1286N1516E75	1516	1286	75	ND (63)	73 J	ND (30)
1286N1516E75D	1516	1286	75	ND (63)	71 J	ND (30)
1286N1516E85	1516	1286	85	ND (63)	ND (51)	ND (30)
1872N1815E0	1815	1872	0	ND (63)	96 J	ND (30)
1872N1815E0D	1815	1872	0	ND (63)	78 J	ND (30)
1872N1815E1	1815	1872	1	ND (63)	ND (51)	ND (30)
1872N1815E2	1815	1872	2	ND (63)	56 J	ND (30)
1872N1815E3	1815	1872	3	ND (63)	74 J	ND (30)
1872N1815E5	1815	1872	5	ND (63)	100 J	ND (30)
1872N1815E7	1815	1872	7	ND (63)	ND (51)	ND (30)
1872N1815E9	1815	1872	9	ND (63)	110 J	ND (30)
1872N1815E11	1815	1872	11	ND (63)	87 J	ND (30)
1872N1815E15	1815	1872	15	ND (63)	84 J	ND (30)
1872N1815E20	1815	1872	20	ND (63)	ND (51)	ND (30)

All Results in Parts Per Million ; X, Y, Z in Feet

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 210, Zinc = 170, and Arsenic = 100

Table 4
Spectrace 9000 FPXRF Results
Non-Coordinate Labelled Samples
Penta Wood Products Site
Siren, Wisconsin
May 1994

Sample	Copper	Zinc	Arsenic
A25166	243 J	57 J	290
A25167	48705	26926	31359
A25168	145 J	174 J	112 J
A25171	223 J	253	ND (49)
A25199	160 J	57 J	173
A25200	233 J	57 J	246
A25279	402	64 J	442
A25280	545	159 J	732
A25331	137 J	170 J	ND (49)
A25332	304	129 J	123 J
A25333	ND (75)	136 J	ND (49)
A25334	ND (75)	ND (56)	ND (49)
A25421	ND (75)	73 J	ND (49)
A25422	76 J	93 J	ND (49)
A25423	79 J	132 J	ND (49)
A25424	98 J	150 J	ND (49)
A25425	ND (75)	126 J	ND (49)
A25426	865	331	339
A25427	139 J	104 J	ND (49)
A25428	89 J	78 J	ND (49)
A25429	44119	24226	29405
A25430	46705	25834	30555
A25431	50338	28648	33957
A25432	46235	25515	31894
A25433	53740	30068	35020
A25434	50930	29364	33607
A25435	45569	25468	29643
A25436	42759	23840	28711
A25437	97 J	141 J	ND (49)

All Results in parts per million

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, Arsenic = 160

Table 4 (Cont'd)
 Spectrace 9000 FPXRF Results
 Non-Coordinate Labelled Samples
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Sample	Copper	Zinc	Arsenic
A25438	82 J	96 J	ND (49)
A25439	84 J	98 J	ND (49)
A25440	ND (75)	108 J	ND (49)
A25441	ND (75)	108 J	ND (49)
A25442	119 J	175 J	ND (49)
A25443	45507	26178	30067
A25444TAT	32383	8021	19029
A25445TAT	9821	722	1363
A25446	738	88 J	417
A25447	44251	24819	28463
A25448	39267	22695	24949
A25453	100 J	156 J	ND (49)
A25499	727	1544	113 J
A25526	168600	ND (56)	230531
A25527	145480	575	247061
A25528	ND (75)	534	ND (49)
→ C25561	ND (75)	101 J	ND (49)
ED1-0	159 J	ND (56)	55 J
ED10-0	ND (75)	116 J	ND (49)
ED10-0D	ND (75)	153 J	ND (49)
ED10-1	ND (75)	ND (56)	ND (49)
ED1-0D	143 J	62 J	65 J
ED1-1	ND (75)	69 J	66 J
ED11-0	ND (75)	75 J	ND (49)
ED11-1	ND (75)	ND (56)	ND (49)
ED11-2	ND (75)	69 J	51 J
ED12-0	ND (75)	56 J	ND (49)
ED12-1	ND (75)	ND (56)	ND (49)
ED13-0	76 J	57 J	ND (49)
ED13-1	ND (75)	ND (56)	92 J
ED14-0	ND (75)	157 J	95 J

All Results in parts per million

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, Arsenic = 160.

Table 4 (Cont'd)
 Spectrace 9000 FPXRF Results
 Non-Coordinate Labelled Samples
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Sample	Copper	Zinc	Arsenic
ED14-1	ND (75)	68 J	ND (49)
ED15-0	ND (75)	79 J	ND (49)
ED15-1	ND (75)	ND (56)	ND (49)
ED16-0	228 J	106 J	104 J
ED16-0D	251	106 J	82 J
ED16-1	ND (75)	ND (56)	ND (49)
ED17-0	122 J	159 J	ND (49)
ED17-1	ND (75)	ND (56)	ND (49)
ED18-0	ND (75)	116 J	57 J
ED18-1	87 J	143 J	ND (49)
ED2-0	118 J	115 J	ND (49)
ED2-1	ND (75)	ND (56)	ND (49)
ED3-0	ND (75)	147 J	ND (49)
ED3-1	ND (75)	81 J	ND (49)
ED4-0	139 J	130 J	51 J
ED4-1	ND (75)	89 J	ND (49)
ED5-0	204 J	ND (56)	90 J
ED5-1	ND (75)	ND (56)	ND (49)
ED6-0	ND (75)	ND (56)	ND (49)
ED6-1	ND (75)	ND (56)	ND (49)
ED7-0	ND (75)	111 J	ND (49)
ED7-0D	ND (75)	89 J	ND (49)
ED7-1	ND (75)	ND (56)	ND (49)
ED8-0	1039	119 J	383
ED8-1	155 J	ND (56)	60 J
ED9-0	436	182 J	221
ED9-1	85 J	107 J	186
ED9-2	ND (75)	72 J	ND (49)
ED9-3	ND (75)	ND (56)	ND (49)
ED9-5	ND (75)	ND (56)	ND (49)

All Results in parts per million

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 250, Zinc = 190, Arsenic = 160

Table 4 (Cont'd)
 Spectrace 9000 FPXRF Results
 Non-Coordinate Labelled Samples
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Sample	Copper	Zinc	Arsenic
Chemonite 1	12500	4600	6000
Chemo Pile 1	110 J	270	84 J
Chemo Drain 1	290	240	78 J
Chemo Drain 2	200 J	89 J	90 J
Penta Drain 1	150 J	92 J	ND (31)
Lagoon Inf 1	95 J	ND (66)	58 J
Lagoon 1	84 J	150 J	91 J
Lagoon 2	90 J	ND (66)	53 J
Lagoon 3	140 J	ND (66)	56 J
Lagoon 4	66 J	92 J	50 J
Washout 1	ND (64)	ND (66)	ND (31)
W Lagoon Inf	ND (64)	74 J	ND (31)
PV Seep Area	ND (64)	71 J	ND (31)
B26107	80000	49000	66000
B26109	48000	27000	32000
B26110	40000	21000	22000
B26111	49000	27000	26000

All Results in parts per million

ND = values below minimum detection limits (MDL), MDL values in ()

J = values above MDLs, but below minimum quantitation limits (MQL), where:

MQLs for Copper = 220, Zinc = 220, Arsenic = 100

Table 5
 Ohmicron PCP RaPID[®] Assay Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Matrix	Sample	PCP
SOIL	1023N1614E117	ND (0.1)
SOIL	1023N1614E118	ND (0.1)
SOIL	1023N1614E119	ND (0.1)
SOIL	1023N1614E120	ND (0.1)
SOIL	1023N1614E121	ND (0.1)
SOIL	1023N1614E122	ND (0.1)
SOIL	1023N1614E123	0.1
SOIL	1023N1614E125	ND (0.1)
SOIL	1023N1614E127	ND (0.1)
SOIL	1023N1614E129	0.6
SOIL	1023N1614E131	0.1
SOIL	1023N1614E135	ND (0.1)
SOIL	1023N1614E140	ND (0.1)
DUPLICATE	1023N1614E140	ND (0.1)
SOIL	1023N1614E156	ND (0.1)
SOIL	1023N1614E160	ND (0.1)
SOIL	1056N705E0	2
SOIL	1056N705E1	ND (0.1)
SOIL	1081N482E0	1.1
SOIL	1081N482E1	ND (0.1)
DILUTED	1096N1279E0	608
SOIL	1096N1279E0	> 385 (EXC)
DILUTED	1096N1279E1	> 1253 (EXC)
SOIL	1096N1279E1	> 456 (EXC)
SOIL	1096N1279E11	3
SOIL	1096N1279E13	ND (0.1)
SOIL	1096N1279E15	> 47 (EXC)
SOIL	1096N1279E17	ND (0.1)
SOIL	1096N1279E2	> 642 (EXC)
DILUTED	1096N1279E2	> 1170 (EXC)
SOIL	1096N1279E20	ND (0.1)

All results in parts per million (PPM), unless noted

PCP = pentachlorophenol

PPB = parts per billion

ND = values below minimum detection limit (MDL), MDLS in ()

EXC = exceeds calibration range

Calibration Range: 0.1 – 10 ppm for soils, 0.1 – 10 ppb for waters

Table 5 (Cont'd)
 Ohmicron PCP RaPID[®] Assay Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Matrix	Sample	PCP
SOIL	1096N1279E30	> 118 (EXC)
DILUTED	1096N1279E4	373
SOIL	1096N1279E4	> 373 (EXC)
DILUTED	1096N1279E5	14
SOIL	1096N1279E5	> 150 (EXC)
SOIL	1096N1279E7	> 27 (EXC)
SOIL	1096N1279E80	> 65 (EXC)
SOIL	1096N1279E9	0.2
SOIL	1110N276E0	0.4
SOIL	1110N276E1	ND (0.1)
DUPLICATE	1805N800E0	ND (0.1)
SOIL	1805N800E0	ND (0.1)
SOIL	183N200E0	10
SOIL	1906N250E0	ND (0.1)
SOIL	2030N705E0	0.7
SOIL	665N481E0	4
SOIL	665N481E0	0.2
SOIL	708N676E0	> 44 (EXC)
SOIL	708N676E1	ND (0.1)
SOIL	818N480E0	> 71 (EXC)
SOIL	818N480E1	> 52 (EXC)
DUPLICATE	818N480E1	> 60 (EXC)
SOIL	820N935E0	9
SOIL	820N935E1	> 52 (EXC)
SOIL	820N935E120	ND (0.1)
SOIL	820N935E124	ND (0.1)
SOIL	820N935E125	ND (0.1)
SOIL	820N935E127	ND (0.1)
SOIL	820N935E130	ND (0.1)
SOIL	820N935E135	ND (0.1)

All results in parts per million (PPM), unless noted

PCP = pentachlorophenol

PPB = parts per billion

ND = values below minimum detection limit (MDL), MDLS in ()

EXC = exceeds calibration range

Calibration Range: 0.1 – 10 ppm for soils, 0.1 – 10 ppb for waters

Table 5 (Cont'd)
 Ohmicron PCP RaPID^R Assay Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Matrix	Sample	PCP
SOIL	820N935E15	ND (0.1)
SOIL	820N935E2	10
DUPLICATE	820N935E2	> 13 (EXC)
SOIL	820N935E20	ND (0.1)
SOIL	820N935E3	10
SOIL	820N935E40	ND (0.1)
SOIL	820N935E5	4
SOIL	820N935E7	ND (0.1)
SOIL	820N935E9	ND (0.1)
SOIL	820N940E35	ND (0.1)
SOIL	857N703E1	0.4
SOIL	875N703E0	> 33 (EXC)
SOIL	900N891E0	4.9
SOIL	900N891E1	0.7
DUPLICATE	904N300E0	4
SOIL	904N300E0	4
SOIL	940N300E1	ND (0.1)
WATER	A26026	3 PPB
WATER	A26044	ND (0.1 PPB)
WATER	A26045	> 56 PPB (EXC)
WATER	A26046	6 PPB
DUPLICATE	A26046	> 26 PPB (EXC)
SOIL	B25434	> 67 (EXC)
SOIL	B25440	> 53 (EXC)
SOIL	B25442	> 51 (EXC)
SOIL	B25443	> 52 (EXC)
WATER	B26042	2 PPB
WATER	C25524	> 31 PPB (EXC)
WATER	C25536	> 20 PPB (EXC)
SOIL	ED 11-0	0.1
SOIL	ED 11-2	2

All results in parts per million (PPM), unless noted

PCP = pentachlorophenol

PPB = parts per billion

ND = values below minimum detection limit (MDL), MDLS in ()

EXC = exceeds calibration range

Calibration Range: 0.1 – 10 ppm for soils, 0.1 – 10 ppb for waters

Table 5 (Cont'd)
 Ohmicron PCP RaPID[®] Assay Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Matrix	Sample	PCP
SOIL	ED 13-0	2
SOIL	ED 13-1	> 13 (EXC)
SOIL	ED 14-0	> 28 (EXC)
DUPLICATE	ED 14-0	> 21 (EXC)
SOIL	ED 14-1	0.2
SOIL	ED 15-0	0.1
SOIL	ED 15-1	ND (0.1)
SOIL	ED 16-0	14
SOIL	ED 16-1	> 47 (EXC)
SOIL	ED 17-0	4.9
SOIL	ED 17-1	> 94 (EXC)
SOIL	ED 18-0	> 12 (EXC)
SOIL	ED 18-1	4
SOIL	ED 9-0	> 58 (EXC)
SOIL	ED 9-1	2
SOIL	ED 9-2	0.5
SOIL	ED 9-3	0.4
SOIL	ED 9-5	ND (0.1)
DILUTED	TAT BLDG 9	245
SOIL	TAT BLDG 9	> 49 (EXC)
DILUTED	TAT UST # 2	> 87 (EXC)
WATER	TAT UST # 2	> 26 (EXC)

All results in parts per million (PPM), unless noted

PCP = pentachlorophenol

PPB = parts per billion

ND = values below minimum detection limit (MDL), MDLS in ()

EXC = exceeds calibration range

Calibration Range: 0.1 – 10 ppm for soils, 0.1 – 10 ppb for waters

Table 5 (Cont'd)
 Ohmicron PCP RaPID[®] Assay Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Matrix	Sample	PCP
SOIL/DILUTED	Blow Down Pit	ND (10)
SOIL/DILUTED	Chemonite Area 1	303
DUPLICATE	Chemonite Area 1	541
SOIL	Chemonite Area Composite	> 4987 (EXC)
SOIL/DILUTED	Chemonite Drain 1	ND (10)
SOIL/DILUTED	Chemonite Drain 2	ND (10)
DUPLICATE	Chemonite Drain 2	ND (10)
SOIL/DILUTED	Lagoon 1	ND (10)
SOIL/DILUTED	Lagoon 2	47
SOIL/DILUTED	Lagoon 4	ND (10)
SOIL/DILUTED	Lagoon Influent 1	ND (10)
SOIL/DILUTED	Penta Drain 1	71
WATER	Potable Water 1	0.1 PPB
WATER	Potable Water 2	0.15 PPB
WATER	Purge Water MW 3&4-1	3 PPB
WATER	Purge Water MW 3&4-2	1 PPB
WATER	Purge Water MW 7&4-1	0.1 PPB
WATER	Purge Water MW 7&4-2	0.1 PPB
DUPLICATE	PV Seep Area 1	> 2084 (EXC)
SOIL/DILUTED	PV Seep Area 1	> 1576 (EXC)
SOIL	PV Seep Area Composite	1000
SOIL/DILUTED	PV Seep Area-0' N of Boring	> 1889 (EXC)
SOIL	PV Seep Area-10' N of Boring	> 133 (EXC)
SOIL	PV Seep Area-15' N of Boring	> 302 (EXC)
SOIL/DILUTED	PV Seep Area-15' N of Boring	> 630 (EXC)
SOIL	PV Seep Area-20' N of Boring	> 129 (EXC)
SOIL	PV Seep Area-25' N of Boring	> 49 (EXC)
SOIL/DILUTED	PV Seep Area-5' N of Boring	192
SOIL/DILUTED	Stained Area 1	> 4666 (EXC)
SOIL/DILUTED	West Lagoon Influent 1	ND (10)
SOIL/DILUTED	Stained Area 1-1	> 3318 (EXC)
SOIL/DILUTED	Stained Area 1-2	> 16020 (EXC)

All results in parts per million (PPM) wet weight, unless noted

PCP = pentachlorophenol

PPB = parts per billion

ND = values below minimum detection limit (MDL), MDLS in ()

EXC = exceeds calibration range

Calibration Range: 0.1 - 10 ppm for soils, 0.1 - 10 ppb for waters

Diluted Soil Sample Calibration Range: 10 - 1000 ppm

Table 5 (Cont'd)
 Ohmicron PCP RaPID[®] Assay Results
 Penta Wood Products Site
 Siren, Wisconsin
 May 1994

Matrix	Sample	PCP
SOIL/DILUTED	Stained Area 1-3	> 24840 (EXC)
SOIL	Stained Area 1-4	> 675 (EXC)
SOIL	Stained Area 1-5	> 318 (EXC)
SOIL	Stained Area 1-6	> 917 (EXC)
SOIL	Stained Area 1-7	> 2098 (EXC)
DUPLICATE	Stained Area 1-7	> 4770 (EXC)
SOIL	Stained Area 1-8	> 682 (EXC)
SOIL	Stained Area 1-9	> 613 (EXC)
SOIL	Stained Area 1-10	> 843 (EXC)
SOIL	Stained Area 1-11	> 848 (EXC)
SOIL	Chemonite Area Drain	> 22 (EXC)
SOIL	Chemonite Area Near Field	> 130 (EXC)
SOIL	Lagoon 2	> 19 (EXC)
SOIL	Lagoon 4	ND (0.1)
SOIL	Lagoon Influent 1A	> 55 (EXC)
SOIL	Lagoon Influent 1B	> 137 (EXC)
SOIL	Penta Drain 1A	> 423 (EXC)
SOIL	Penta Drain 1B	> 586 (EXC)

All results in parts per million (PPM) wet weight, unless noted

PCP = pentachlorophenol

PPB = parts per billion

ND = values below minimum detection limit (MDL), MDLS in ()

EXC = exceeds calibration range

Calibration Range: 0.1 – 10 ppm for soils, 0.1 – 10 ppb for waters

Diluted Soil Sample Calibration Range: 10 – 1000 ppm

CHAIN OF CUSTODIES

9456

6075

6076

6077

- samples sent to GP Environmental,
Gaithersburg, MD on 5/17/94

Results are being sent to TAT
(Chris Schultz)

- M. F. Mohr

5/25/94

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

Project Name: Penta Wood Products
 Project Number: 03317-035-001-6932-01
 RFW Contact: Richard Henry Phone: (908) 331-4200

No: **9456**

SHEET NO. 1 OF 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	TCLP PCP	TCLP Hs, Cu, Zn	PCP
	A 22747	PA20C	X	5/17/94	1	402 / 4°C	X		
	A 22748	PA 20C5C					X		
* MS	A 22746	PA 20C5S					X		
	A 22744	PA 20C5CL					X		
	A 22745	PA 20C5CL5S					X		
	A 22736	A 20C.3P					X		
	A 22742	PAW20C5C					X		
	A 22740	A 20C					X		
	A 22737	A 33C					X		
* MS	A 22739	A 10C					X		
	A 22738	A 20C ^{MEM} 5S					X		
	A 22743	PAW20C					X		
	A 22741	PAW20C5CL			1	802 / 4°C	X		
	B 22737	A 33C			1	402 / 4°C		X	
	B 22743	PAW20C						X	
	B 22745	PA20C5CL5S						X	
	B 22742	PAW20C5C						X	
	B 22738	A 20C5S						X	
* MS	B 22739	A 10C						X	
* MS	B 22746	PA20C5S						X	

Matrix:
 SD - Sediment PW - Potable Water S - Soil
 DS - Drum Solids GW - Groundwater W - Water
 DL - Drum Liquids SW - Surface Water O - Oil
 -X - Other SL - Sludge A - Air

Special Instructions:
 X - cement stabilized soil
 * - use for MS/MSD

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
1-70/Analysis											

Reviewed MFM

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 6075

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Project Name: Penta wood Products
Project Number: 03347-035-001-6932-01
RFW Contact: Richard Henry Phone: (908) 321-1200

SHEET NO. 2 OF 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	TCLP PCP	TCLP As ₂ Co ₂	PCP
	B22736	A 20C. 3P	X	5/17/94	1	1oz / 4°C		X	
	B22740	A 20C						X	
	B22744	PA 20C SCL						X	
	B22748	PA 20C SC						X	
	B22747	PA 20C						X	
	B22741	PAW 20C SCL				8oz glass / 4°C		X	
	C22741	PAW 20C SCL							X
	C22747	PA 20C							X
	C22745	PA 20C SCL SS							X
	C22748	PA 20C SC							X
	C22742	PAW 20C SC							X
	C22743	PAW 20C							X
	C22744	PA 20C SCL							X
* MS/MSD	C22746	PA 20C SS							X

End of Samples

End of Analysis

- Matrix:
- SD - Sediment
 - DS - Drum Solids
 - DL - Drum Liquids
 - X - Other
 - PW - Potable Water
 - GW - Groundwater
 - SW - Surface Water
 - SL - Sludge
 - S - Soil
 - W - Water
 - O - Oil
 - A - Air

Special Instructions:
X - cement stabilized soil
* - use for MS/MSD

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
1-14/Analysis											

Received MFM

Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 6076

SHEET NO. 1 OF 2

Project Name: Penta Wood Products
 Project Number: 05517 C35-001-6932-01
 RFW Contact: Richard Henry Phone: 708 321-4700

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	SOLIDS	Matrix	Date Collected	# of Bottles	Container/Preservative	PCP			
	A22587	LS6 PT4	solids	X'S	5/17/94	1	Box / 4°C	X	X		
	A22589	LS6 PT6	solids					X			
	A22586	LS6 PT3	solids					X			
	A22585	LS6 PT2	solids					X			
* nsl/msd	A22588	LS6 PT5	solids					X			
	A22584	LS6 PT1	solids					X			
	A22595	S6 PT4 + 120		OS			4oz glass / 4°C	X			
* nsl/msd	A22594	S6 PT4 + 110						X			
	A22593	S6 PT3						X			
	A22592	S6 PT2						X			
	A22591	S6 PT1						X			
	A22719	S6 PT6						X			
	A22590	Seep area Soil						X			
	A22596	S6 PT5						X			
	A22582	LS6 PT5 (extra bottle)					32 oz amber / 4°C	X			
* nsl/msd	B22583	LS6 PT5 CEMT									
	A22593	LS6 PT6 CEMT									
	A22578	LS6 PT1 CEMT									
	A22579	LS6 PT2 CEMT									
	A22580	LS6 PT3 CEMT									

Matrix:
 SD - Sediment PW - Potable Water S - Soil
 DS - Drum Solids GW - Groundwater W - Water
 DL - Drum Liquids SW - Surface Water O - Oil
 X - Other SL - Sludge A - Air

Special Instructions:
 X' - centrifuged liquid
 * - use for MS/MSD

NOTE: A22587
 A22584 - A22589 ARE
 CENTRIFUGED SOLIDS
 NOTE: A22590 - A22596, & A22719
 ARE WASHED SOLIDS

**FOR SUBCONTRACTING USE ONLY
 FROM CHAIN OF
 CUSTODY #**

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
1-20/Analysis	Matthew Wood	5/17/94									

Reviewed by MEM

Roy F. Weston, Inc.
 REAC, Edison, N.J.
 EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 6077
 SHEET NO. 2 OF 2

Project Name: Penta Wood Products
 Project Number: 03347-035-001-6932-01
 RFW Contact: Richard Henry Phone: (908) 321-4200

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCP			
	A22581	LS 6 PT4 CEMT	X ⁸⁰	5/17/91	1	32oz amber/4°C	X			
<p>End of Samples</p> <p>End of Analysis</p>										

Matrix:

- SD - Sediment
- DS - Drum Solids
- DL - Drum Liquids
- X - Other
- PW - Potable Water
- GW - Groundwater
- SW - Surface Water
- SL - Sludge
- S - Soil
- W - Water
- O - Oil
- A - Air

Special Instructions:

X¹ centrifuged liquid

FOR SUBCONTRACTING USE ONLY
FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
1 / Analysis	<i>Marcello D'Amico</i>	5/17/91									

Reviewed MFM

Appendix B

APPENDIX B
Laboratory Notes
Penta Wood Products
May 1994

4/10/94 1200 - Worked on Pest. Document -
 RF heating section - also - : reviewed
 Section 3 to see if references were OK.

Stopped at 1730.

4/10/94 M. Moul

4/11/94 Got stuff ready for PENTA - read up
 on soil washing, also made arrangements
 to get cash advance. Got cash
 advance at ~ 3:30 - went to bank -
 they would not cash (over \$750 no
 good after 3:00 p.m.). Returned to
 REAC - issued \$1000 check & gave
 back to K. Motley. Asked her to
 give me a check for \$700 instead.
 C. Andreas signed the check - took
 it to bank - they did not want
 to cash it because of C. Andreas'
 signature. Finally they cashed the
 check.

1630 - Left REAC

M. Moul 4/11/94

4/12/94. Picked up by Deluxe Limos at 0630.
 Went to Philadelphia Airport.

1030 Arrive at Minneapolis Airport -
 get luggage, go to Continental area

to wait for H. Allen & H. Compton

1035 Called John Syslo (912-264-3465) -
asked him if he had results (Dan
Crown asked me to call him) - John
said he had already sent them to
YI WASH UN at REEC - he said there
were 25 samples for PCP - no dupes -
He said if we ^{NEED} need data I can
get it - just give him a few \$.

1040 Called D. Brooks (908-321-4213) - left
message about PWA for 90g samples.
I will call again later.

1130 met H. Allen & H. Compton at airport.
We drove to the site.

~1400 Arrived at PENTA site in SCIN, WA.
Took tour of site, picked out spot
to run tritium test in. Put in
table that J. Dougherty made. We
must sweep out area & get lights.
We will put generator in to power
lights.

141650 Talked to H. Compton regarding making
for 513 tests - we will use soil
from 3 sources:

- 1) ACA soil
- 2) Penta/ACA
- 3) Soil washed soil

1730 Dinner
Told
they
will
I will
he is
topic

1705 Called
asked
Twe
rege
he ce
Fed

1730 Discussed soil wash with H. Allen.
Told him which tests I plan to run -
they are listed in work plan. We
will use Triton NP-10 as well as
Tween 80. (H. Allen said earlier that
he wanted to use Tween 80 to avoid
toxic reactions to fish).

1705 Called ETC + spoke to F. Miller -
asked him if he could send some
Tween 80 to the site per H. Allen's
request to use Tween 80. He said
he could send ~100 ml - he will
Fed Ex it tomorrow.

Compton
4-3465) -

(Dan
John
to
there
dipin -
can
st.

(13) - left
samples.

airport.

'in, We.
spot
Put in
we
lefts.
power

matrix
soil

4/13/94 0600 Met for breakfast
 0700 arrived at PENTA site

Started to get together all the items for engineering studies - brought them to the ^{MPM} designated lab area. Started to set up.

Problem w/ jam tester - came loose - spent ~ 1 hr fixing it. Got it to work OK.

0930 Went to town to pick up equipment that was needed for soil wash + S/S tests. Bought lights, - bricks, etc.

^{MPM}
 1130 ~~Came back~~ Also stopped at hotel to talk to D. Brooks - asked her about PWA's. I must also talk to R. Henry.

1130 Came back to site - H. Allen + H. Crompton obtained samples:

DARK BRN,
 V. SANDY
 DARK BRN,
 V. SANDY

- 1) Penta (only) from Sump area
- 2) ALA (only) from Wood Storage Drip Area

D. BRN, V. FINE - A LOT
 OF LUMINOUS DEBRIS
 DARK BRN
 V. SANDY

- 3) Penta / ALA from ALA Process Area
- 4) ASH PILE

1140 Con
 by

1200 Cas
 in

1230 Set
 di
 "E

to
 m
 id
 H

A
 MPM
 Ca
 w

1245 Mo
 We

S

- 1) D
- 2) D
- 3) a
- 4) p
- 5) p
- 6)

Add
 (2

A

1140 Continued setting up - lights installed
by H Allen & H Compton.

1200 Calibrated Orion 720A pH meter -
used Buffers 4+10 (fresh made).

1230 Set up OHAUS scale - GT4000 - scale
did not work - gave error message -
"Err 9.6". Called OHAUS factory -
talked to serviceman - he guided
me through a calibration procedure -
did not work - he said the only
thing to do is send it in for
repair - he said most likely a
MFM ~~case~~ circuit board broken. I
will send in for repair.

1245 Got 300 g capacity scale from L Kaelin.
We will use this.

Sorted jars for 1 - Soil: PENTA ONLY
FROM SEEP

- 1) DI H₂O control (1 wash)
- 2) DI " (2 washes)
- 3) 0.1% Tergitol NP 10 (1 wash)
- 4) pH 10 (NaOH) (1 wash)
- 5) pH 10 / Tergitol NP-10 (0.1%) (1 wash)
- 6) " " (2 washes)

Added 700 mL of solution to jars 3-6.
(250 mL for 1st part of wash + 450 mL
for 2nd part of wash)

HW temp = 7.4°C
Soil temp = 10.9°C

Soil was pre-screened with 1/4" screen.

Procedure followed was according to PENTA
Work Plan + Soil Wash SOP.

All samples were allowed to settle for
10 min after the 1st wash. Looks
like ~ 1/4" soil fines settled from top
of jar during settling period. Consistent
for each of 6 jars.

1745 Started second series of jar tests:

- 1) PENTA soil - 0.1% Tergitol NP10 / pH 10
(1 wash, 1 rinse)
- 2) PENTA soil - 0.1% Tergitol NP10 / pH 10
(1 wash - DUPLICATE).
- 3) PENTA/ACA soil - DI HW - 1 wash
- 4) PENTA/ACA soil - DI HW - 2 washes
- 5) PENTA/ACA soil - Tergitol NP-10 (0.1%) - 1 wash
- 6) PENTA/ACA soil - pH 10 (1 wash)

When the first 250 mL of solution was
added to the above samples in preparation
for the beginning of the test, it was noted
that the PENTA/ACA samples (#3-6)
did not wet easily, if at all - the water
stayed clear. Unlike the PENTA samples
(#1-2) which dispersed easily in the water.

Soil
HW

Set
sta
had
for:

Screen
pH

- 1) 7
- 2) 7
- 3) ^{meq} 9
- 4) 9
- 5) ^{meq} 9
- 6) 9-10

After
the
thru
no
thru

Add
open

After
obs
1) Th

Soil Temp = 16.1 °C

HW Temp = 13.9 °C

It was also noted that when the samples started to spin, all the PENTA/KA samples had unwetted soil on particles on top (except for # 5 - looked wetted).

Series 2

pH values of slurries (after 250 ml added phase 1ST work)

1) 7

2) 7

3) ~~8~~ 9

4) 9

5) ~~8~~ 8-9

6) 9-10

After the 10 minute spin at 50 rpm - the sample #5 looked black all the way through - the others were much clearer - as if they did not wet or disperse throughout the volume of the solution.

Added 500 ml of appropriate solution + spun for 10 min @ 200 rpm.

After the 10 min mix period the following observations were made:

1) The 2 penta soil samples (#1+2) were

pH of Series 1 decantate

- 1 6
- 2 1ST wash - 6-7 2ND wash - 6
- 3 6-7
- 4 7
- 5 7
- 6 1ST wash - 6-7 2ND wash - 10

well dispersed throughout the liquid.

2) The PENTA/ACA sample was - dark olive green in color - possible ACA?
 Also - Penta/ACA sample #5 had soil partially dispersed throughout the vol of the sample (on the bottom half).

pH values of above decantates from Series 2

- 1) 7 (1ST wash) 2ND wash - 6
- 2) 6
- 3) 8
- 4) 8 (1ST wash) 2ND wash - 8-9
- 5) 8
- 6) 9

MFM 1945
 0740 - Started to pack up + shut down for evening.

MFM
 08 2000 Left site

Went to store - bought Marm jars + by the truck - got to hotel at ~ 2100.

4/14/54

0700

Sta

0740 Cal

wa

0745 Cal

OK

0750 am

0900 Sta

PENT

1) 0.1%

2)

3)

4) 0.5

let

sample

+ s

very

1) pH

2)

3)

4)

MFM

MFM

MFM

to

4/14/94

0700 Arrived at PENTA site

Started to set up for the day.

0740 Calibrated 300g scale - placed 300g weight on it - it read 300.2g. OK

0745 Calibrated pH meter - use buffer 4 & 10. OK.

0750 Ambient temp = 7.0 °C

0900 Started ^{run 3rd} first test series - all used PENTA/ACA soils. Tests were:

- 1) 0.1% Terg, NP-10 / pH 10 (1 wash)
- 2) " (2 washes)
- 3) " (wash / DI H₂O rinse)
- 4) 0.5% Na silicate (PQ Silicate G)

Let mix @ 50 rpm for 10 MIN - ^{MPN} all looked
 Sample 1-3 looked green (similar to series 2)
 + Sample 4 (Silicate) - looked like
 very hard to wet - water was sl. green/clear.

1) pH = 9	} pH of slurry after ^{TEMP} = 8.7 °C 10 min @ 50 rpm
2) 9	
3) 9	
4) 9-10	

MPN
MPN
MPN

MPN
 + add 300 mL of additional

+ ~ 2100.

solution - let mix for 10 min @ 200 rpm.

let settle for 10 min. Samples 1-3 look

green - sample 4 looks cleaner - they
have solids floating on top (especially
#4 - did not want to wet).

pH after 200 rpm (10 min):

- | | | | |
|----|---|----------|--------------|
| 1) | 9 | | |
| 2) | 9 | 1st wash | 2nd wash : 9 |
| 3) | 9 | | " : 8-9 |
| 4) | 9 | | |

Do second wash on # 2 + 3: Add 250
mL + spin for 50 rpm for 10 min.

then add 50 mL + spin at 200 rpm
for 10 min.

PH

of

1120

Called Webster Concrete - talked
to Mick Bruss 715-866-4226.

Asked about CKD - he said to
call by end of day - salesman will
have an answer by then. I will
call by 1630.

101400 Stair

1) PCP/A

-1

+1

> 10

> 18

> 60

> 120

> 200

< 200

2) PCP

-1

+

> 10

> 18

> 6

> 12

> 20

< 20

01400 Started to do grain size analysis

1) PCP/ACA:

$$\begin{aligned}
 -1/4" &: 189.7 - 4.5 = 184.9 \\
 &170.1 - 4.5 = 165.6 \\
 &173.4 - 4.5 = \underline{168.9} \\
 &579.4 \text{ g}
 \end{aligned}$$

$$+1/4" : 49.0 - 4.5 = 44.5 \text{ g}$$

> 10	27.9 g	5.44%
> 18	50.7	9.89%
> 60	254.6 + 58.0	60.98%
> 120	86.4	16.85%
> 200	31.9	6.22%
< 200	<u>3.1</u>	0.60%
	512.6	

2) PCP

$$\begin{aligned}
 -1/4" &: 170.4 - 4.5 = 165.9 \text{ g} \\
 &185.6 - 4.5 = 181.1 \\
 &178.1 - 4.5 = \underline{173.6} \\
 &520.6
 \end{aligned}$$

$$+1/4" : 27.0 - 4.5 = 22.5$$

> 10	22.0 g	4.27%
> 18	57.9	11.29%
> 60	291.3 + 99.7	75.93%
> 120	38.0	7.38%
> 200	4.1	0.80%
< 200	1.9 / 514.9	0.37%

3) ACLA

$$\begin{aligned}
 - \frac{1}{4}'' : & \quad 219.2 - 4.5 = 210.7 \\
 & \quad 213.3 - 4.5 = 208.8 \\
 & \quad 209.9 - 4.5 = 205.4 \\
 & \quad \underline{624.9}
 \end{aligned}$$

$$+ \frac{1}{4}'' : 15.3 - 4.5 = 10.8 \text{ g}$$

> 10	10.0 g	1.61 %
> 18	21.0	3.87
> 60	249.5 + 168.1	67.30
> 120	106.2	17.12
> 200	20.3	3.27
< 200	42.4	6.83
	<u>620.5 g</u>	<u>100 %</u>

4) Ash pile

$$\begin{aligned}
 - \frac{1}{4}'' : & \quad 157.9 - 4.5 = 153.4 \\
 & \quad 95.0 - 4.5 = 90.5 \\
 & \quad \underline{243.9 \text{ g}}
 \end{aligned}$$

$$+ \frac{1}{4}'' : 17.3 - 4.5 = 12.8 \text{ g}$$

> 10	6.8 g	2.80 %
> 18	17.4 g	7.16
> 60	145.7 g	59.98
> 120	57.3 g	23.59
> 200	7.9 g	3.25
< 200	7.8 g	3.21
	<u>242.9 g</u>	<u>100 %</u>

1610 Cont'd
T.w.
Pen
+ p

1645 Stair
using

1) 0.1%

2) 0.1%

3) 0.1%

4) 0.1%

5) 0.1%

pH M
al

pH of

1) 6-7

2) 7

3) 7

4) 7

5) 7

Temp

1610 Continue with soils washing - got Tween 80 sample - will use to wash Penta soil. Started to make solutions & program for series 4 tests.

1645 Started series 4 soil wash tests using PENTA soil; Tests:

- 1) 0.1% TWEEN 80 (1 wash)
- 2) 0.1% TWEEN 80 / pH 10 (1 wash)
- 3) 0.1% TWEEN 80 / pH 10 (2 washes)
- 4) 0.1% TWEEN 80 / pH 10 (wash / rinse)
- 5) 0.1% TWEEN 80 / pH 10 (1 wash) - DUPLICATE

pH Mixed for 10 min @ 50 rpm - all looked similar - brown slurry.

pH of tests

- 1) 6-7
- 2) 7
- 3) 7
- 4) 7
- 5) 7

Temp = 14.3°C

Add 500 mL of appropriate solution +
mix for 10 min @ 200 rpm.

pH of solutions:

- 1) 7
- 2) 7
- 3) 7
- 4) 7
- 5) 7

Mixed for 10 min @ 200 rpm - all
samples look the same - brown dispersion -
let settle 10 min.

1900

Started second wash of tests #3 & 4 -
50 rpm for 10 min. Looked similar -
brown slurry.

Mix at 200 rpm for ten min - let
settle for 10 min -

pH values:

Test 3: 8

4: 7

1910

Completed soil wash tests. Mixed
up 10 gal (2 x 5 gal) of wash
solution for PENTA / MCA soil for
tomorrow. Put in and 5 gal bucket?
20 first pH adj to 10.0 w/ NaOH, then

ads
over

1930 left

4/15/94 0
Stn
area

0730

for

TEST
NAME

Mov

A20C | 1) 20%

A20C5S | 2) 20%

A10C | 3) 20%

A33C | 4) 33%

A20C.3P | 5) 20%

All

mold

cylin

Also,

(w)

Note:

added 20g of Tween 80. Let sit overnight to dissolve.

1930 left site.

4/15/94 0700 Arrived at PENTA site.
Started to bring equipment into lab area for SLS studies.

0730 Started to ~~start up~~^{MFA} make up matrix for tests to conduct using ACA soil.

TEST NAME

Matrix:

TEST NAME		SOIL	CEMENT	ADDITIVE
A20C	1) 20% Cement	1600	400	220 ^{MFA} + 220 mL H ₂ O
A20C5S	2) 20% Cement / 5% Silicate	1500	400	100 + 230 mL H ₂ O
A10C	3) 20% Cement ^{MFA} + 10% Cement	1800	200	+ 205 mL H ₂ O
A33C	4) 33% Cement	1340	660	+ 240 mL H ₂ O
A20C.3PS	5) 20% Cement / 0.34% H ₂ O ₂	1600	400	+ 240 mL 3% H ₂ O ₂

All samples were used to make the following molds: PERM (1 LG CYLINDER); UCS (2 5mm cylinders); W/D + FIT (total of 4 sm. molds).

Also, samples were taken for % moisture (unconsolidated) + pH (unconsolidated).

Note: soil was sieved at #5 mesh size.

pH values - ~ 10 g cement
mix was mixed w/ ~ 10 mL H₂O.

A20C - 12
A20C55 - 12
A10C - 11
A33C - 12
A20C.3P - 11

pH paper was used for values.

% moisture data:

CUP NO.	TEST	CUP WT	TOT WET WT	TOT DRY WT	WT WET	WT DRY	% H ₂ O
1)	A20C	1.3g	60.8	54.5	59.5	53.2	10.6
2)	A20C55	1.4	34.5	30.7	33.1	29.5	10.9
3)	A20C55 (DUP)	1.4	39.6	35.3	38.2	33.9	11.3
4)	A10C	1.4	31.2	27.7	29.8	26.3	11.4
5)	A10C (DUP)	1.3	25.9	22.9	24.6	21.6	12.2
6)	A33C	1.4	20.0	18.0	18.6	16.6	10.8
7)	A20C.3P	1.3	35.2	30.8	33.9	29.5	13.0

12:30

Started to do second set of S/S tests using Penton/ALP soil. (This soil was pre-sieved using a #5 mesh sieve). This soil had a definite ammonia odor to it. The following matrix of tests was made:

Pen

PA20C 1) 20%

PA20C55 2) 20%

PA20C55CL 3) 20%

PA20C55 4) 20%

PA20C55CL55 5) 20%

pH A
mix

PA20C

PA20C

PA20C

PA20C

PA20C

% M

CUP NO TEST

8) PA20C

9) PA20C

10) PA20C
(DUP)

11) PA20C

12) PA20C

13) PA20C

Pembuatan Matrik:

SOIL CEMENT ADDITIVE 157
 1600 400
~~SOIL CEMENT~~ + 550 mL H₂O

- PA20C 1) 20% Cement 1500 400 100
 + 550 mL H₂O
- PA20C5C 2) 20% Cement / 5% Carbon 1500 400 100
 + 550 mL H₂O
- PA20C5CL 3) 20% Cement / 5% Clay 1500 400 100
 + 550 mL H₂O
- PA20C5S 4) 20% Cement / 5% Selicite 1500 400 100
 + 550 mL H₂O
- PA20C5CL5S 5) 20% Cement / 5% Clay / 5% Selicite 1400 400 100/100
 + 550 mL H₂O

pH values - ~10 g cement mix was
 mixed w/ ~10 mL H₂O

- PA20C 11
- PA20C5C 11
- PA20C5CL 11
- PA20C5S 11
- PA20C5CL5S 11

% Moisture data:

CUP NO	TEST	CUP WT	TOT WET WT	TOT DRY WT	WET WT	DRY WT	% H ₂ O
8)	PA20C	1.3	28.4	22.1	27.1	20.8	23.2
9)	PA20C5C	1.4	30.6	23.8	29.2	22.4	23.3
10)	PA20C5C (DUP)	1.4	41.7	32.7	40.3	31.3	22.3
11)	PA20C5CL	1.4	38.4	31.0	37.0	29.6	20.0
12)	PA20C5S	1.4	32.0	25.0	30.6	23.6	22.9
13)	PA20C5CL5S	1.4	42.0	33.1	40.6	31.7	21.9

Started large soil washing batch to get enough soil to stabilize. Used PENTON/ACA soil in soil wash batch.

Set up test as follows:

Soil available = 6 kg
 If use 6:1 ratio for liquid: soil,
 need $6 \times 6 = 36$ kg = 36 L H₂O.

∴ use 3 buckets with the following:
 2 kg soil
 + 12 L H₂O = 3.2 gal

Filled 3x5 gal buckets w/ the soil + water solution (pH 10 + 0.1% Tween 80). Stirred buckets with wood stirrer for 20 minutes (alternated between buckets). Let settle for 10 minutes. Add water to each bucket (~ 3.2 gal). Mix for 20 minutes. Let settle for 10 minutes.

1830

Talked to R. Henry & D. Prince about difficulty in obtaining solids at sufficient dryness after decanting off water - solids are still too muddy. (I noticed this after decanting off wash water). They suggested that I get some aluminum pie pans & poke holes in them & put the solids in the pans. Their

les
 top,
 dry.

pH 6,
 pH 9

The
 ven
 has
 then
 son
 of
 ore

ur
 a
 m
 den

sol
 el
 fou

app
 (M
 sho
 a
 the

cl
 to
 dec
 '1

leave the pans out to drain overnight.
Hopefully tomorrow the solids will be
dry enough to solidify.

pH of wash sol after 20 min mixing = 10
pH of rinse sol after 20 " " = 8

The water was decanted off & the solids
were put into 3 aluminum pans that
had small ($1/16 - 1/8$ ") holes poked in
them. The water filtered through the
sand & solids & drained out the bottom
of the pans. I will let them drain
overnight & then stabilize them tomorrow.

During the test it was observed that
a lot of floating solids accumulated
on the surface of the 5 gallon buckets
during the wash & rinse steps. These
solids also had an oily sheen to them.
I believe that a way should be
found to float the solids, since they
appear to be coated w/ oil (P.C.P.
[similar to coal froth flotation]). I
showed G. Prince & he agreed that
a lot of contaminated solids were at
the top.

It was also noted that, when I went
to refill the 5 gallon buckets after
decanting the wash liquid from them,
that when the water was poured in

a LOT of oily solids came to the top of the water. I believe that this was due to the water entraining air in the bucket + making bubbles as it filled the bucket. This was similar to a DAF ~~off~~ application.

Forgot to enter this information about the S/S tests that were done using the uncrushed PENTRA/ACA soil - every one of the mixes had a strong ammonia odor to it when it was being mixed - (when water added).

I got a pH stick + wet it with DI H₂O - then held it above the pan with the wet mix in it - every time the pH paper turned to pH 8-9. This shows that there was NH₃ present (probably formed to NH₄OH when the cement was added).

Also forgot to add that for test #2) PAW20C5C - PENTRA/ACA - when the carbon was added, I first wet it by shaking 100 g carbon in the a jar with 200 mL DI H₂O. It was then added to the cement mix. This was done to make sure that no air was in the pores.

9/16/97 6

Pre,
use
see
ore
as

The

PAW20C 1) 20

PAW20C 2) 50

No

de
li

PAW20C5C 3) 20

400

Ad

w

so

wa

M

1000

S/

At

so

7/16/97 0700 - Arrived at PENTA site.

Prepared to do final set of S/S tests using washed & drained PENTA/ACA soil. The drained soil (drained overnight) looked much drier than it was yesterday. ~~The~~^{MPN}

The test matrix was:

PAW20C 1) 20% Cement - 1600g soil, 400g cement (no water was added) - enough was already present.

PAW20C 2) ^{5cc} 20% Cement / 5% Clay - 1500g soil, 400g cement, 100g clay. No water added - this mix looked drier than the first mix - most likely due to the clay.

PAW20C 3) 20% Cement / 5% Carbon - 1500g soil, 400g cement, 100g ~~dry~~^{MPN} carbon. 50 mL H₂O. ~~No water added.~~ The carbon (dry) was added directly to the wet soil & mixed. Then the cement was added. The mix looked dry so 50 mL H₂O was added.

1000 S/S tests done - cleanup up, then started to get samples of washed soil ready for shipping - put samples in proper jars, labeled, etc.

Must still fill out field data sheets & COC forms. Need 3 COC forms for each sample:

- 1) XRF
- 2) PLP (high heavy metal in GA)
- 3) Cu, Zn, As - Accredited Lab.

1200 Lunch

1300 Start working on COC + Field Data sheets.

1500 Finished COC + field data sheet forms. Started to pack up for night.

1830 left site

M. Noel 4/16/99

~~4/11/99 Arrived at site 0730.~~

~~Stack~~

~ 1100 Got 2 samples from J. Dougherty for grain size analysis:

1) L1 83 ft 4/16/99 @ 0935

Sample wt after drying: 563.7 g

Sample fraction weights:

> No. 18 0.0%g -

> No. 60 267.2 g 47.9%

> No. 120 233.5 41.8

> No. 200 40.7 7.3

< No. 200 16.7 3.0

558.1 g 100%

% error compared to original sample weight: 1.0%

2) L1 105 ft 4/16/94 @ 0930

Sample wt after drying: 783.0 g

Sample fraction wts:

> 5/8" 53.0 g 6.8%

> 3/8" 83.4 10.7

> No. 5 (4 mm) 156.7 20.2

> No. 10 (2 mm) 161.4 20.8

> No. 18 (1 mm) 146.4 18.9

> No. 60 (250 μ m) 153.3 19.7

> No. 120 (125 μ m) 14.7 1.9

> No. 200 (75 μ m) 3.3 0.4

< No. 200 4.4 0.6

776.6 g 100%

% error: 0.8%

% moisture data from 3rd set
of S/S tests:

		TOT WET WT	TOT DRY WT	WET WT	DRY WT	% H ₂ O	
20)	PAW20C	1.3	40.6	32.8	34.3	31.5	19.8
21)	PAW20C5CL	1.3	45.8	37.6	44.5	36.3	18.4
22)	PAW20C5C	1.3	56.3	45.4	55.0	44.1	19.8

pH values - for 1/1 mix of H₂O + cement
mix.

20)	PAW20C	-	pH 11	Note: only 3 samples due since not enough soil
21)	PAW20C5CL	"	"	sample (as per H. Compton + H. Allen)
22)	PAW20C5C	"	"	"

1830 Left site

M. M. 4/16/54

4/17/54 Arrived at site at 0730.

Started to determine which additional samples are needed. Still must do ETL, soils washing - water, + S/S samples - untreated soils.

Obtained samples of untreated soils for ETL tests (physical tests). Also collected samples for chemical analysis for S/S study (untreated soil sample - 3):

1) Pa

2) W.

3) AC.

Sam

1) }

2) }

3) }

RE

sa

PL

1130 Pa

J.

So

So

So

set

DET %
wt 420

31.5 19.8

36.3 18.4

44.1 19.8

+ cement

note: only 3

also done since

enough soil

as per

+ H. Allen

1) Penton/ACA untreated

2) Washed Penton/ACA untreated

3) ACA untreated

Samples for ER - were also sent collected

1) }
2) } Same as above.
3) }

XRF samples were also sent to L. Keelin -
same soil samples that were sent for
P.P. analysis to Brunswick lab.

1130

Particle size analysis conducted for
J. Dougherty:

Sample L1 20-25 ft 4/16/94

Sample wt after drying: 695.6g

Sample fraction wts:

> No 5 1.1g 0.2%

> No 10 8.6 1.2

> No 18 48.5 7.0

> No 66 599.7 86.4

> No 120 30.0 4.3

> No 200 2.7 0.4

< No. 200 3.7 0.5

694.0g 100%

detrital

must do

+ S/S

for

also

analysis

4-3:

% error compared to original
sample wt = 0.23%.

Prepared ^{PPH} Packed up Hobart
food mixer in cooler.

1200 Started to prepare ^{water} samples for soil
washing. Problem: only have 1L to
distribute over 2 parameters: metals
(As, Cu, Zn) + PCP. Each parameter
needs 1L. Metals get preserved
with HNO₃. I will find out
from D. Crouse or someone in analytical
whether ~500 ml is sufficient.
(Celt has to be - there is only 1L
to go around).

Washed through lunch - only got a take out
sandwich.

1300 Packed up Hobart food mixer in
cooler.

1400 Started to assist R. Henry + P. Bority
in doing surveying.

2030 Left site at 2030.

2130 Got back to hotel - washed in Pest. Doc
for 1 hr

PPH
4/18/94 07:

Star
He
Even,

0900 Cal

alone

Told

were

The

Two

wan

near

il

h

sho

the

id

do

il

en

wa

He

that

the

so

0930 Cal

An

4/18/94 ^{Mon} 0730 0700 Arrived at Penta site.

Started to go over PWA's with Rick Henry.
He talked to D. Brooks about PWA's.
Everything is O.K. regarding samples.

0900 Called Dan Crouse - gave him update
about what we did on the site so far.
Told him that we did soils using jets &
went according to test plan in work plan.
The only extra tests we did were using
Tween 80 + silicate. Harry Allen
wanted Tween 80 - so I had F. Miller
send up Tween 80. I wanted to try silicate.
I indicated that I had mentioned
to H. Copton about doing additional tests -
should we do any? He said that
the variables had already been
identified - not really any need to
do extra tests.

I also told him that there was not
enough sample to do the S/S PENTA/ACA
washed untreated sample complete set.

He said to call J. Martin & let him know
that I will be sending 3 samples to
the ETC. Also that I will be storing
samples there (S/S).

0930 Called Accredited Lab (908-541-2025)
Asked for Ted Magdon. Left him message -

that the water samples should be shaken up rather than decanted - in order to make sure that the solids are also included in the analysis. (we want total contaminants - not just the ones in the water).

I will call him back later to verify that he received the message.

Forgot to note - in conversation w/ Dan Crowe - he said to do a MS/MSD on 3 samples, I will submit the 2 wash liquid samples from the large mesh wash (see p. 157-158) as well as a third sample that I will do.

1000 Started to generate the three MS/MSD samples required for the water tests for the Accredited analysis. (generates the 20 water samples ^{MS/MSD} were generated :- need 3 MS/MSD).

also started to prepare the water samples for Accredited water analysis. Have to add HNO_3 to samples.

1300 Lunch

1400 Called J. Martins - told him we are going to send out 3 soil samples to the ETL. He said OK. (for phy parameters).

MFN
1630

1500

1630

d
cen
str
d
to
up
cur
lin
(to
sen
wv
He
plan
1st
wv
d
wha

Ho
un
(P
the
an
the
val

No

+
the
do

I also asked him if OK to send the cement 5/5 cores to the ETC for the duration of the 28 day cure period. I said that I needed someone to unpack the cores + re-set them up in the cooler to make the curing chamber again. I asked him to send me an estimate of hours (to REAC at Edison) + then I would send him a memo verifying the work. He said OK.

He also asked me ^{MEM} what my plans are for getting rid of the waste after it is tested. I told him I would ~~check~~ ^{MEM} get back to him. I will find out from EPA people what to do.

MEM
1630
1500

Got results of XRF tests done on untreated + soil washed soil samples (Penta + Penta/ACA). Results indicated that there was no difference in any of the treated samples compared to their respective ~~values~~ ^{MEM} control (untreated) values. (See attached data sheets).

1630

Notified G. Price of XRF results + showed him the results - he agreed that soil washing did not appear to do anything to treat the soil.

1700 Prepared labels for set of water samples to be analyzed for PCP by Accredited.

1900 Started to pack up for the night.

1930 Left Ponda site.

M. Mol 4/18/94

4/19/94 0700 Arrived at Ponda site.

Started to prepare water samples for metals analysis by Accredited. Added HNO_3 to samples.

0800 Called M. Armstrong at Georgia Lab - 912-264-3465. Asked him whether I could specify the MS/MSD samples to be done for the PCP soil analyses. I told him: A25432, A25442, A25443. (I told him I had 23 samples in the label). - This assumes a 10% MS/MSD rate.

George replied that for this project they are using a 5% MS/MSD rate. ^{now} He said that it was only necessary to use 2 samples for MS/MSD. I told him to eliminate the A25432 sample since there was more of the other two. I will check this with R. Henry.

0830 Ca

to

u

ur

PE

he

do

un

li

d

4/18/94

Furg

P

.

L

i

10

10

A

L

0

1

g

2) L

T

v

S

.

08.30 Called D. Crouse - left message -
told him no significant difference
in values between treated samples +
untreated soil (both PENTA +
PENTA/ACA soils). I also told
him that I was having L. Kaehli
do PCP immunoassay testing on both
untreated soil samples + the most
likely treatments. I also told him
I would keep in touch ^{with} with him.

4/18/94 Forgot to enter: 1000 - 4/18/94 as
per D. Crouse - made 3 MS/MSO
samples:

1) ^{MSO} LSPT ^{MSO} LS5PT1 - did a DI water
wash using the pin test mixer. Did
10 min at 50 rpm, followed by
10 min at 200 rpm. Allowed to
settle for 10 min, then decanted off.
Used PENTA soil. Got 700 ml
of decantate, then diluted ^{MSO} with
1500 ml H₂O. Poured into 2 x 1L
glass amber bottles (PCP) + 1 plastic
1L bottle - (As, Cu, Zn).

2) LSP1LOTW1 - this sample was saved
from the large batch of soil that
was washed in order to generate the
S/S substrate. This is the wash 1
sample (0.1% Tween 80 / pH 10). 700 ml
was diluted w/ 1500 ml H₂O.

- 3) LSP10T02 - The sample was also saved from the large label. This is the water rinse step. 700 ml was diluted \uparrow with 1500 ml H₂O. All samples were placed in 2 x 1L amber glass (R.P.) + 2 x 1L plastic (As, Cu, Zn) bottles.

4/19/94

0945

Placed labels on metals wash liquid sample from soil washing. Will now start to make chain of custody forms.

1000

Got call from H. Allen + H. Compton - they asked how everything was going. I told them I had completed the work (both soil washing + S/S) + that I was packing up. I told them the results of the XRF tests that were done so far. - I said there was no significant difference between the metals levels in the treated vs the untreated soil samples. They said that was OK - since they were trying to remove the R.P. from the soil + then stabilize the soil. \therefore you would want to keep the metals associated with the soil. Based on this, the results from the XRF analysis are good.

1030

Talked to Cindy Snyder - she got call

from ACCREDITED LABS - said they were not expecting to ~~have~~^{MEF} receive any TCLP PCP for soil samples. I sent 4 soil samples for TCLP PCP analysis. This problem has been solved - they can do the analysis but it will cost more. It appears that the PWA # 2 (Engineering PWA - S/S studies) had TCLP water samples for both Pb, Cu, Zn + PCP. I will check this w/ D. Crouse.

1130

Accredited lab accepted samples for soil TCLP-PCP analysis. Misinformation appears to be due to PWA # 2, which said originally that TCLP water samples were going to be run. Correction was made on my paper - but apparently on official PWA that Accredited had gotten.

1200

Dave L. Kaelin PCP samples for PCP immunoassay tests. 4 soil samples + 2 wash water samples. All samples were from soil wash tests.

1200

Prepared bottles for 02 wash liquid samples (PCP + metals) ^{MEF} for shipment with S. Jacobowitz - put bottles in coolers for Fed Ex shipment.

1500

Collected 4 soil samples with
G. Prince for ^{RF} PCP (PCP + metals),
XRF, + PCP

Ac, Cu, Zn

1700

Put cement cores into cooler for
shipment to ETL. Noted that cores
containing PENTON[®] soil were not
hardened up. ACA soil was very
hard.

Called to G. Prince - regarding sending
remains of cement test cores to site. He
said OK to send back to site.
I will contact J. Martinez + let
him know.

Decided to leave the following chemical
treatments on site:

Cement

Clay (SM-399)

Sulfate (PA Sulfate G)

Carbon (Norit Hydrocarbon C)

Ferric chloride

Fertilizer NP-10 (Union Carbide)

Tween 80

Must order more to replace the samples.

Also left the following equipment
on site: electronic temperature
indicator (thermocouple); set of
sieves; complete set of hydrometers
items needed to do test.

1800

At

gc

M.

r

1930

L

4/26/94 07.

Sts

fr

w.

t

0930

L

1000

Ch

w

130L

B

a

1830

Cl

4/26/94 0

Tas

is

1800 Started to pack up equipment & get ready for shipment.

Must ship scale back to ONANS for repair.

1930 Left Penta site.

M. Mol 4/19/94

4/20/94 0700 Arrived at PENTA site.

Started to check & fill out data sheets for samples that D. Prairie & I collected on 4/19 - for TCLP (PCP + metals), XRF, & PCP β m².

0930 Left Penta site

1000 Checked out of hotel & left for airport. w/ P. Priddy & R. Henry.

1300 Boarded plane - delay due to defective airspeed indicator.

1830 Arrived home.

M. Mol 4/20/94

4/21/94 0730 Arrived REAR

Talked to D. Crown about what happened in my absence (nothing). Discussed what

PCP + metals)

PCP + metals)

for
cores
not
very

sendy
to the
site.
list

Chemical

site)

by samples -

must

set of
instruments

5
 11/10/94 0800 arrive at ETL to do
 Penta Soil Washing tests.

Go into lab + set up.

0840 Talked to P. Crome - he said to
 use Seep Area soil. I
 opened 2 5 gal Buckets of Seep
 soil + took composite sample of
 soil. Mixed together - soil
 has free H₂O (dirty brown) on top.
 First filled bucket so as not
 to collect free water.

Got composite sample + screened
 with 1/4" screen to eliminate
 large pieces. Will use 1/4"
 soil in tests.

0950 Calibrated pH meter using 2
 pH buffers - 4 + 7.

People from W. Chester (Wash) came to
 film soil washing. They started to
 set up equipment.

MEM

Ph Made 3L of pH 10 liquid -
 added 2.7 ml of 10% NaOH sol to get pH 10

Made 3L of pH 11 liquid - added 5.5 ml
 of 10% NaOH sol to get pH 10.

The following set (Series B) ⁶ MFM
 of soil washing for tests was done.

- 1) Control (water washed)
- 2) pH 10 (NaOH)
- 3) pH 11 (NaOH)
- 4) pH 10 / air sparging
- 5) pH 10 / Na heptameta phosphate (0.5%)
- 6) pH 10 / Tergitol NP-10

		pH
		1) 5.5
		2) 9.0
		3) 9.5
		4) 9.5
		5) 9.5
		6) 9.0
		2 ex
		Ter
		the
		0.4
		1 5+

When test started - film crew
 filmed it. Ran @ 50 rpm for
 20 minutes. pH after 20 minutes:

pH	1) 5.5-6.0	} - after of wash liquids } → 10.0 } → 10.5-11.0 } → 10.0 to each (after 10 min) } → 9.5-10.0 } → 9.5-10.0
	2) 6.0	
	3) 6.0	
	4) 6.0	
	5) 6.0	
	6) 6.0	

	1) Add
	17
	pH a
	1) 5.5
	2) 8.5
	3) 9.5
	4) 8.5
	5) 9.0
	6) 8.0

1300 (FILMING OVER) Added 500 mL of wash liquid &
 ran for 10 minutes - at 200 rpm.

2) Add at

Series 8) MFM
its was done.

pH of wash liquids after spinning:

	pH		
1)	5.5		added 5 ml 2% NaOH (after 10 min)
2)	9.0-9.5	→	10.5
3)	9.5	→	11.0
4)	9.5	→	9.5-10.0
5)	9.5	→	10.0
6)	9.0	→	9.5-10.0

phosphate (0.5%)

Let settle for 10 min - then decant -
Test #4 (air sparger) - looks
the best - has oily bubbles on top.
Other samples look almost as good.

WASH 2:

1) Add 250 ml wash liq to each beaker -
spin @ 50 rpm for 10 min.

then crew
50 rpm for
10 minutes

wash liquids
5 ml = 10 ml
ml of 2% NaOH
(after 10 min)

	pH after 10 min		add 5 ml of 2% NaOH
1)	5.5	-	
2)	8.5	→	9.5
3)	9.5	→	10.5
4)	8.5-9.0		9.5-10.0
5)	9.0		10.0
6)	8.0-8.5		9.5

Run for 10 more minutes.

liquid a
at 200 rpm.

2) Add 500 ml of wash liquid - spin
at 200 rpm for 10 min -

	pH after 10 min		Add 5ml	
1	5.5	INITIAL PH	5.5-6.0	5.5-6.0% NaOH spin 10 min
2	10.0		9.0-9.5	9.5-10.0
3	10.5		10.0	11.0
4	10.0		9.0	10.0
5	10.0		9.5-10.0	10.0
6	10.0		8.5	10.0

Let settle 10 min - decant off liquid - (add liquid to liquid from Wash 1)

WASH 3 Add 250 mL wash liquid to each beaker - spin 10 min @ 50 vpm

	pH after 10 min		
1	6.0	} stir 10 min ↑ pH after + mixing for 10 min.	6.0
2	9.5		10.0
3	10.0-10.5		11.0
4	9.0		10.0
5	9.5		10.0
6	9.5		10.0

Add 500 mL wash liquid to each beaker - spin 10 min @ 200 vpm

- 1 5.5-6.0
- 2 9.5-10.0
- 3 10.5
- 4 9.5-10.0
- 5 9.5-10.0
- 6 9.5-10.0

As
sp
1 5.
2 10
3 11
4 10
5 10
6 10
Spin
1 6
2 10
3 11
4 10
5 10
6 10
Let
de
Wash
soil
d.
egg
me
be
Soil
sm

Add 5ml
5.5-6.0% NaOH, spin
10 min
9.5-10.0

- 11.0
- 10.0
- 10.0
- 10.0

Decant off
to

pour to
in @ 50 rpm

5ml 2% NaOH
mix ↑

after +
spin for 10 min.

to each
200 rpm

Add 5ml 2% NaOH to each -
spin for 10²⁰ min -

- 1 5.5-6.0
- 2 10.0
- 3 11.0
- 4 10.0
- 5 10.
- 6 10.0

Spin another 10 minutes:

- 1 6
- 2 10
- 3 11
- 4 10
- 5 10
- 6 10

Let settle for 10 minutes -
decant (into same liquid as
washes 1+2).

Wash is done - pH equilibrated. This
soil is not as contaminated as soil
I worked w/ on site (judging by
appearance of washed soil - looks sandy
instead of muddy). Also seems to
be lower pH demand.

Soils look like most of all of
small solids were removed. Air

sparged sample - looked the best -
 decantate looked like oily layer on
 top - more than others. also -
 inside of glass flask holding decantate
 had whitish coating (due to organics)
 - more than others.

1,300 Call
 ash
 ash

also - during soil wash -
 bubbles on top of air sparged
 sample looked like coated w/
 oily layer.

1635 Call
 He
 for
 then
 gas

~ 1600

Talked to D. Crouse. He said:

He
 let
 a
 then

IF NOT MUCH
 - 120 MESH
 ADD TO CENTRATE
 ALSO ADD
 LIQUID FROM
 WASHING -
 I DID IT SINCE
 LIQUID WAS
 CLEARER
 THAN
 CENTRATE

1) Pick best treatment & get soil
 + sieve (wet) w/ #40 + #120
 sieve. I told him I thought
 air sparged sample was best.

1700 Stan
 set

(ALMOST
 CLEAR)
 HARDLY
 ANY
 SOLIDS
 AT ALL.

- 2) Do other soil samples as is
- 3) Get liquid - put together - into
 composite - centrifuge - take
 solids & analyze for PCP.
- 4) Analyze liquid for PCP also.
 (centrifuge).

~ 1800 Takes
 sample
 7x1

- 5) He said to analyze for PCP w/ig
 immunoassay & analytical methods.

1900 Not
 for
 some
 el c
 + le

6)

1930 Left
 2030 Not

908-321-6747

1,30 Called H. Allen + left message -
asked him if TDO was ready. (D. Cronin
asked me to call him + find out).

1635 Called Joe Sorota (TAM) 908-225-6266 -
He was not there (out till Fri) -
talked to M. Huston - told him
there was TDO coming from EDT -
gave him description of tests + samples.

He will get a subcontract lab +
let me know, + I will get
a number of how many + what tests
there are.

1700 Start cleaning up lab - also
set up centrifuge in EDT lab -

~ 1800 Takes a long time to centrifuge
samples - centrifuge is slow + only does
4 x 100 ml at a time.

1900 Put 1 sample centrifuged - stopped
for night - I will talk to K. Cropp
 tomorrow (as per Sam Dori) to see if
I can use their centrifuge (bigger
+ better).

1930 Left EDT

2030 Got home

M. Mel 5/10/94

shed the best
- only logs on
also -
holding decantate
(due to organisms)

shy -
- sparged
centrif w/

He said:

get soil
40 + #120
I thought
= best.

together - into
- tube
P.

PCP also

PCP using
methods.

5/11/94 0800 Got to ETL for Park visit.
Packed up PCP test supplies
at D. Crowe's home on way to ETL.

Got washed soils out of oven +
packed them into jars for shipping.
Samples are air dried ($\sim 30^\circ\text{C}$) as
per L. Kaelin (this is what he
did at site).

Sample designations: (test samples on p. 2)

- 1) Control - S6PT1
- 2) pH 10 - S6PT2
- 3) pH 11 - S6PT3
- 4) pH 10/ air sponge - S6PT4+40, S6PT4+120
- 5) pH 10/ phosphate - S6PT5
- 6) pH 10/ NP-10 - S6PT6

FROM
BUCKET
(-1/4")

→ 7) Untreated Seep Area Soil

Note: sample 4 was air dried, then
sieved wet into 3 fractions:

- 1) +40
- 2) +120
- 3) -120 (only very small amt)

The two first fractions were saved

0900 Can
the
us
to
one
cer
an

Din
PCP
in
don
cer

The
wi

Wash

Liqu

0930 Go
for
the
de

Bank accty.
+ supplies
on way to ETL.

of oven +
for shipping.
(~30°C) as
to what he

sent
samples on p. 2)

T1

T2

PT4+40, SEPT4+12

PT5

soil

dried, then
actions.

(cont)

are were saved

for chemical analysis. The -126
fraction was added to the solids
in the supernatant.

0900 Called D. Crowe - told him my plan for
the day - to centrifuge solids
using Tom Ori's centrifuge +
to do PCP test kits. I said
one of the F+E people will do
centrifuging. I will do the PCP
analyses.

Dan Crowe said to just do the
PCP test kit using the washed soils
from each test. - not to bother
doing the wash liquid + the
centrifuged solids.

The samples to go for PCP lab analysis
will be:

Washed soils - untreated + 7 washed = 8

Liquid { centrifuged solids = 6
 { liquid = 6

0930 Got call from Chris Schuttge
from TAT - she asked me about
the samples that Mark Hunter + I
discussed last night.

cl told her that we would send them:

S/S	TCLP		AS, Cu, Zn
	PCP	PCP	
ACA		5	5
PCP/ACA - v	5	5	5
" - w	3	3	3
<u>total</u>	<u>8</u>	<u>13</u>	<u>13</u>

2) Soil Washing (all PCP)

Soil - 1 untreated + 7 washed = 8

Liquid - solid certified soil = 6
 liquid = 6

She will get back to me with a lab to send them to. cl will give her a copy of the coc's generated

1000 Pot % H₂O in untreated screened (-40")
 Porta Seep area sample 1

- 1) Beaker wt = 171.88g
- Beaker + wet soil = 252.98g
- Wet soil wt = 81.1g

Dry
Dry

1030

Sta
sam

1035

Tal
wil
sam

1045

Che
ill
in
0.

Work

1230

Level

1300

Sta

Call

ask

in

yes

The

me

PCP

would

Dry soil + beaker wt = 239.97g
Dry soil wt = 68.1g

CLP	7.00
PCP	As, Cu, Zn
5	5
5	5
3	3

$$\therefore \frac{81.1 - 68.1}{81.1} \times 100 = 16.0\% \text{ H}_2\text{O}$$

1030 Started to prepare for testing soil samples

1035 Talked to Jane Runchecima - she will do centrifuging of liquid samples for PCP.

led = 8

1045 Checked specs on ENSYS spec - filled 2 PS test tubes w/ DI H₂O + inserted into machine. It read 0.0. This is correct.

soil = 6
= 6

Worked on soil PCP tests until 1230.

me with

1230 Lunch
1300 Start work on PCP tests again.

of the coc's

Called Lisa Spenneli at Millipore - asked her if I should use NaOH in my extraction fluid - she said yes.

screened (-45")

The following optical density measurements were taken from the PCP test samples.

Control NFN

Neg. calibration (NC)	- 0.73 - 0.76	
10 ppm cal -	0.41 - 0.38	
100 " "	0.18 - 0.19	
Untreated Saep	0.10	
S6PT1	0.18	
S6PT2	0.27	
S6PT3 ^{NFN} Dup	0.23 - 0.25	
S6PT3	0.18 - 0.19	
S6PT4 + 40	0.22	
S6PT4 + 120	0.19	1030
S6PT5	0.23	
S6PT6	0.19	

Re measured 2 + 20 :

S6PT2 - 0.22

S6PT2 Dup - 0.24 - 0.25

In this batch of samples, all were ^{NFN} below within the 2 calibration samples except the untreated sample (0.10).

MICLIPONE
L. SPINELLI
1-800-645-5476
x 8654

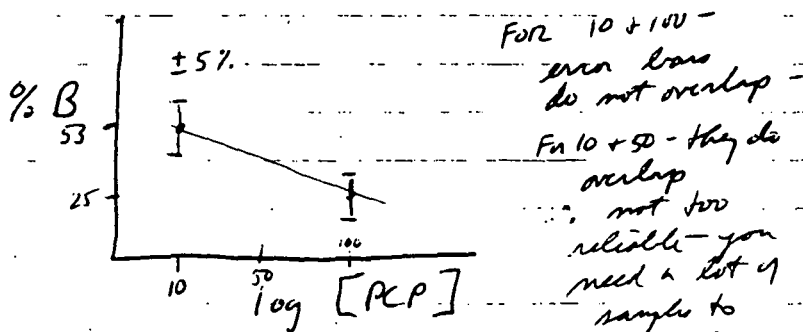
I called L. Spinelli - she recommended I use a 10-fold + a 100-fold dilution. I set it up:

To get 10-fold dil: take diluted exhaerion fluid (made prior to 1ST run) + add 100 µL to 1 mL of unosed exhaerion fluid (in small vial).

To get 100-fold dilution - add 10 μ L of
 extraction fluid (from Untreated Seep
 Area sample) - add to 1 mL of
 unused extraction fluid.

He did test with both of these
 samples as well as a new N.C.,
 10 ppm, + 100 ppm calibration.

1030 He asked her if I could graph
 the data - she said no because
 there is too much error.



$$\% B = \frac{\text{O.D. calib. a sample}}{\text{O.D. negative control}} \times 100$$

This gives a # that normalizes
 effects of temperature + other batch-
 specific variables - \therefore gives similar
 trends for a given batch even though
 absolute values of concentrations may
 differ.

$$\text{for 10 ppm: } \frac{.4}{.75} \times 100 = 53\%$$

0.73 - 0.76

0.41 - 0.38

0.18 - 0.19

0.10

0.18

0.27

0.23 - 0.25

0.18 - 0.19

0.22

0.19

0.23

0.19

0.25

all were
 calibration
 untreated

he - she

10-fold
 dilution

she
 made

100 μ L to
 1 mL

Fr 100 ppm : $\frac{0.19}{.75} \times 100 = 25\%$

2ND set of tests:

N.C - 0.64

10 ppm cal - 0.41

100 ppm cal - 0.19-0.20

10 fold dil (untreated Seep area) - 0.21

100 fold dil (" ") - 0.34-0.35

1730 Started to clean up area + put away samples.

1830 Left ETC

2000 Went over notes at home

2100 Stopped looking at notes.

M. Noel 5/11/94

5/12/94 0730 - Arrived at REAC

0900 Mtg at Bldg 18 -

M. Dreyer

P. Bortz

G. Prince

H. Allen

M. Mohr

} at mtg.

Decision
d of
from
with

M. Pa
sam

Mtg

1145 Star
fire

1200 Lun

1300 Wash

1630 Lef

5/13/94 a

wnt

1200 Lun

1300 Fin

S-

me

1310 St

Decided mapping + geotechnical material.
 it gave results that I have so far
 from PLP + metals analyses of washed
 soils from Penta

Mr. Prince asked me to get data on 4
 samples that we collected

Mtg ended at 1145

1145 Started to look at York Oil report to
 final + issue it

1200 Lunch

1300 Worked on York Oil final report.

1630 Left REAC

M. Moe 5/12/94

5/11/94 5/13/94 Arrived at REAC 0730.

worked on getting out York Oil report.

1200 Lunch

1300 Finished - got York Oil report back from
 S. Butterfield. Gave to Jenna to
 make copies.

1310 Started to work on Penta Tables.

25%

seen) - 0.21
) - 0.34-0.35

+

5/11/94

1400 Started to pack for trip to ETC
to do S/S crushing on Mon.

1630 Left REPC - have UCS machine +
grinder in my car to take to ETC
on Mon.

M. Mon 5/13/94

5/16/94 ⁰⁸⁰⁰ MFM + M. Donohue conducted
UCS tests of the S/S samples that
were allowed to cure for 28 days.
all UCS cores were crushed also -
obtained measurements for bulk density
+ pH + % H₂O.

1210 Lunch

1240 Started to finish up UCS tests.

~ 1400 Finished UCS tests. Started to
get samples organized to ship to
the analytical lab. Filled out
labels, etc for samples.

also - talked to H. Wu (Fateo
Effects Lab) about doing COO tests
on centrifugate samples from
soil washing. He did them. He
will give me results from tests
tomorrow.

1700

2000

2030

0800

5/17/94

1100

~ 1030

Ship to ETL
in Mon.

1700 Left ETL -

2000 Reviewed data (at home).

2030 Stopped data review.

M. Not 5/16/94.

Wed 5/13/94

advised

5 samples that
in 28 days.
checked also -
for both permits

0800 Arrived at ETL -

5/17/94

Started to pack samples & fill out
chain of custody (MFR + M. Donahue).

Reviewed COC's - looked OK

1100 Went to Fed Exp to Ship samples.

~ 1030

Got call from Chris Schultze
from TAT: she gave me the
name & address of the TAT
lab to ship to:

GP Environmental
202 Perry Parkway
Gaithersburg, Md 20877
Attn: Marty Sadoughi

301-926-6802

5 tests.

Started to
do ship to
Filled out
files.

(Fate +
long COO tests
from
to other. He
from tests

I will send Chris Schultz
 copies of the CDC's:
 FAX - 908-225-7032
 phone - 908-225-6266.

2100

2300

1200 Finished shipping packages of
 samples (2 coolers). M. Donahue
 returned to NERC (he carried
 back the ULS test machine).
 I stayed at ETL - lunch.

5/18/99

07

~ 1200 Called D. Crome - told him
 we completed the job.

1) Remaining cores in cold room
 at ETL.

~ 0900

2) PCP test kits also there.

3) He asked me to see if F. Miller
 needed help shipping/prepping
 samples for Navaho Vets. I said
 I would check it out.

0930

1220 Talked w/ F. Miller - he said
 he had already shipped samples.

1300 Left NERC - went home to do
 additional work.

1400 Arrived home + worked on tables

0945

1700 Stopped working on making tables
 at home.

is Schultz

2100

Started working again - making
folds.

32

66

2300

Stopped working on folds.

stays of
M. Bonahue
he carried
machine).

5/18/99

0730 Arrived REAR

M. MCK 5/17/99

- lunch
told her

Started working on Perten folds -
talked to Ray Lewis about making folds.
He will also calculate bulk
density + UCS figures.

rd room

~ 0900 - got call from J. Camacho about
Yah Oil - can we ship untreated
soil to Burlington, VT Fed ex office?
H. Prince is going up to site
tomorrow + can pick it up to dispose
of it.

where
of F. Miller
prepping
I sent
out

0930 Talked to M. Barkly about saving
Yah Oil samples (V. Karmal said
something about saving oil samples). She
said to check w/ RAT SINGHVI - he
was right there - we checked with
him - he said OK to dispose of
samples.

he said
of samples.
how to do

0945 Called J. Camacho + left message
saying that we would send samples
to Fed ex office at Burlington, VT for
H. Prince to pick up.

making folds

me he will
bring them

4) TCEP - should be no problem.

5) liquid centrifugates - should be
no problem

6) He said if he has any problems he
will give me a call.

I will call Chris Schetty +
let her know outcome of conversation.

1500 Called Chris Schetty - told her
what Marty Salvonghi told me about
the MS/MSO's + air dry samples.

1505 Worked on Penta report

1630 Left REAR

M. Wed 5/18/94

0730 5/19/94 - Arrived REAR

0730 Called B. Prime - left message
about York Oil - told him address
of Fed Ex office:
101 Marshall Ave
Williston, VT 05495

There will be 3x5 gal soil +
2x5 gal H₂O.

Also gave him directions to office from

Salvonghi
he had
sent to him

sober score

He will
left in the
soilly part then
then take

as is,
solids
fill assume

dry -
1 bar as

THEY USE THIS
1/2 OFF.

0) a
samples (MSO
9458).
listed

1000 M. Van Cleft told ^{MR} me he will get samples in cooler & bring them to Ray Lewis.

1010 Worked on Penta report

1200 Lunch

1300 Worked on Penta Report

1400 Got call from Marty Saloufio (GP Environmental) - he had questions about samples sent to him.

1) Centrifuged solids - problem since very little volume. He will air dry the samples right in the original containers (possibly put them in the oven). He will then take the solids out & analyze as-is, & will not use any % solids correction factor. (Will assume solids are 100% solids).

2) Since the samples will air dry - there may be a problem as far as exceeding the holding time. THEY USE THIS METHOD FOR DYNAMIXE - OMI - ZZ OFF.

3) He will do MS (not MSD) on TELP (PCP & As, Cu, Zn) samples. (MSD not required). (COC # 9458). All other MS/MSD's requested will be done.

4) TEL

5) Log
n

6) It
w

d
le

1500 Ca
wt
%

1505 Work

1630 Tel

0730 5/15

0730 Ca
a
g

TL

a

7/17/94

pg. 1

1) 0835 - started to unpatch core for UCS - Very soft

1) PAWZOC5CL - unpatched 1st core - broke into 2 pieces. - Tried to unpatch 2nd core of this sample - also broke into 2 - Must saw off end

METER - 1000 LB RING
(23054)
(MUT _____)

HT = 1 7/8" width =

(MIN) TIME	(LC-8) DEFLECTION	(LC-2) (LB) LOAD
0	0	0
1	18	0.5
2	38	0.6
3	55	0.8
4	68	1.0
5	65	1.0
5:01	60	1.0

RAW DATA

smells like NH₃ - moist

Note: was able to be crushed by hand

MAX LOAD (LB)
X AREA

2) PAW20C5C - (1,000 lb ring)

Very soft

Time	Deflection	load
0	0	0
1	25	0.2
2	40	0.25
3	67	0.3
3:30 4	→ 78	0.3
4	77	0.4
4:30	79	0.5
5	90	0.6
6	105	0.8
7	118	1.0
8	131	1.2
9	145	1.5
10	165	1.6

then rapidly lost

smells like NH_3 - moist

Note: was able to be crushed by hand.

5/17/94

p. 3

3) PAWZOC - smells like NH_3 - moist (1,000 lb ring)

(MIN) Time	Deflection	Load
0	0	0
1	29	0.7
2	46	0.9
3	66	1.2
4	88	1.3
5	100 110 MEM	1.3
6	132	1.1
7	150	0.9
8	172	0.7
9	195	0.5
10	218	0.4
11	241	0.2

Note: was able to be crushed by hand.

5/17/94

p 4

very moist - strong NH₃ smell
height 2.0" 156.63g

4) PAWC5RL55 -

TIME	Deflection	Load
0	0	0
1	19	0.1
2	38	0.2
3	54	0.2
4	76	0.2
5	97	0.2
6	119	0.2
7	140	0.2
8	160	0.2

Note: was able to be crushed by hand

5/17/99

P 5

5) PA 20C5CL

height - $3\frac{3}{8}$ "

weight - 298.53g

very moist
NH₃ smell

Time	deflection	load
0	0	0
1	23	0.1
2	40	0.2
3	65	0.2
4	93	0.3
5	120 120	0.4
6	140	0.5
7	164	0.5
8	184	0.5
9	201	0.5
10	220	0.5
11	238	0.5-0.6
12	261	0.5-0.6
13	288	0.6
14	308	0.6

Note: was able to be crushed by hand

MS/MSD

5/17/94

p 6

6) PAZOCSS

very moist - NH₃ smell

Time	deflection	Load
0	0	0
1	18	0.3
2	37	0.4
3	60	0.4 - 0.5
4	80	0.5
5	101	0.5
6	126	0.5
7	148	0.5
8	169	0.4
9	187	50.1 ^{MEM} ± 0.3 - 0.4

Note: was able to be crushed by hand

5/17/94

p. 7

7) PA 20C5C - ^{sm. amt of free H₂O}
very moist - deformed very ~~easy~~
easily by touch - no UCS was done

smelled like NH₃

Note: was able to be crushed by hand

5/17/94

p. 5

8) PA20C - smells like NH_3 - moist

TIME	deflection	Load (FACTOR: 10)
0	0	0
1	24	0.2
2	46	0.3
3	63	0.3 - 0.4
4	85	0.3 - 0.4
5	107	0.4
6	124	0.4
7	144	0.4
8	164	0.4 - 0.5
9	185	0.4 - 0.5
10	206	0.4 - 0.5
11	225	0.5
12	245	0.5

Note: was able to be crushed by hand

5/17/99

9) A-33C

weight - 340.26g
height - 3 1/4"

6,000 lb ring
#22970

Time	deflection ($\frac{L}{1000}$)	load (x100)
0	0	0
1	15	5
2	53	8.5
3	63	14.5
4	82	17.8
5	92	23.9
6	115 ^{MPM}	28.9
7	134	34.5
8	145	45
9	152	59.5
10	164	66 68.6 (= 6000 6800 lb)

test discontinued - cylinder looks good - strength too high

~~Note: was ^{not} able to be crushed by hand~~

5/17/94

10) A20C55 - 6000 lb ring

Sample looks good - smells like cement -

TIME	DEFLECTION (FACTOR: $\frac{1}{1000}$)	LOAD (USE FACTOR OF 100)
0	0	0
1	9	3.7 = 3700
2	12	10.5
3	16	20
4	11	29
5	12	37.5
6	22	46.5
7	35	55
8	44	60

test discontinued - strength too high

~~Note: was able to be crushed by hand~~

11) A20C.3P - 6,000 lb ring

Sample looks good - smells like cement

TIME	DEFLECTION ($\frac{1}{100}$)	LOAD ($\times 100$)
0	0	0
1	4	0.4
2	40	1.2
3	58	4.5
4	60	6.7
5	61	8
MFM 6 5:40	45	19.5
6	43	19.2
7	36	10.1
8	42	15
9	43	21.6
10	52	25.7
MFM 11 10:30	42	MFM 26 15
uneven top surface		
11	42	23
12	51	29
MFM 13 12:45	76	33
MFM 13 14	68	37.5
15	44	37.5
16	31 56	31

uneven top surface ~~Note: was able to be~~ MFM

5/17/94

P.

(12) A-20C

weight - 354.91
length 3 1/2"

6,000 lb ring

Time	deflection ($\frac{1}{1000}$)	load
0	0	0
1	10	4.1 (x100)
2	10	12.5
3	12	22.3
4	15	32
5	21	42
6	28	49
7	50	~56

sample cracked + gave out

5/17/99

(13) A10C

weight = 325.72g ; 3^{3/16}" high

Sample looks good -

6,000 lb ring

TIME	DEFLECTION	LOAD
0	0	0
1	32	3.6
2	64	7.5
3	12	4.6
4	47	6.5
5	81	8.5
6	2	9.0
7		

DEFLECTION NUMBERS WRONG

LOAD NUMBERS OK

RE-DO - DUPLICATE

A10C	0	0	
	1	22	2 (x.00)
	2	31	7
	3	32	12.5
	4	70	7
	4.20	70	6.7

Strength Calculations			
All Cross-sectional areas are			
Sample Number	Max Load (lbs)	Stress - Load/Area (psi)	
PAW20C5CL	10	3.18	
PAW20C	13	4.14	
PA20C5CL5S	2	0.64	
PA20C5CL	6	1.91	
PA20C5S	5	1.59	
PA20C5C	NA	NA	
PA20C	5	1.59	
A-33C	6860	2183.61	Still Intact
A20C5S	6000	1909.86	
A20C	5600	1782.54	
A10C	900	286.48	
A10C-Dup	670	213.27	

5/17/97

Sample

pH

- | | |
|----------------|-------|
| 1) PAW 20C5CL | 11.07 |
| 2) PAW 20C5C | 10.72 |
| 3) PAW 20C | 11.21 |
| 4) PA 20C5CL5S | 10.77 |
| 5) PA 20C5CL | 10.19 |
| 6) PA 20C5S | 11.82 |
| 7) PA 20C | 9.68 |
| 8) PA 20C5C | 10.50 |
| 9) A 20C5S | 12.57 |
| 10) A 33C | 12.30 |
| 11) A 20C 3P | 12.46 |
| 12) A 20C | 12.41 |
| 13) A 10C | 12.35 |

WT of cores - S/S samples

5/17/94

f

1) PAW20C5CL	169.97 g	HT = 1 7/8" high	DIAM = 2"
2) PAW20C5C	224.22 g	2 5/8"	↓
3) PAW20C	278.80 g	3"	
4) PA20C5CL5S	156.63	2.0"	
5) PA20C5CL	298.53	3 3/8"	
6) PA20C5S	264.06	3 1/16"	
7) PA20C5C	279.31	3 1/4"	
8) PA20C	267.96	3.0"	
9) A33C	340.26 g	3 1/4"	
10) A20C5S	396.96 g	4.0"	
11) A20C.3P	307.52	3 1/8"	
12) A20C	354.91	3 1/2"	
13) A10C	325.72	3 3/16"	
DUPLICATE	318.77 318.17	3 3/16"	

% HW

SAMPLE	BEAK. WT(g)	BEAK + WET CORE	BEAK + DRY CORE	WET WT	DRY WT	% HW
1) PAW20C5CL	29.14	53.15	48.42	24.01	19.78	17.6
2) PAW20C5C	29.42	43.65	40.70	14.23	11.48	19.3
3) PAW20C	1.58	18.32	15.39	16.74	15.8	17.5 19.3 MFM
4) PA20C5CL5S	1.61	16.89	13.25	15.28	11.64	23.8
5) PA20C5CL	1.57	25.87 27.51 MFM	20.39	24.30	18.82	22.5
6) PA20C5S PA20C5S OJA	1.57 1.60	25.62 23.19	14.51 18.15	24.05 21.59	17.94 16.55	25.4 23.3
7) PA20C	MFM 1.59 1.66	25.08	19.94	23.49	18.35	21.9
8) PA20C5C	1.60	17.90	14.30	16.30	12.70	22.1
9) A20C5S	1.57	19.59	17.74	18.02	16.17	10.3
10) A33C	1.59	22.86	21.07	21.27	19.48	8.4
11) A20C.3P	1.59	14.80	13.42	13.21	11.83	10.4
12) A20C	1.60	13.89	12.89	12.29	11.29	8.1
13) A10C	1.63	24.72	22.37	23.09	20.74	10.2

0.1% Tween 80 / pH 10

PCP

x 2.14

D 25540

LS PILOT W1 - 4500 mg/L = 4.5 mg/L

9.63 mg/L

A, B 25541

W2 - ~~6.20~~^{6.20} mg/L = 0.62 mg/L

1.33

C 25540

LS PILOT W1

mg/L	As	Cu	Zn
LS PILOT W1	9.67	13.9	7.45
W2	6.20	7.70	4.91

41

MULT x 2.14 →

20.7	29.7	15.9
13.3	16.5	10.5

Soil is untreated washed PA

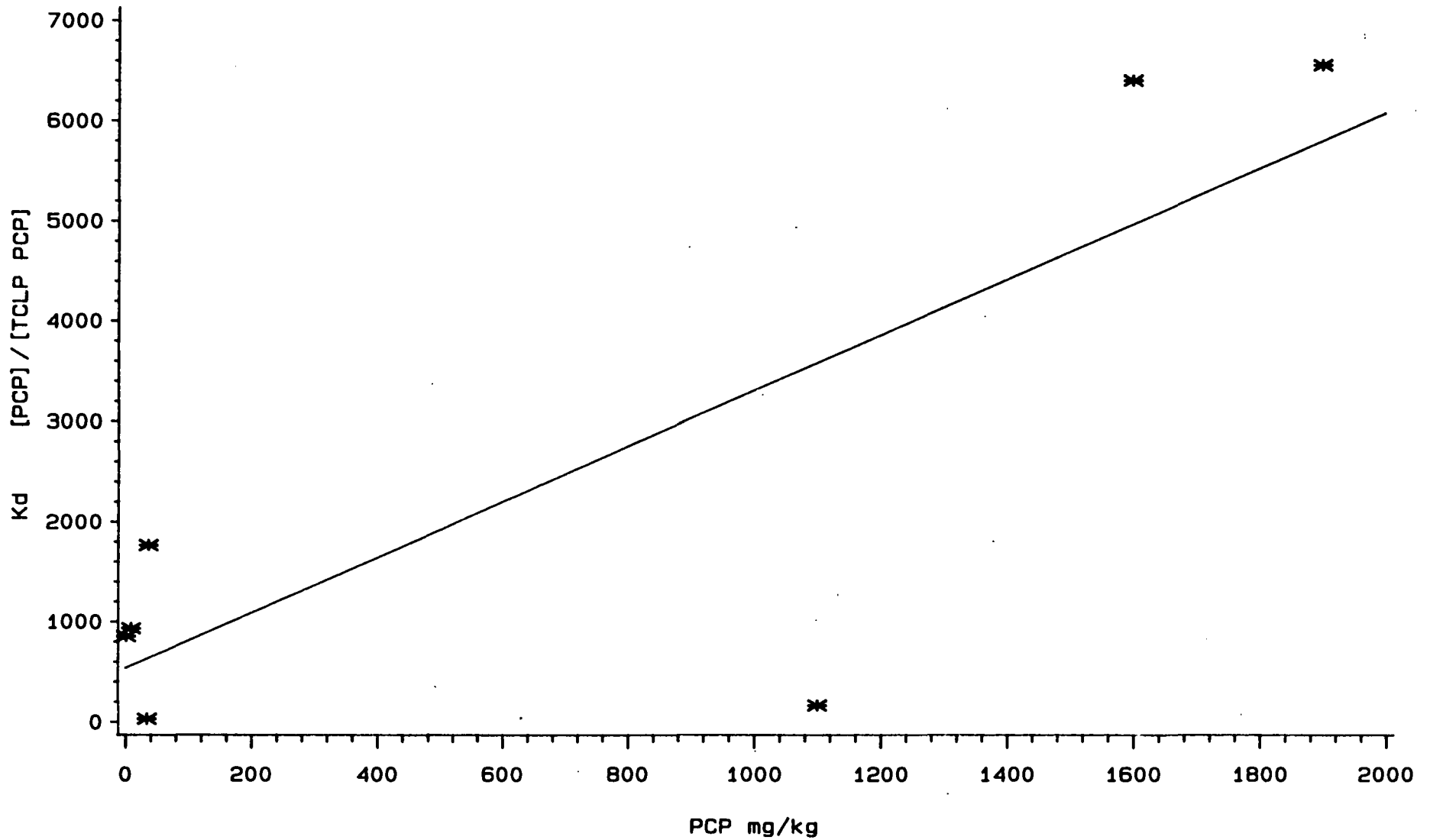
Dilution factor for supernatants -

used 700 ml of supernatant - diluted w/ 1500 ml H₂O
is a 2.14-fold dilution.

Get analytical results - multiply by 2.14.

Plot of PCP and Kd for PCP

Penta Wood Products
Siren, WI
May 1994



Linear Correlation of PCP and Kd for PCP

Penta Wood Products

Siren, WI

May 1994

CORRELATION ANALYSIS

1 'WITH' Variables: PCP_KD

1 'VAR' Variables: PCP

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
PCP_KD	7	2383.014286	2853.164051	16681	26.100000	6551.000000
PCP	7	668.857143	841.726919	4682.000000	1.700000	1900.000000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 7

PCP

PCP_KD 0.81779
 0.0246

Linear Regression of PCP and Kd for PCP
Penta Wood Products
Siren, WI
May 1994

Model: MODEL1
Dependent Variable: PCP_KD

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	32665700.039	32665700.039	10.096	0.0246
Error	5	16177570.569	3235514.1138		
C Total	6	48843270.609			

Root MSE	1798.75349	R-square	0.6688
Dep Mean	2383.01429	Adj R-sq	0.6025
C.V.	75.48228		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > T
INTERCEP	1	528.917024	895.94402972	0.590	0.5806
PCP	1	2.772038	0.87241838	3.177	0.0246

Linear Regression of PCP and Kd for PCP

Penta Wood Products

Siren, WI

May 1994

Obs	Dep Var PCP_KD	Predict Value	Std Err Predict	Residual	Std Err Residual	Student Residual	-2-1-0 1 2	Cook's D
1	26.1000	623.2	876.914	-597.1	1570.521	-0.380		0.023
2	850.0	533.6	894.979	316.4	1560.297	0.203		0.007
3	1762.0	631.5	875.263	1130.5	1571.441	0.719	*	0.080
4	162.0	3578.2	776.978	-3416.2	1622.288	-2.106	****	0.509
5	930.0	554.7	890.681	375.3	1562.754	0.240		0.009
6	6400.0	4964.2	1059.303	1435.8	1453.751	0.988	*	0.259
7	6551.0	5795.8	1271.159	755.2	1272.662	0.593	*	0.176

Sum of Residuals -9.09495E-13

Sum of Squared Residuals 16177570.569

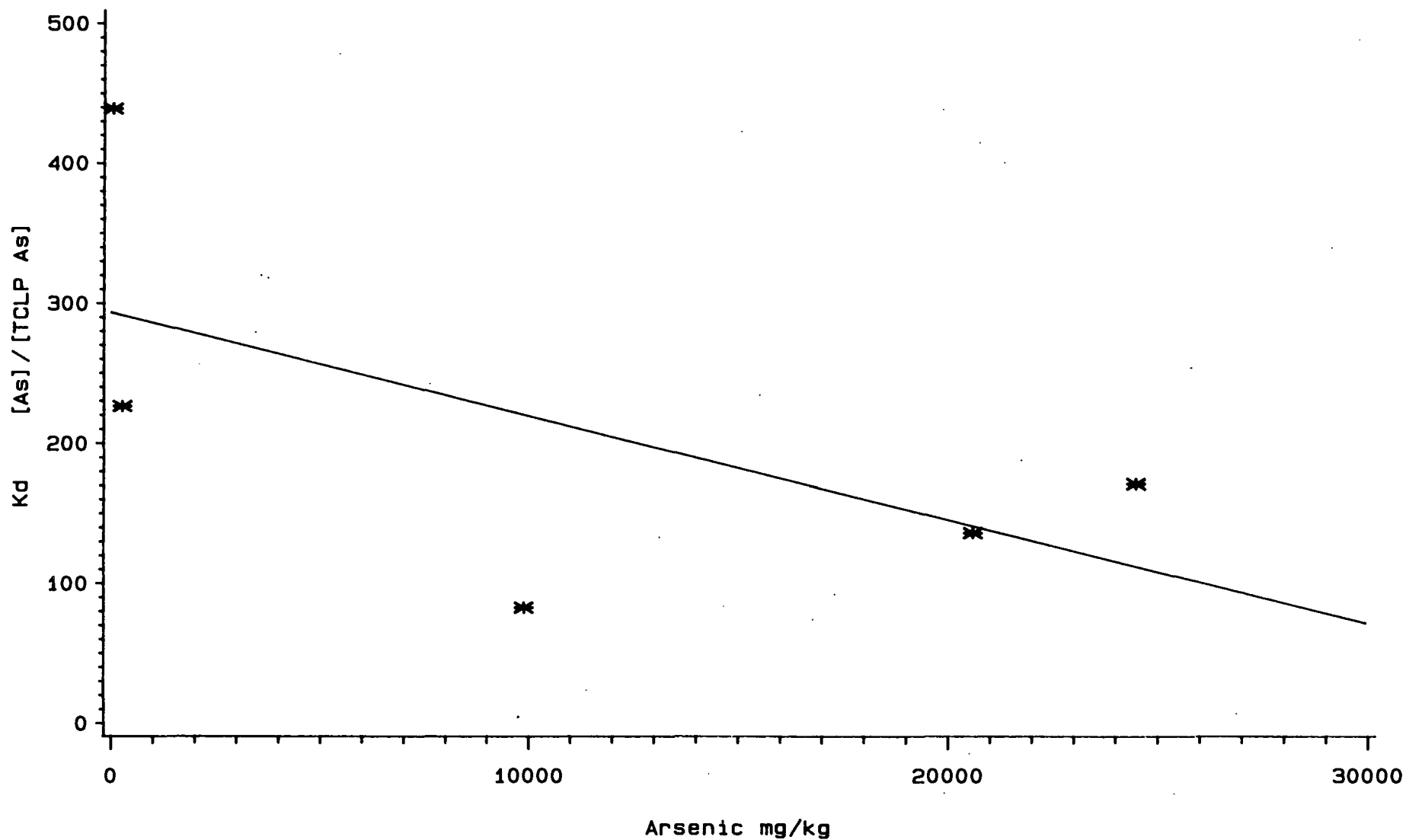
Predicted Resid SS (Press) 27977551.693

Plot of Arsenic and Kd for Arsenic

Penta Wood Products

Siren, WI

May 1994



Linear Correlation of Arsenic and Kd for Arsenic

Penta Wood Products

Siren, WI

May 1994

CORRELATION ANALYSIS

1 'WITH' Variables: AS_KD

1 'VAR' Variables: AS

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
AS_KD	5	210.900000	137.791691	1054.500000	82.500000	439.000000
AS	5	11062	11301	55312	40.800000	24500

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 5

AS

AS_KD	-0.60660
	0.2781

Linear Regression of Arsenic and Kd for Arsenic
Penta Wood Products
Siren, WI
May 1994

Model: MODEL1
Dependent Variable: AS_KD

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	27945.83973	27945.83973	1.747	0.2781
Error	3	48000.36027	16000.12009		
C Total	4	75946.20000			
Root MSE	126.49158	R-square	0.3680		
Dep Mean	210.90000	Adj R-sq.	0.1573		
C.V.	59.97704				

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > T
INTERCEP	1	292.722755	83.86393987	3.490	0.0398
AS	1	-0.007397	0.00559667	-1.322	0.2781

Linear Regression of Arsenic and Kd for Arsenic

Penta Wood Products

Siren, WI

May 1994

Obs	Dep Var AS_KD	Predict Value	Std Err Predict	Std Err Residual	Std Err Residual	Student Residual	-2-1-0 1 2	Cook's D
1	226.0	290.7	82.751	-64.7183	95.669	-0.676	*	0.171
2	136.0	140.4	77.778	-4.3548	99.754	-0.044		0.001
3	171.0	111.5	94.106	59.4915	84.523	0.704	*	0.307
4	439.0	292.4	83.696	146.6	94.843	1.545	***	0.930
5	82.5000	219.5	56.942	-137.0	112.950	-1.213	**	0.187

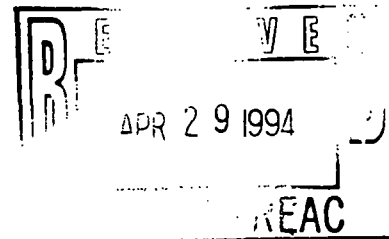
Sum of Residuals 2.842171E-14

Sum of Squared Residuals 48000.3603

Predicted Resid SS (Press) 128100.3710



Roy F. Weston, Inc.
Environmental Technology Laboratory
254 Welsh Pool Road
Lionville, Pennsylvania 19341-1225
610-701-6174 • Fax 610-701-6175



28 April 1994

Mr. Mike Mohn
Roy F. Weston, Inc.
REAC, Edison, N.J.

**Re: Physical Testing Results for Penta Wood Site Soil Samples
WESTON Job Number 9404X007**

Dear Mr. Mohn:

Attached are the results of physical testing conducted on the three (3) soil samples received by WESTON on 19 April 1994. The following geotechnical tests were performed in accordance with the cited methods:

ASTM D-422	Particle Size Analysis of Soils by Sieve and Hydrometer (a.k.a. Grain Size or Gradation).
ASTM D-2216	Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.
ASTM D-4972	pH of Soils
ASTM D-854	Specific Gravity of Soils
EM 1110-2-1906	Appendix II: Unit Weights, Void Ratio, Porosity, and Degree of Saturation



28 April 1994
Page 2

If you have any questions concerning these results, please contact Mr. Russell Frye at (610) 701-6173.

Very truly yours,

ROY F. WESTON, INC.

Joseph F. Martino, P.E.
Senior Section Manager
Environmental Technology Laboratory

ROY F. WESTON, INC. ENVIRONMENTAL TECHNOLOGY LABORATORY

GEOTECHNICAL TESTING DATA AND RESULTS

PROJECT	REAC, Penta Wood Site	PROJECT SAMPLE I.D.	A25450	PROJECT ANALYST	SPM
JOB NUMBER	9404X007	ETL SAMPLE NUMBER	001	QA/QC ANALYST	RWF
W. O. NUMBER	03347-035-001-6932-02	DATE RECEIVED	04/19/94	DATE COMPLETED	04/24/94

PARTICLE SIZE DISTRIBUTION		
U. S. Standard Sieve Size	Diameter mm	% Finer
3"	75.00	100.0
1 1/2"	37.50	100.0
3/4"	19.00	100.0
3/8"	9.500	100.0
#4	4.750	99.9
#10	2.000	97.9
#20	0.850	91.0
#50	0.300	42.1
#100	0.150	18.2
#200	0.075	12.9
HYDROMETER	0.0470	12.8
	0.0339	10.7
	0.0243	9.3
	0.0173	8.6
	0.0128	7.2
	0.0091	6.5
	0.0065	5.8
	0.0046	5.1
	0.0033	4.4
	0.0023	3.7
0.0012	3.7	
0.0010	3.0	

EFFECTIVE SIZES	
% Finer	Diameter mm
60	0.501
30	0.224
10	NA
Uniformity Coefficient	Gradation Coefficient
NA	NA

SAMPLE DESCRIPTION
light brown silty or clayey SAND with 13% silt or clay
Unified Soil Classification System (USCS) Group Symbol
SM or SC

NATURAL MOISTURE CONTENT, % dry basis
6.2

pH in DI water
5.1

SPECIFIC GRAVITY
2.72

UNIT WEIGHT (disturbed)		
Wet Density g/cc	Unit Weight, pcf	
	Wet	Dry
1.46	91.1	85.8

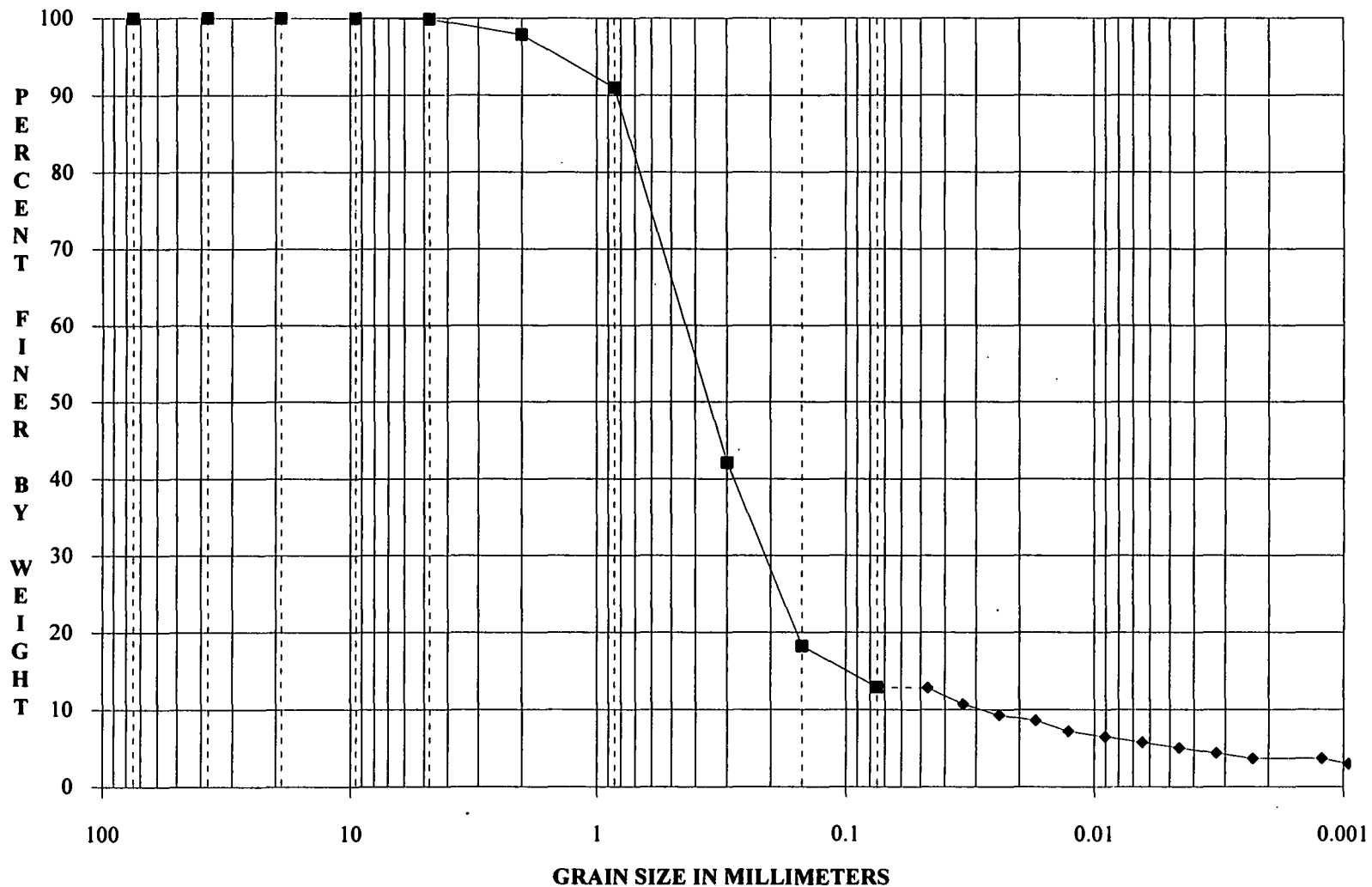
NOTES
NA=NOT APPLICABLE

PARTICLE-SIZE DISTRIBUTION CURVE FOR

PROJECT SAMPLE A25450, ETL SAMPLE 9404X007-001

U. S. STANDARD SIEVE SIZES

3" 1 1/2" 3/4" 3/8" #4 #10 #20 #50 #100 #200 HYDROMETER



GRAVEL	SAND	SILT OR CLAY
--------	------	--------------

ROY F. WESTON, INC. ENVIRONMENTAL TECHNOLOGY LABORATORY

GEOTECHNICAL TESTING DATA AND RESULTS

PROJECT	REAC, Penta Wood Site	PROJECT SAMPLE I.D.	A25451	PROJECT ANALYST	SPM
JOB NUMBER	9404X007	ETL SAMPLE NUMBER	002	QA/QC ANALYST	RWF
W. O. NUMBER	03347-035-001-6932-02	DATE RECEIVED	04/19/94	DATE COMPLETED	04/24/94

PARTICLE SIZE DISTRIBUTION		
U. S. Standard Sieve Size	Diameter mm	% Finer
3"	75.00	100.0
1 1/2"	37.50	100.0
3/4"	19.00	100.0
3/8"	9.500	100.0
#4	4.750	100.0
#10	2.000	99.2
#20	0.850	95.4
#50	0.300	53.2
#100	0.150	26.2
#200	0.075	15.6
HYDROMETER	0.0527	4.8
	0.0373	4.8
	0.0265	4.0
	0.0187	4.0
	0.0138	3.2
	0.0097	3.2
	0.0069	2.5
	0.0049	2.5
	0.0035	2.5
	0.0024	2.5
0.0013	2.5	
0.0010	2.5	

EFFECTIVE SIZES	
% Finer	Diameter mm
60	0.388
30	0.171
10	NA
Uniformity Coefficient	Gradation Coefficient
NA	NA

SAMPLE DESCRIPTION
dark brown silty or clayey SAND with 16% silt or clay
Unified Soil Classification System (USCS) Group Symbol
SM or SC

NATURAL MOISTURE CONTENT, % dry basis
8.6

pH in DI water
9.0

SPECIFIC GRAVITY
2.59

UNIT WEIGHT (disturbed)		
Wet Density g/cc	Unit Weight, pcf	
	Wet	Dry
1.28	79.9	73.5

NOTES

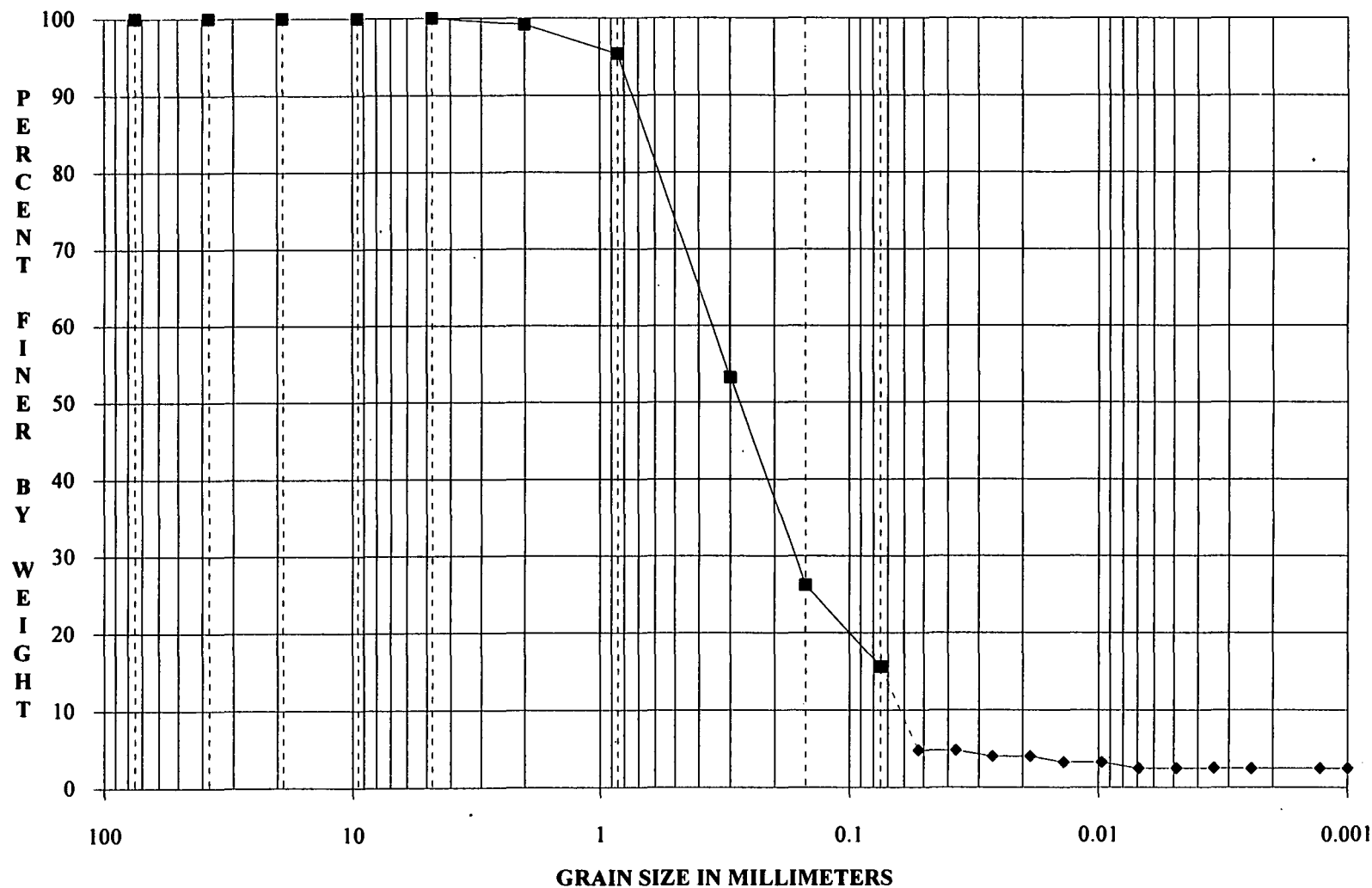
NA=NOT APPLICABLE

PARTICLE-SIZE DISTRIBUTION CURVE FOR

PROJECT SAMPLE A25451, ETL SAMPLE 9404X007-002

U. S. STANDARD SIEVE SIZES

3" 1 1/2" 3/4" 3/8" #4 #10 #20 #50 #100 #200 HYDROMETER



GRAVEL SAND SILT OR CLAY

ROY F. WESTON, INC. ENVIRONMENTAL TECHNOLOGY LABORATORY

GEOTECHNICAL TESTING DATA AND RESULTS

PROJECT	REAC, Penta Wood Site	PROJECT SAMPLE I.D.	A25452	PROJECT ANALYST	SPM
JOB NUMBER	9404X007	ETL SAMPLE NUMBER	003	QA/QC ANALYST	RWF
W. O. NUMBER	03347-035-001-6932-02	DATE RECEIVED	04/19/94	DATE COMPLETED	04/24/94

PARTICLE SIZE DISTRIBUTION		
U. S. Standard Sieve Size	Diameter mm	% Finer
3"	75.00	100.0
1 1/2"	37.50	100.0
3/4"	19.00	100.0
3/8"	9.500	100.0
#4	4.750	100.0
#10	2.000	97.0
#20	0.850	87.7
#50	0.300	43.6
#100	0.150	22.3
#200	0.075	12.8
HYDROMETER	0.0548	3.4
	0.0388	3.4
	0.0274	3.4
	0.0194	3.4
	0.0142	3.4
	0.0100	3.4
	0.0071	2.6
	0.0050	2.6
	0.0036	2.6
	0.0025	2.6
	0.0013	2.6
0.0010	2.6	

EFFECTIVE SIZES	
% Finer	Diameter mm
60	0.504
30	0.204
10	NA
Uniformity Coefficient	Gradation Coefficient
NA	NA

SAMPLE DESCRIPTION
dark brown silty or clayey SAND with 13% silt or clay
Unified Soil Classification System (USCS) Group Symbol
SM or SC

NATURAL MOISTURE CONTENT, % dry basis
41.9

pH in DI water
9.0

SPECIFIC GRAVITY
2.50

UNIT WEIGHT (disturbed)		
Wet Density g/cc	Unit Weight, pcf	
	Wet	Dry
1.63	101.7	71.7

NOTES

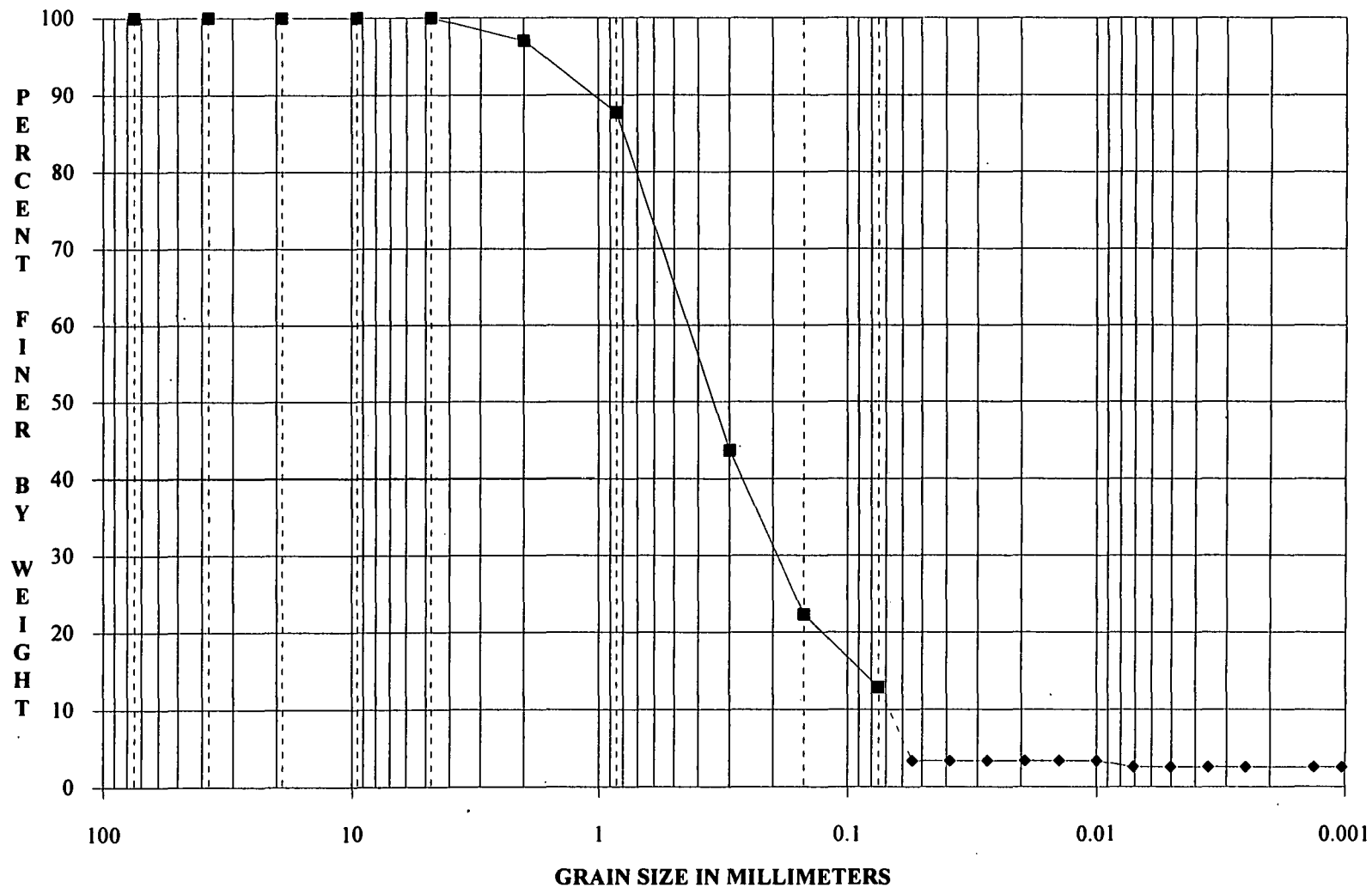
NA=NOT APPLICABLE

PARTICLE-SIZE DISTRIBUTION CURVE FOR

PROJECT SAMPLE A25452, ETL SAMPLE 9404X007-003

U. S. STANDARD SIEVE SIZES

3" 1 1/2" 3/4" 3/8" #4 #10 #20 #50 #100 #200 HYDROMETER



GRAVEL	SAND	SILT OR CLAY
--------	------	--------------

CLIENT/SUBJECT Penta W.O. NO.
 TASK DESCRIPTION Results of PCP Immuno TASK NO.
 PREPARED BY Soil work DEPT DATE
 MATH CHECK BY DEPT DATE
 METHOD REV. BY DEPT DATE

APPROVED BY	
DEPT <u> </u>	DATE <u> </u>

<u>Treatment</u>	<u>Optical Density</u>	<u>APPROX CONC. PCP</u>
<u>Neg. control</u>	<u>0.73 - 0.76</u>	
<u>10 ppm cal</u>	<u>0.38 - 0.41</u>	
<u>100 ppm cal</u>	<u>0.18 - 0.19</u>	
<u>Untreated seep area</u>	<u>0.16</u>	<u>>100</u>
<u>Control (HWC work)</u>	<u>0.18</u>	<u>100</u>
<u>pH 10</u>	<u>0.27</u>	<u>10-100</u>
<u>pH 10 (dry)</u>	<u>0.23 - 0.25</u>	<u>10-100</u>
<u>pH 11</u>	<u>0.18 - 0.19</u>	<u>100</u>
<u>pH 10/ air sparge (+40)</u>	<u>0.22</u>	<u>16% > conc < 100</u>
<u>pH 10/ air sparge (+120)</u>	<u>0.19</u>	<u>100</u>
<u>pH 10/ phosphate</u>	<u>0.23</u>	<u>10-100</u>
<u>pH 10/ NP-10</u>	<u>0.19</u>	<u>100</u>

CLIENT/SUBJECT _____ W.O. NO. _____
 TASK DESCRIPTION _____ TASK NO. _____

PREPARED BY _____ DEPT _____ DATE _____
 MATH CHECK BY _____ DEPT _____ DATE _____
 METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	
DEPT _____	DATE _____

Treatment

O.D.

N.C	0.64
10 ppm cal	0.41
100 ppm cal	0.19 - 0.20
Untreated Seep	
10 fold control (10 fold dil)	0.21
control Untreated Seep (100 fold dil)	0.34 - 0.35

~~Since~~ 10 fold dil ~ 100 ppm calib. (LOA ~ 20)
 ∴ MULTIPLY 100 ppm calibration x 10
 ∴ Untreated ~ 1000 ppm

P ~~Fig~~ FIGURE —

PENTA WOOD PRODUCTS
SIREN WISCONSIN
MAY 1994

151

01400 Started to do grain size analysis

1) PCP/ACA:

-1/4" : 189.4 - 4.5 = 184.9

170.1 - 4.5 = 165.6

173.4 - 4.5 = 168.9

Percent finer than

579.4 g

TOTAL

563.9

91.9 < +1/4" : 49.0 - 4.5 = 44.5 g

~~0.177~~

87.0 < > 10 27.9 g 491.5 5.44% 100

< > 18 50.7 9.89% 94.54

< > 60 254.6 + 58.0 60.98% 84.65

< > 120 86.4 16.85% 23.67

< > 200 31.9 6.22% 6.82

< 200 3.1 0.60% 0.60

512.6

2) PCP

-1/4" : 170.4 - 4.5 = 165.9 g

185.6 - 4.5 = 181.1

178.1 - 4.5 = 173.6

520.6

+1/4" : 27.0 - 4.5 = 22.5

> 10 22.0 g 4.27% 100

> 18 57.9 11.29% 95.77

> 60 291.3 + 99.7 75.93% 84.48

> 120 38.0 7.38% 8.55

> 200 4.1 0.80% 1.17

< 200 1.9 / 514.9 0.37% 0.37

3) ACA

$$\begin{aligned}
 - \frac{1}{4}'' : & \quad 219, 215.2 - 4.5 = 210.7 \\
 & \quad 213.3 - 4.5 = 208.8 \\
 & \quad 209.9 - 4.5 = \underline{205.4} \\
 & \quad 624.9
 \end{aligned}$$

$$+ \frac{1}{4}'' : 15.3 - 4.5 = 10.8 \text{ g}$$

> 10	10.0 g	1.61 %	100.0
> 18	24.0	3.87	98.39
> 60	249.5 + 168.1	67.30	94.52
> 120	106.2	17.12	27.22
> 200	20.3	3.27	10.1
< 200	<u>42.4</u>	<u>6.83</u>	<u>6.83</u>
	620.5 g	100 %	

4) ASZ pile

$$\begin{aligned}
 - \frac{1}{4}'' : & \quad 157.9 - 4.5 = 153.4 \\
 & \quad 95.0 - 4.5 = \underline{90.5} \\
 & \quad 243.9 \text{ g}
 \end{aligned}$$

$$+ \frac{1}{4}'' : 17.3 - 4.5 = 12.8 \text{ g}$$

> 10	6.8 g	2.80 %	100.0
> 18	17.4 g	7.16	97.19
> 60	145.7 g	59.98	90.03
> 120	57.3 g	23.59	30.05
> 200	7.9 g	3.25	6.46
< 200	<u>7.8 g</u>	<u>3.21</u>	<u>3.21</u>
	242.9 g	100 %	

1610 Conv

T_vP_v

± 1

1645 Str

un

1) 0.1

2) 0.1%

3) 0.1%

4) 0.1%

5) 0.1%

pH 1

a

pH 0

1) 6-

2) 7

3) 7

4) 7

5) 7

T_v

CLIENT/SUBJECT Penta W.O. NO. _____
 TASK DESCRIPTION Amt of PCP in each size fraction TASK NO. _____
 PREPARED BY MEM DEPT _____ DATE _____
 MATH CHECK BY _____ DEPT _____ DATE _____
 METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	
_____	_____
DEPT _____	DATE _____

Calculations based on particle size analysis in MEM notebook, p. 157

1) PENTA Soil

Particle Size	PCP (mg/kg)	SIZE FRACTION %	AMT (kg) PCP IN FRACTION	PCP IN FRACTION (%)
> 10	—	4.3	—	—
> 18	1600	11.3	18.08	17.5
> 60	950	75.9	72.105	69.7
> 120	1300	7.4	9.62	9.3
> 200	2800	0.8	2.24	2.2
< 200	3500	0.4	1.40	1.3
			103.445 kg	100%

Assume > 10 mesh has same PCP conc. as > 18 mesh (1600 ppm):

$\therefore 1600 \text{ mg/kg} \times 4.3 \text{ kg soil} = 6.88 \text{ kg PCP}$

\therefore add on 6.88 kg PCP to total amt of PCP :

$$\frac{6.88 \text{ kg PCP (>10 mesh)}}{(103.445 + 6.88) \text{ kg PCP total}} \times 100 = 6.2\% \text{ of PCP is in >10 mesh fraction}$$

also: other % figures would be slightly reduced

CLIENT/SUBJECT Penta W.O. NO. _____
 TASK DESCRIPTION PCP in size fractions TASK NO. _____

PREPARED BY _____ DEPT _____ DATE _____
 MATH CHECK BY _____ DEPT _____ DATE _____
 METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	
DEPT _____	DATE _____

Calculations based on particle size analysis in MFM notebook, p. 152

2) ACA soil

Particle size	PCP (mg/kg)	SIZE FRACTION (%)	AMT (kg) PCP IN FRACTION	PCP IN FRACTION (%)
>10	—	1.6	—	—
>18	1100	3.9	4.290	5.5
>60	520	67.3	34.996	44.7
>120	1000	17.1	17.10	21.8
>200	1900	3.3	6.27	8.0
<200	2300	6.8	15.64	20.0
			78.296	100.0

Assume >10 mesh has same [PCP] as >18 mesh (= 1100 mg/kg)

∴ 1100 mg/kg × 1.6 kg soil = 1.76 kg PCP

∴ add on 1.76 kg PCP to total amt of PCP :

$$\frac{1.76 \text{ kg PCP in } >10 \text{ mesh}}{(78.296 + 1.76) \text{ kg PCP total}} \times 100 =$$

2.2 % of PCP is associated with >10 mesh fraction