39FRBCERCLASF10,623

39FRBCERCLASF10,623

Site Name:	SOUTHERN WOOD PIEDMONT
Subsite:	
Site Name: *Do not enter text.*	NCD058517467
Full Site Name (Subject): *Do not enter text.*	SOUTHERN WOOD PIEDMONT
Document Type:	REMEDIAL INVESTIGATION (RI)
Description:	Remedial Investigation: References 65 - 69
Report Segment:	10
Date of Document:	6/24/1999
Date Received:	
Box: *Enter SF and # with no spaces.*	SF10,623
Access Level:	PUBLIC
Division:	WASTE MANAGEMENT
Section:	SUPERFUND
Program (Document Group):	FRB CERCLA (FRBCERCLA)
Document Category:	FACILITY

Print Report for Record | Go to New Blank Record | Go to New Record - (default to last record values) | Delete Record

REFERENCE 65

Ref. 65

FIT R-586-4-6-17

SITE SCREENING INVESTIGATION
SOUTHERN WOOD PIEDMONT FACILITY
WILMINGTON, NORTH CAROLINA

Prepared Under
TDD NO. F4-8411-0#
CONTRACT NO. 68-01-6699

Revision 0

FOR THE

AIR AND WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

APRIL 18, 1986

NUS CORPORATION
SUPERFUND DIVISION

CERCLA

Prepared By	Reviewed By	Approved By
B. Hansen Benoy	Philip Blackwell	Murray Warner, P.E.
Chemist	Assistant Regional Project Manager	Regional Project Manager

R-586-4-6-17

SITE SCREENING INVESTIGATION
SOUTHERN WOOD PIEDMONT FACILITY
WILMINGTON, NORTH CAROLINA

Prepared Under
TDD NO. F4-8411-0#
CONTRACT NO. 68-01-6699

Revision 0

FOR THE

AIR AND WASTE MANAGEMENT DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

APRIL 18, 1986

NUS CORPORATION
SUPERFUND DIVISION

Prepared By	Reviewed By	Approved By
B. Hansen Benoy Chemist	Philip Blackwell Assistant Regional Project Manager	Murray Warner, P.E. Regional Project Manager

1.0 INTRODUCTION

A site screening sampling investigation was conducted at the Southern Wood Piedmont Site, Wilmington, North Carolina on January 7, 1985. The investigation was conducted by Barbara Hansen Benoy, Bob Donaghue, Bob Rose, and Maurice Rowan, Jr., NUS Corporation, Region IV, Field Investigation Team (FIT) at the request of the U. S. Environmental Protection Agency, Air and Waste Management Division in accordance with Technical Directive Document (TDD) No. F4-8411-03. The investigation was conducted under the authority of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA).

The purpose of this investigation was to identify contaminants which may be present at the site, if any, and to determine whether these materials may be migrating offsite.

2.0 SITE CHARACTERIZATION

2.1 Site Description

The Southern Wood Piedmont site is located on Greenfield Street in Wilmington, North Carolina (New Hanover County). The site occupies approximately 52 acres adjacent to the Cape Fear River. Shown in Figure 1, the Southern Wood Piedmont site is specifically located at coordinates 34° 13' N Latitude and 77° 57' W Longitude, and is shown on the Wilmington Quadrangle, United States Geologic Survey Topographic Map, dated 1979.

2.2 Site History

During World War I the site was developed to construct concrete barges and ships. A wood treating facility was constructed at the site about 1932. The Taylor-Colquitt Company purchased this plant in 1935, and Southern Wood Piedmont purchased the Taylor-Colquitt Company in 1964 and operated the plant until it closed in 1983. A 35 acre parcel of the site is owned by the City of Wilmington and the remaining acreage is owned by the State of North Carolina Ports Authority (1). Creosote coal tar was the only preservative used in the wood preserving process

until 1972. At that time a separate treating system was installed using chromated copper arsenate (CCA) as the preserving agent. In 1980, pentachlorophenol (PCP) preservative treatment was added using the existing creosote cylinder (2).

7. Previous Superfund investigations have identified several onsite waste disposal areas. Exact dimensions of each of these areas have not been defined. As shown in Figure 2, these areas are:

Area I, Covered Sludge Ditch: Creosote sludges from early plant operations were buried when the ditch was filled in.

Area II, Trash Dump Area: Consisting almost exclusively of wood waste, dirt, and metal waste, small amounts of creosote were deposited here occasionally.

Area III, Dike Area: Old, hard, and solid creosote residuals were used to seal some of the earthen dike near the south slip.

Area IV, Trash Fill Area: A portion of the north slip was filled with trash and capped with creosote sludge.

Additionally, the operating and wood-storage areas were contaminated by spills, leaks and drippings of wood preserving agents (3).

An inspection of the Southern Wood Piedmont site in July, 1984 discovered numerous indications of contamination. An oily sheen was visible on the surface water at several locations within the site. Volatiles were observed escaping from "tars" contained in large storage tanks. The presence of stressed vegetation was noted in areas (4).

Landfarming has been initiated to reduce the concentration of contaminants at the site. In landfarming, highly contaminated soils and sludges are mixed with lightly contaminated soils. The mixture is then fertilized and tilled at regular intervals. Microbial action, sunlight, and aeraqtion is thought to decompose the contaminants (5). The areas used for landfarming are shown in Figure 2.

All treated wood stock and some processing equipment have been removed from the site. Railroad tracks which were used to transport wood have also been removed.

2.3 Hydrogeology

According to the 1958 geologic map of North Carolina, the site occurs in the outcrop area of the Castle Hayne Limestone of middle to late Eocene age (6). Subsequent work, still incomplete, has shown that the bedrock at this site is an unnamed Oligocene limestone. The thickness of this unit is on the order of tens of feet, although the exact thickness is unknown (1).

In 1982 Soil and Material Engineers, Inc., conducted a subsurface investigation of the site for the city of Wilmington and New Hanover County. Subsurface conditions at the site were as follows:

3 to 18 feet of sand/silty sand fill at surface
5 to 19 feet of clayey silt, interpreted to be river deposits
8 to 34 feet of fine to coarse sand
2 to 7 feet of limestone/mar'

Total depth 44-49 feet - auger refusal on limestone (8).

The sand and limestone together comprise the surficial aquifer; wa aquifer was measured to be 2 to 3 feet below the land surface (9). in the underlying unnamed limestone is expected to be the sa hydraulic connection between the two aquifers.

The limestone aquifer is capable of yielding 10 to 1000 gpm of good quality water. Zones of high transmissivity occur in areas where permeability has been enhanced by fossil replacement.

Ground water beneath the site appears to flow almost parallel to, but slightly towards the Cape Fear River (south, southwest). Law Engineering has determined that the groundwater originating at the site discharges into the Cape Fear River (10).

3.0 OBJECTIVE

The purpose of this site screening was to collect soil and water samples from the Southern Wood Piedmont site and to obtain the analytical data needed to determine the identity of contaminants if any, which do not normally occur in the area.

4.0 SCOPE

It was withing the scope of this investigation to collect ground and surface water samples and soil samples from the site area. The sampling locations were chosen to target the most likely contaminated areas. Subsurface soil samples were not collected, nor did this study include a geophysical evaluation of the site.

5.0 FIELD INVESTIGATION

5.1 Description of Sample Collection Stations

A total of 13 samples, two surface water samples, five groundwater samples, and six soil/sediment samples, were collected during this investigation. A background sediment and surface water sample were collected from areas offsite. One groundwater sample was collected from an artesian well which is used for public supply. Four groundwater samples were collected from existing monitoring wells installed at the site. Monitoring well No. 3 was inoperable and could not be sampled. One composite soil sample was collected from each of the landfarming areas. One composite soil sample was collected from the jetty area. A sediment and surface water sample were collected from the Cape Fear River immediately

adjacent to the site. Figure 2 shows the sampling locations and Table 1 lists all the sampling codes and descriptions. Figure 1 shows the sampling location for the background soil and water samples.

5.2 Field Measurements

Data collected in the field, i.e., pH and temperature of water samples, are shown in Table 7.

5.3 Sample Duplicates

CERCLA regulations dictate that duplicate samples be offered to the current owners of the site. Duplicate samples were collected and reliquished to Southern Wood Piedmont's on-site representative.

5.4 Analytical Laboratories

Analyses of samples collected during this investigation were conducted by laboratories under contract with the U. S. Environmental Protection Agency (EPA) in their Contract Laboratory Program (CLP). Organic water and soil analyses were conducted by UBTL, Salt Lake City, Utah. Inorganic water and soil analyses were conducted by Wilson Laboratories, Salina, Kansas. The results are given in Appendix A.

5.5 Analytical Data Quality

The data used in this report have not been subjected to a Quality Control (QC) review. Use of the data should be restricted to site screening purposes only.

6.0 DISCUSSION OF ANALYTICAL RESULTS

6.1 Groundwater Samples

Results of laboratory analyses of groundwater sample GW-1, collected from monitoring well No. 1 located in the southeast portion of the site, indicate the

presence of ten inorganic constituents. Two of these constituents, lead (14 ug/l) and zinc (40 ug/l), are priority pollutants. These results are shown in Table 2. Organic analyses indicate the presence of nine identified and nine unidentified organic compounds. Benzene (0.3 ug/l, estimated quantity) and ethyl benzene (3 ug/l, estimated quantity) were the only organic constituents detected in this sample which are priority pollutants. These results are shown in Table 3. Pesticides and PCB's were not detected in this sample.

Results of analyses of ground water samples GW-2, collected from monitoring well No. 2 located near the center of the site indicate the presence of nine inorganic constituents. Four of these constituents, arsenic (22 ug/l), chromium (20 ug/l), lead (12 ug/l), and zinc (60 ug/l), are priority pollutants. Table 2 shows these results. Laboratory analyses indicate the presence of fifteen identified and three unidentified organic compounds. Seven of the identified compounds are priority pollutants. These compounds are benzene (0.3 ug/l, estimated quantity), toluene (5 ug/l, estimated quantity), ethyl benzene (5.1 ug/l), naphthalene (290 ug/l), acenaphthene (40 ug/l), fluorene (15 ug/l), and phenanthrene (7.8 ug/l). These results are shown in Table 3. No pesticides and PCB's were detected in this sample.

Results of inorganic analyses of groundwater sample GW-4, collected from monitoring well No. 4 located in the northwest portion of the site, indicate the presence of eight inorganic constituents. Three of these constituents, arsenic (44 ug/l), lead (16 ug/l), and zinc (40 ug/l), are priority pollutants. These results are shown in Table 2.

Laboratory analyses indicate the presence of eleven identified and one unidentified organic compounds. Eight of the identified organic constituents are priority pollutants. These pollutants are toluene (16 ug/l), acenaphthene (3.2 ug/l), fluorene (0.7 ug/l, estimated quantity), phenanthrene (0.5 ug/l), acenaphthylene (0.9 ug/l, estimated quantity), anthracene (2 ug/l, estimated quantity), fluoranthene (7.8 ug/l), and pyrene (10 ug/l, estimated quantity). Table 3 shows these results. Pesticides and PCB's were not detected in this sample.

Results of laboratory analyses of sample GW-5, collected from monitoring well No. 5 located in the northeast portion of the site, indicate the presence of five inorganic constituents, one of which, chromium (20 ug/l), is a priority pollutant. These results are shown in Table 2. Analyses indicate the presence of two identified and two unidentified organic compounds. None of the organic compounds detected in this sample are priority pollutants. Table 3 shows these results. No pesticides or PCB's were detected in this sample.

Results of analyses of groundwater sample AW-01, collected from the artesian well located approximately one-half mile southeast of the site, indicate the presence of one metal, which is not listed as a priority pollutant. These results are shown in Table 2.

Analyses indicate the presence of thirteen identified and two unidentified organic compounds. Ten of the organic constituents are priority pollutants. These organic pollutants are methylene chloride (37 ug/l), 1,1-dichloroethene (1,1-dichloroethylene) (6.6 ug/l), chloroform (63 ug/l), 1,2-dichloroethane (55 ug/l), 1,1,1-trichloroethane (14 ug/l), carbon tetrachloride (38 ug/l), trichloroethene (trichloroethylene) (15 ug/l), bromoform (14 ug/l), tetrachloroethene (tetrachloroethylene) (81 ug/l), and toluene (26 ug/l). These results are shown in Table 3. No pesticides or PCB's were detected in this sample.

6.2 Surface Water Samples

Laboratory analyses of background surface water sample BK-W1, collected from the overflow stream from Greenfield Lake located south of the site, indicate the presence of five inorganic constituents. Cyanide (40 ug/l) is the only inorganic priority pollutant which was detected in this sample. These results are shown in Table 2. Laboratory analyses also indicate that five unidentified organic compounds are present in the sample. No pesticides or PCB's were detected in the sample.

Results of laboratory analyses of surface water sample RB-W, collected from the Cape Fear River from the end of the jetty, indicate the presence of five inorganic constituents; none of which are priority pollutants. Organic analyses indicate the

presence of three unidentified organic compounds. No pesticides or PCB's were detected by analyses of the sample.

6.3 Soil/Sediment Samples

Results of laboratory analyses of background sediment sample BK-S1, collected from the bed of the overflow stream out of Greenfield Lake south of the site, indicate the presence of four inorganic constituents. Two of the constituents, lead (6000 ug/kg) and cyanide (430 ug/kg), are priority pollutants. The results of the inorganic analyses are shown in Table 4. Analyses indicate the presence of eight identified organic compounds, eleven unidentified organic compounds and one unidentified brominated compound. Four of the identified compounds are priority pollutants. These compounds are isophorone (80 ug/kg, estimated quantity), 2-chloronaphthalene (24 ug/kg), flouranthene (300 ug/kg, estimated quantity), and pyrene (500 ug/kg, estimated quantity). These results are shown in Table 5. Pesticide and PCB analyses detected the priority pollutants 4,4'-DDE (P,P'-DDE) (7.4 ug/kg) and 4,4'-DDD (P,P'-DDD) (5.9 ug/kg). These results are shown in Table 6.

Results of laboratory analyses of sediment sample RB-S, collected from the bed of the Cape Fear River at the end of the jetty on site, indicate the presence of five inorganic constituents. Two of these constituents, lead (15,000 ug/kg) and cyanide (225 ug/kg), are priority pollutants. These results are shown in Table 4. Analytical analyses indicate the presence of fourteen identified organic compounds, one unidentified brominated compound, and three unidentified hydrocarbons. These results are shown in Table 5. Analyses did not detect pesticides or PCB's in this sample.

Laboratory analyses of composite soil sample JA-C1, collected from the jetty area, indicate the presence of eight inorganic constituents. Four of these constituents, arsenic (10,000 ug/kg), copper (40,000 ug/kg), lead (12000 ug/kg), and cyanide (880 ug/kg) are priority pollutants. The results of the inorganic analyses are shown in Table 4. Twelve organic constituents were detected by laboratory analyses; nine of these compounds are priority pollutants, two of which are different isomers of the same compound. The organic pollutants are 2-chloronaphthalene (400 ug/kg,

estimated quantity), phenanthrene (4,400 ug/kg), anthracene (2000 ug/kg), estimated quantity), fluoranthene (15,000 ug/kg), pyrene (12,000 ug/kg), benzo(A)anthracene (2,700 ug/kg), benzo(B and/or K)fluoranthene (5,600 ug/kg), and benzo-A-pyrene (4,600 ug/kg). These results are shown in Table 5. Pesticides or PCB's were not detected in this sample.

Analyses of composite soil sample LA-C2, collected from landfarm area A, indicate the presence of twelve inorganic constituents. Seven of these constituents are priority pollutants. These constituents are arsenic (610,000 ug/kg), copper (620,000 ug/kg), chromium (390,000 ug/kg), lead (150,000 ug/kg), zinc (75,000 ug/kg), mercury (480 ug/kg), and cyanide (410 ug/kg). The results of the inorganic analysis are shown in Table 4. Results of laboratory analyses indicate the presence of seventeen identified organic compounds and 2 unidentified polynuclear aromatics. Twelve of the identified compounds are priority pollutants. These organic pollutants are naphthalene (1200 ug/kg), 2-chloronaphthalene (500 ug/kg, estiamted quantity), acenaphthylene (1500 ug/kg), phenanthrene (5400 ug/kg), anthracene (5200 ug/kg), fluoranthene (25000 ug/kg), pyrene (22,000 ug/kg), benzo-A-anthracene (11,000 ug/kg), benzo (B and/or K) fluoranthene (14,000 and 12,000 ug/kg listed for the different isomers), benzo-A-pyrene (11,000 ug/kg), and pentachlorophenol (4000 ug/kg, estimated quantity). These results are shown in Table 5. Pesticides or PCB's were not detected in this sample.

Results of laboratory analyses of composite soil sample LB-C3, collected from landfarm area B, indicate the presence of nine inorganic constituents. Five of these inorganic constituents, arsenic (10,000 ug/kg), copper (30,000 ug/kg), lead (33,000 ug/kg), zinc (20,000 ug/kg), and cyanide (110 ug/kg), are priority pollutants. Table 4 shows these results. Fourteen organic constituents were also detected in this sample. Eleven of the organic compounds are priority pollutants. These compounds are 2-chloronaphthalene (400 ug/kg, estimated quantity), acenaphthylene (1000 ug/kg, estimated quantity), phenanthrene (1400 ug/kg), anthracene (2000 ug/kg, estimated value), fluoranthene (10,000 ug/kg), pyrene (10,000 ug/kg, estimated quantity), benzo(A)anthracene (3,900 ug/kg), chrysene (7100 ug/kg), benzo (B and/or K) fluoranthene (7,300 and 6,600 ug/kg for the different isomers), and benzo-a-pyrene (5,800 ug/kg). These results are shown in Table 5. Pesticides or PCB's were not detected in this sample.

Results of laboratory analyses of composite soil sample LC-C4, collected from landfarm area C, indicate the presence of ten inorganic constituents. Six of the ten inorganic constituents are priority pollutants. These constituents are arsenic (20,000 ug/kg), copper (60,000 ug/kg), chromium (10,000 ug/kg), lead (61,000 ug/kg), zinc (87,000 ug/kg) and mercury (450 ug/kg). These results are shown in Table 4. Analytical analyses detected 29 identified organic compounds, 2 unidentified methylphenanthrenes, 2 unidentified benzofluorenes, and three unidentified methylpyrenes. Sixteen of the identified compounds are priority pollutants. These compounds are acenaphthylene (6,300 ug/kg), acenaphthene (170,000 ug/kg), fluorene (170,000 ug/kg), phenanthrene (390,000 ug/kg), anthracene (170,000 ug/kg), di-N-butylphthalate (6500 ug/kg), fluoranthene (29,000 ug/kg), pyrene (220,000 ug/kg), benzo(A)anthracene (130,000 ug/kg), chrysene (120,000 ug/kg), benzo (B and/or K)fluoranthene (48,000 and 4,500 ug/kg for the different isomers), benzo-A-pyrene (37,000 ug/kg), indeno(1,2,3-CD)pyrene (10,000 ug/kg, estimated quantity), benzo(GHI)perylene (9000 ug/kg) and pentachlorophenol (150,000 ug/kg). These results are shown in Table 5. Analyses did not detected pesticides or PCB's.

7.0 SUMMARY OF ANALYTICAL RESULTS

Constituents which are related to the presence of creosote (11) were detected in soil samples collected both on and off the Southern Wood Piedmont site. Fluoranthene and pyrene, both constituents of creosote, were detected in all of the soil samples collected during this investigation. Anthracene and phenathrene, also creosote components, were found in all of the soil samples collected from the Southern Wood Piedmont site. Chrysene was present in landfarm areas B and C, and in the sediment sample collected from the Cape Fear River. Concentrations of the creosote components fluorene, acenaphthene, and 2-methylnaphthalene were detected in landfarm area C. Naphthalene was found only in landfarm area A.

Monitoring well No. 2, located in the center of the site, contained concentrations of naphthalene, acenaphthene, fluorene, and phenathrene; all these compounds are components of creosote. Monitoring well No. 4, located in the northwest portion of the site, contained concentrations of acenaphthene, fluorene, anthracene, fluoranthene, phenanthrene, and pyrene.

Pentachlorophenol (PCP), used as a wood preserving agent, was detected in landfarm areas A and C. No pentachlorophenol was detected in the water samples.

Concentrations of chromium, copper, and arsenic, a result of the chromated copper arsenate (CCA) wood preserving process, was detected in both soil and water samples. Chromium was detected in landfarm areas A and C and in groundwater samples collected from monitoring wells No. 2 and No. 5. Concentrations of copper and arsenic were detected in the composite soil samples collected from the jetty and the three landfill areas. Groundwater samples collected from monitoring wells No. 2 and No. 4 also contained concentrations of arsenic.

Concentrations of constituents detected in composite soil samples collected from landfarm area C are generally higher than concentrations found at other locations in the site. Landfarm area C was a region of the site where wood treatment was performed. Spillage and leakage of preserving agents during wood treatment probably resulted in the higher concentrations observed.

The artesian well located southeast of the site contained a suite of organic compounds which were not found in samples collected from the site. These constituents include 1,1-dichlorethane, 1,1,1-trichloroethane, chloroform, carbon tetrachloride, and trichloroethane. The direction of ground water flow and the compounds identified make if unlikely that the contaminants in this well originated from the Southern Wood Piedmont. The well supplies water to a fountain which is open to public use.

The background sediment sample, collected from the bed of the stream flowing form Greenfield Lake, contained concentration of the pesticides 4,4'-DDE (P,P'-DDE) and 4,4'-DDD (P,P'-DDD). These were the only pesticides detected during this investigation. Analyses also indicate the presence of pyrene and fluorene in this sample.

The progress of the landfarming technique for reducing concentrations of the wood preserving agents should be monitored. In this manner the effectiveness of the procedure can be determined and alternatives can be implemented if required. Care should be taken to prevent soil runoff into the Cape Fear River during tillage

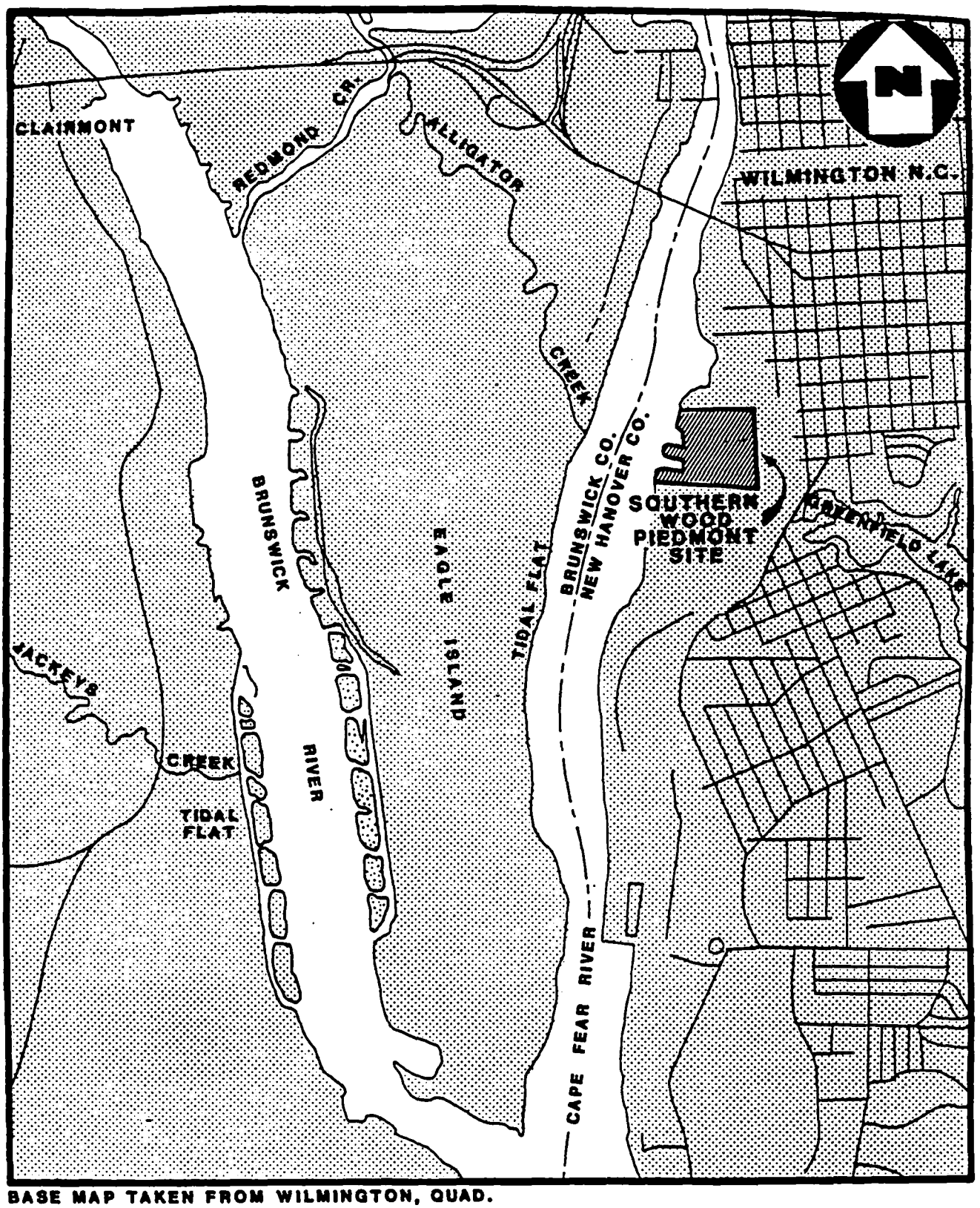
of the landfarm areas Berms or other erosion barriers are possible solutions for preventing contaminated soil from migrating into the Cape Fear River. Landfarming should allow the degradation of the contaminants and not promote contaminant migration.

8.0 METHODOLOGY

All sample collection, sample preservation, and chain-of-custody procedures used during this investigation were in accordance with the standard operating procedures as specified in Sections 3, 4, and 6 of the Water Surveillance Branch Standard Operating Procedures and Quality Assurance Manual (Draft); United States Environmental Protection Agency, Region IV, Environmental Services Division, August 1980 and all revisions to the SOP addressed in the following correspondences:

Blackwell, P. (October 21, 1983) Changes in Sampling Procedures.
Lair, D. (September 10, 1984) Solvents Used to Clean Sampling Equipment.
Wilson, C. (December 14, 1983) Region IV Sampling SOP Revisions. (ESD, 1980).

All laboratory analyses and laboratory quality assurance procedures used during this investigation were in accordance with standard procedures and protocols as specified in the Analytical Support Branch Operations and Quality Assurance Manual; United States Environmental Protection Agency, Region IV, Environmental Services Division; April 1982, or as specified by the existing United States Environmental Protection Agency Standard procedures and protocols for the contract analytical laboratory program (ESD, 1982).

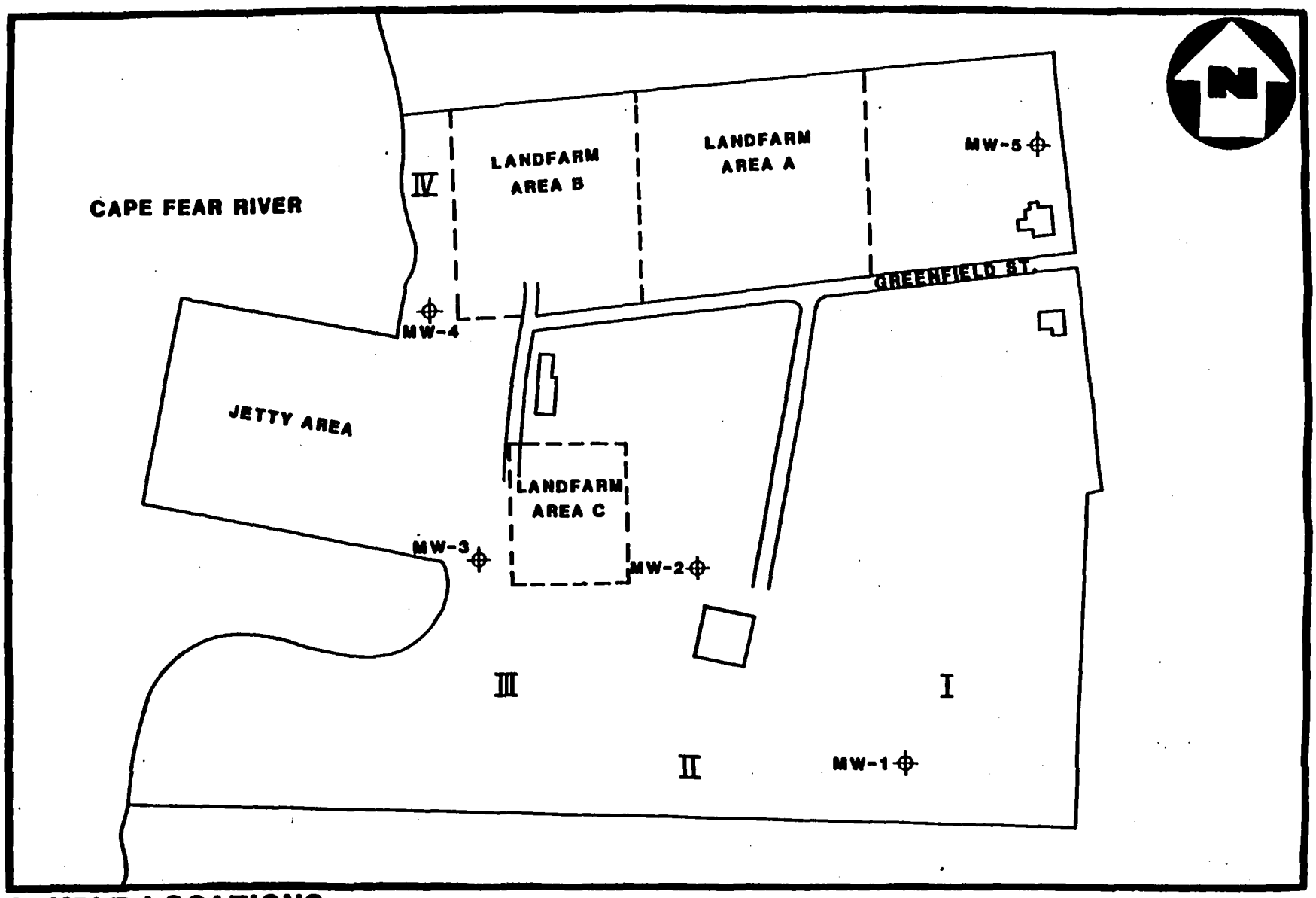


BASE MAP TAKEN FROM WILMINGTON, QUAD.

SITE LOCATION MAP
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA

FIGURE 1

NUS CORPORATION
A Halliburton Company



SAMPLE LOCATIONS
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA

LEGEND

⌖ MONITORING WELL

I II III IV ROMAN NUMERALS INDICATE CONTAMINANT DISPOSAL AREAS (SEE TEXT)

FIGURE 2

NUS CORPORATION
A Halliburton Company

TABLE 1
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA
SAMPLE CODES AND DESCRIPTIONS

SWP*-BK-W1	Surface Water sample collected from overflow stream from Greenfield Lake south of the site.
SWP-BK-51	Sediment sample collected from above location.
SWP-GW-1	Groundwater sample collected from onsite monitoring well #1.
SWP-GW-2	Groundwater sample collected from onsite monitoring well #2.
SWP-GW-4	Groundwater sample collected from onsite monitoring well #4.
SWP-GW-5	Groundwater sample collected from onsite monitoring well #5.
SWP-RB-W	Surface water sample collected at end of jetty from Cape Fear River.
SWP-RB-S	Sediment sample collected from above location.
SWP-JA-C1	Composite soil sample collected from jetty area.
SWP-LA-CZ	Composite soil sample collected form landfarm area A.
SWP-LB-C3	Composite soil sample collected from landfarm area B.
SWP-LC-C4	Composite soil sample collected from landfarm area C.
SWP-AW-01	Groundwater sample collected from artesian well, (public supply).

---

* SWP: Code short for Southern Wood Preserving. This designation will not be used in the narrative report.

TABLE 2
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA
INORGANIC ANALYSES
WATER SAMPLES
in ug/l

	SWP-BK-W1	SWP-GW-1	SWP-GW-2	SWP-GW-4	SWP-GW-5	SWP-RB-W	SWP-AW-01
Arsenic*	-	-	22	44	-	-	-
Chromium*	-	-	20	-	20	-	-
Lead*	-	14	12	16	-	-	-
Zinc*	-	40	60	40	-	-	-
Aluminum	500	4,800	7,100	3,500	5,700	1,000	-
Manganese	20	2,000	1,100	300	150	130	-
Iron	680	91,000	46,000	17,000	5,300	2,400	-
Sodium	10,000	2,300,000	9,000	1,400,000	15,000	930,000	6,000
Potassium	-	14,000	6,000	49,000	-	36,000	-
Cyanide*	40	-	-	-	-	-	-

* Priority pollutant.
\- Material analyzed for but not detected.

TABLE 3
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA
ORGANIC ANALYSES
WATER SAMPLES
in ug/l

	SWP-BK-W1	SWP-GW-1	SWP-GW-2	SWP-GW-4	SWP GW-5	SWP-RB-W	SWP-AW-01
Methylene Chloride*	-	-	-	-	-	-	37
1,1-Dichloroethene(1,1-Dichloroethylene)*	-	-	-	-	-	-	6.6
Chloroform*	-	-	-	-	-	-	63
1,2-Dichloroethane*	-	-	-	-	-	-	55
1,1,1-Trichloroethane*	-	-	-	-	-	-	14
Carbon Tetrachloride*	-	-	-	-	-	-	38
Bromodichloromethane	-	-	-	-	-	-	60
Trichloroethene(Trichloroethylene)*	-	-	-	-	-	-	15
Benzene*	-	0.3J	0.3J	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	38
Bromoform*	-	-	-	-	-	-	14
Tetrachloroethene(Tetrachloroethylene)*	-	-	-	-	-	-	81
Toluene*	-	-	5J	16	-	-	26
Chlorobenzene*							
Ethyl Benzene*	-	3J	5.1	-	-	-	-
Methyl Butyl Ketone	-	7J	7J	-	23	-	-
Propene	-	5J	-	-	26	-	-
Acetone	-	-	500	1,000	-	-	-
Chloromethylpropane	-	-	3JN	-	-	-	-
Methyl Ethyl Ketone	-	-	-	30	-	-	-
1 Unidentified Compound	-	4J	-	30JN	-	-	-
Naphthalene*	-	-	290	-	-	-	-
Acenaphthene*	-	-	40	3.2	-	-	-
Fluorene*	-	-	15	0.7J	-	-	-

TABLE 3
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA
ORGANIC ANALYSES
WATER SAMPLES
in ug/l
PAGE 2

	SWP-BK-W1	SWP-GW-1	SWP-GW-2	SWP-GW-4	SWP GW-5	SWP-RB-W	SWP-AW-01
Phenanthrene*	-	-	7.8	0.5	-	-	-
Acenaphthylene*	-	-	-	0.9J	-	-	-
Anthracene*	-	-	-	2J	-	-	-
Fluoranthene*	-	-	-	7.8	-	-	-
Pyrene*	-	-	-	10J	-	-	-
Protect	-	8JN	-	-	-	-	-
Prometon	-	50JN	-	-	-	-	-
Tetrahydrodimethylpyranone	-	20JN	-	-	-	-	-
methylheptanol	-	10JN	-	-	-	-	-
C5 Alkyl Benzene	-	7JN	-	-	-	-	-
Dibenzafuran	-	-	14	8	-	-	-
2-Methyl Naphthalene	-	-	18	-	-	-	-
C3 Alkylbenzene	-	-	100JN	-	-	-	-
Benzothiophene	-	-	20JN	-	-	-	-
Nitrocarbazole	-	-	10JN	-	-	-	-
Tribromophenol	-	-	-	-	-	-	10JN
8 Unidentified Compounds	-	100J	-	-	-	-	-
3 Unidentified Compounds	-	-	30J	-	-	30J	-
2 Unidentified Compounds	-	-	-	-	10JN	-	20J
5 Unidentified Compounds	100J	-	-	-	-	-	-

* Priority pollutant.
\- Material analyzed for but not detected.
J Estimated quantity.
N Presumtive evidence of material.

TABLE 4
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA
INORGANIC ANALYSES
SOIL/SEDIMENT SAMPLES
in ug/kg

	SWP-BK-S1	SWP-RB-S	SWP-JA-C1	SWP-LA-C2	SWP-LB-C3	SWP-LC-C4
Arsenic*	-	-	10,000	610,000	10,000	20,000
Copper*	-	-	40,000	620,000	30,000	60,000
Chromium*	-	-	-	390,000	-	10,000
Lead*	6,000	15,000	12,000	150,000	33,000	61,000
Vanadium	-	-	-	20,000	-	-
Zinc*	-	-	-	75,000	20,000	87,000
Mercury*	-	-	-	480	-	450
Aluminum	1,700,000	750,000	2,600,000	4,300,000	2,100,000	1,700,000
Manganese	-	20,000	40,000	100,000	52,000	50,000
Calcium	-	-	4,000,000	12,000,000	6,300,000	2,000,000
Iron	930,000	1,400,000	4,800,000	12,000,000	5,800,000	6,600,000
Cyanide*	430	225	880	410	110	-

* Priority pollutant.
\- Material analyzed for but not detected.

TABLE 5
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA
ORGANIC ANALYSES
SOIL/SEDIMENT SAMPLES
in ug/kg

	SWP-BK-S1	SWP-RB-S	SWP-JA-C1	SWP-LA-C2	SWP-LB-C3	SWP-LC-C4
Naphthalene*	-	-	-	1,200	-	-
Isophorone*	80J	60J	-	-	-	-
2-Chloronaphthalene*	24	19	400J	500J	400J	-
Acenaphthylene*	-	30J	-	1,500	1,000J	6,300
Acenaphthene*	-	-	-	-	-	170,000
Fluorene*	-	-	-	-	-	170,000
Phenanthrene*	-	70	4,400	5,400	1,400	390,000
Anthracene*	-	70J	2,000J	5,200	2,000J	170,000
Di-N-Butylphthalate*	-	-	-	-	-	6,500
Fluoranthene*	300J	350	15,000	25,000	10,000	29,000
Pyrene*	500J	300J	12,000	22,000	10,000J	220,000
Benzo(A)Anthracene*	-	78	2,700	11,000	3,900	130,000
Chrysene*	-	160	-	-	7,100	120,000
Benzo(B and/or K)Fluoranthene* (1)	-	110	5,600	14,000	7,300	48,000
Benzo(B and/or K)Fluoranthene* (1)	-	100J	5,600	12,000	6,600	4,500
Benzo-A-Pyrene*	-	90J	4,600	11,000	5,800	37,000
Indeno(1,2,3-CD)Pyrene*	-	-	-	-	-	10,000J
Benzo(GHI)Perylene*	-	-	-	-	-	9,000
Pentachlorophenol*	-	-	-	4,000J	-	150,000
Dimethyheptanone	10,000JN					
Hexadecanoic Acid	20JN					
Acetyloxyhexanone	2,000JN	2,000JN				
Dimethylfuranone	8,000JN	5,000JN				

(1) For Benzol(B and/or K)Fluoranthene, there is no distinction on laboratory data sheets between the two isomers, the above data could represent total concentrations for the two isomers or replicate concentrations of one isomer.

TABLE 5
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA
ORGANIC ANALYSES
SOIL/SEDIMENT SAMPLES
in ug/kg
PAGE 2

	SWP-BK-S1	SWP-RB-S	SWP-JA-C1	SWP-LA-C2	SWP-LB-C3	SWP-LC-C4
Dibenzofuran	-	-	300J	900J	300J	110,000
Tetrahydrodimethylpyranone	-	-	7,000JN	-	-	-
Benzo(J)Fluoranthene	-	-	3,000JN	6,000JN	4,000JN	40,000JN
Dimethyltetrahydropyran-2-one	-	-	-	8,000JN	-	-
Benzo(GHI)Fluoranthene	-	-	-	4,000JN	-	-
2-Methyl Naphthalene	-	-	-	-	-	16,000
Ethylideneindene	-	-	-	-	-	10,000JN
Dimethylnaphthalenes	-	-	-	-	-	20,000JN
Xanthene	-	-	-	-	-	20,000JN
Methyldibenzofuran	-	-	-	-	-	40,000JN
Methylfluorene	-	-	-	-	-	20,000JN
Dihydronapthafuran	-	-	-	-	-	8,000JN
Cyclopentaphenathrene	-	-	-	-	-	70,000JN
Benzo(B)Napthothiophene	-	-	-	-	-	40,000JN
11 Unidentified Compounds	200,000J	-	-	-	-	-
1 Unidentified Brominated Compound	5,000J	30,000JN	-	-	-	-
3 Unidentified Hydrocarbons	-	10,000J	-	-	-	-
2 Unidentified Polynuclear Aromatics	-	-	-	5,000J	-	-
2 Unidentified Methylphenanthrenes	-	-	-	-	-	70,000J
2 Unidentified Benzofluorene Compounds	-	-	-	-	-	100,000J
3 Unidentified Methylpyrenes	-	-	-	-	-	60,000J
Fluoratrichloromethane	-	-	-	10JN	10JN	-
Pinene	-	-	-	-	-	7JN
Trimethylcyclohexanone	-	-	-	-	-	6JN

* Priority pollutants.
\- Material analyzed for but not detected.
J Estimated quantity.
N Presumptive evidence of material.

TABLE 6
SOUTHERN WOOD PIEDMONT SITE
WILMINGTON, NORTH CAROLINA
PESTICIDES AND PCB ANALYSES
SOIL/SEDIMENT SAMPLES
in ug/kg

	SWP-BK-S1	SWP-RB-S	SWP-JA-C1	SWP-LA-C2	SWP-LB-C3	SWP-LC-C4
4,4'-DDE (P,P'-DDE)*	7.4	-	-	-	-	-
4,4'-DDD (P,P'-DDD)*	5.9	-	-	-	-	-

* Priority pollutant.
\- Material analyzed for but not detected.

TABLE 7
FIELD MEASUREMENTS
SOUTHERN WOOD PIEDMONT
WILMINGTON, NORTH CAROLINA

Sample Code	Time*	pH (S.U.)	Temp. °C
BK-W1	0950	7.5	10
GW-1	1045	5.85	16
GW-2	1335	6.4	17
GW-4	1440	6.85	16
GW-5	0940	5.85	14
AW-01	1645	7.8	13

* All measurements taken on January 7, 1985.

APPENDIX A

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
WATER

SAMPLE NO.: R5C6276 SAMPLE TYPE: NORMAL

PROJECT NO.: R5-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, 400P PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: S-P-GW-4
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: R BEESE RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAU CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 1454 ORG SAMPLE NO: D4648 INORG SAMPLE NO.: MDA417
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLH DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER	STORET
0.010	MG/L	CYANIDE	00720

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER	STORET
0.010	MG/L	CYANIDE	00720

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
WATER

SAMPLE NO.: 85C6273 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-5
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: K HAWSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4645 INORG SAMPLE NO.: MDA414
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLR DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
WATER

SAMPLE NO.: H5C6270 SAMPLE TYPE: NORMAL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-AW-01
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA657 INORG SAMPLE NO.: MDA419
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER	STORET
0.010	MG/L	CYANIDE	00720

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *HAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
WATER

SAMPLE NO.: 85C6269 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-MR-W
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA656 INORG SAMPLE NO.: MDA418
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER
0.010	MG/L	CYANIDE

STORET
00720

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER
0.04	MG/L	CYANIDE

STORET
00720

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
WATER

SAMPLE NO.: 85C6268 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-W1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/08/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA494 INORG SAMPLE NO.: MDA420
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
WATER

SAMPLE NO.: 85C6274 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4646 INORG SAMPLE NO.: MDA415
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLH SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO STFF SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
10U	UG/L	SILVER
20U	UG/L	ARSENIC
NA	UG/L	BORON
200U	UG/L	BARIUM
3U	UG/L	BERYLLIUM
2U	UG/L	CADMIUM
30U	UG/L	COBALT
10U	UG/L	CHROMIUM
10U	UG/L	COPPER
NA	UG/L	MOLYBDENUM
20U	UG/L	NICKEL
14	UG/L	LEAD
60U	UG/L	ANTIMONY
6U	UG/L	SELENIUM
40U	UG/L	TIN
NA	UG/L	STRONTIUM
NA	UG/L	TELLURIUM
NA	UG/L	TITANIUM
70U	UG/L	THALLIUM
10U	UG/L	VANADIUM
NA	UG/L	YTTRIUM
40	UG/L	ZINC
NA	UG/L	ZIRCONIUM
0.2U	UG/L	MERCURY
4800	UG/L	ALUMINUM
2000	UG/L	MANGANESE
80	MG/L	CALCIUM
48	MG/L	MAGNESIUM
91	MG/L	IRON
210	MG/L	SODIUM
14	MG/L	POTASSIUM

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED, THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
WATER

SAMPLE NO.: 85C6275 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-2
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4647 INORG SAMPLE NO.: MDA416
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLH SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
10U	UG/L	SILVER
22	UG/L	ARSENIC
NA	UG/L	BORON
2000	UG/L	BARIUM
3U	UG/L	BERYLLIUM
2U	UG/L	CADMIUM
30U	UG/L	COBALT
20	UG/L	CHROMIUM
10U	UG/L	COPPER
NA	UG/L	MOLYBDENUM
20U	UG/L	NICKEL
12	UG/L	LEAD
60U	UG/L	ANTIMONY
6U	UG/L	SELENIUM
40U	UG/L	TIN
NA	UG/L	STRONTIUM
NA	UG/L	TELLURIUM
NA	UG/L	TITANIUM
70U	UG/L	THALLIUM
10U	UG/L	VANADIUM
NA	UG/L	YTTRIUM
60	UG/L	ZINC
NA	UG/L	ZIRCONIUM
0.2U	UG/L	MERCURY
7100	UG/L	ALUMINUM
1100	UG/L	MANGANESE
35	MG/L	CALCIUM
8	MG/L	MAGNESIUM
46	MG/L	IRON
9	MG/L	SODIUM
6	MG/L	POTASSIUM

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
WATER

SAMPLE NO.: H5C6276 SAMPLE TYPE: MONWL

PROJECT NO.: 85-046 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: S-P-GW-4
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4648 INORG SAMPLE NO.: MDA417
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
10U	UG/L	SILVER
44	UG/L	ARSENIC
NA	UG/L	BORON
200U	UG/L	BARIUM
3U	UG/L	BERYLLIUM
2U	UG/L	CADMIUM
30U	UG/L	COBALT
10U	UG/L	CHROMIUM
10U	UG/L	COPPER
NA	UG/L	MOLYBDENUM
20U	UG/L	NICKEL
16	UG/L	LEAD
60U	UG/L	ANTIMONY
6U	UG/L	SELENIUM
40U	UG/L	TIN
NA	UG/L	STRONTIUM
NA	UG/L	TELLURIUM
NA	UG/L	TITANIUM
70U	UG/L	THALLIUM
10U	UG/L	VANADIUM
NA	UG/L	YTTRIUM
4U	UG/L	ZINC
NA	UG/L	ZIRCONIUM
0.2U	UG/L	MERCURY
3500	UG/L	ALUMINUM
300	UG/L	MANGANESE
66	MG/L	CALCIUM
160	MG/L	MAGNESIUM
17	MG/L	IRON
1400	MG/L	SODIUM
49	MG/L	POTASSIUM

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
WATER

SAMPLE NO.: R5C6273 SAMPLE TYPE: MONWL

PROJECT NO.: 85-04H PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-5
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: 04645 INORG SAMPLE NO.: MDA414
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLM SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
10U	UG/L	SILVER
20U	UG/L	ARSENIC
NA	UG/L	BORON
200U	UG/L	BARIUM
3U	UG/L	BERYLLIUM
2U	UG/L	CADMIUM
30U	UG/L	COBALT
20	UG/L	CHROMIUM
10U	UG/L	COPPER
NA	UG/L	MOLYBDENUM
20U	UG/L	NICKEL
4U	UG/L	LEAD
60U	UG/L	ANTIMONY
6U	UG/L	SELENIUM
40U	UG/L	TIN
NA	UG/L	STRONTIUM
NA	UG/L	TELLURIUM
NA	UG/L	TITANIUM
70U	UG/L	THALLIUM
10U	UG/L	VANADIUM
NA	UG/L	YTTRIUM
20U	UG/L	ZINC
NA	UG/L	ZIRCONIUM
0.2U	UG/L	MERCURY
5700	UG/L	ALUMINUM
15U	UG/L	MANGANESE
42	MG/L	CALCIUM
2U	MG/L	MAGNESIUM
5.3	MG/L	IRON
15	MG/L	SODIUM
2U	MG/L	POTASSIUM

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED, THE NUMBER IS THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
WATER

SAMPLE NO.: 85C6270 SAMPLE TYPE: NORMAL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-A4-01
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA657 INORG SAMPLE NO.: 4DA419
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLH SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
10U	UG/L	SILVER
20U	UG/L	ARSENIC
NA	UG/L	BORON
200U	UG/L	BARIUM
3U	UG/L	BERYLLIUM
2U	UG/L	CADMIUM
30U	UG/L	COBALT
10U	UG/L	CHROMIUM
10U	UG/L	COPPER
NA	UG/L	MOLYBDENUM
20U	UG/L	NICKEL
4U	UG/L	LEAD
60U	UG/L	ANTIMONY
6U	UG/L	SELENIUM
40U	UG/L	TIN
NA	UG/L	STRONTIUM
NA	UG/L	TELLURIUM
NA	UG/L	TITANIUM
70U	UG/L	THALLIUM
10U	UG/L	VANADIUM
NA	UG/L	YTTRIUM
20U	UG/L	ZINC
NA	UG/L	ZIRCONIUM
0.2U	UG/L	MERCURY
200U	UG/L	ALUMINUM
15U	UG/L	MANGANESE
4U	MG/L	CALCIUM
2U	MG/L	MAGNESIUM
0.1U	MG/L	IRON
6.0	MG/L	SODIUM
2U	MG/L	POTASSIUM

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
WATER

SAMPLE NO.: H5C6269 SAMPLE TYPE: LOUWL

PROJECT NO.: H5-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: S-P-RR-A
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA656 INORG SAMPLE NO.: MDA418
CONTRACT LABORATORY(ORGANIC): UWTI
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
100	UG/L	SILVER
200	UG/L	ARSENIC
NA	UG/L	BORON
2000	UG/L	BARIUM
30	UG/L	BERYLLIUM
20	UG/L	CADMIUM
300	UG/L	COBALT
100	UG/L	CHROMIUM
100	UG/L	COPPER
NA	UG/L	MOLYBDENUM
200	UG/L	NICKEL
40	UG/L	LEAD
600	UG/L	ANTIMONY
60	UG/L	SELENIUM
400	UG/L	TIN
NA	UG/L	STRONTIUM
NA	UG/L	TELLURIUM
NA	UG/L	TITANIUM
140	UG/L	THALLIUM
100	UG/L	VANADIUM
NA	UG/L	YTTRIUM
200	UG/L	ZINC
NA	UG/L	ZIRCONIUM
0.20	UG/L	MERCURY
1000	UG/L	ALUMINUM
130	UG/L	MANGANESE
41	MG/L	CALCIUM
100	MG/L	MAGNESIUM
2.4	MG/L	IRON
930	MG/L	SODIUM
36	MG/L	POTASSIUM

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
WATER

SAMPLE NO.: HSC6268 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. MOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-W1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/08/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: H HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D8494 INORG SAMPLE NO.: MDA420
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO STIF SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
10U	UG/L	SILVER
20U	UG/L	ARSENIC
NA	UG/L	BORON
200U	UG/L	BARIUM
3U	UG/L	BERYLLIUM
2U	UG/L	CADMIUM
30U	UG/L	COBALT
10U	UG/L	CHROMIUM
10U	UG/L	COPPER
NA	UG/L	MOLYBDENUM
20U	UG/L	NICKEL
4U	UG/L	LEAD
60U	UG/L	ANTIMONY
6U	UG/L	SELENIUM
40U	UG/L	TIN
NA	UG/L	STRONTIUM
NA	UG/L	TELLURIUM
NA	UG/L	TITANIUM
70U	UG/L	THALLIUM
10U	UG/L	VANADIUM
NA	UG/L	YTTRIUM
20U	UG/L	ZINC
NA	UG/L	ZIRCONIUM
0.2U	UG/L	MERCURY
50U	UG/L	ALUMINUM
2U	UG/L	MANGANESE
2J	MG/L	CALCIUM
2U	MG/L	MAGNESIUM
0.68	MG/L	IRON
1U	MG/L	SODIUM
2U	MG/L	POTASSIUM

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
WATER

SAMPLE NO.: 85C6274 SAMPLE TYPE: MONWL

PROJECT NO.: 85-049 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-1
STORET STATION NO: 370230C

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4646 INORG SAMPLE NO.: MDA415
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/L	ACROLEIN
NA	UG/L	ACRYLONITRILE
5U	UG/L	CHLOROMETHANE
5U	UG/L	BROMOMETHANE
5U	UG/L	VINYL CHLORIDE
5U	UG/L	CHLOROETHANE
5U	UG/L	METHYLENE CHLORIDE
5U	UG/L	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/L	1,1-DICHLOROETHANE
5U	UG/L	TRANS-1,2-DICHLOROETHENE
5U	UG/L	CHLOROFORM
5U	UG/L	1,2-DICHLOROETHANE
5U	UG/L	1,1,1-TRICHLOROETHANE
5U	UG/L	CARBON TETRACHLORIDE
5U	UG/L	BROMODICHLOROMETHANE
5U	UG/L	1,2-DICHLOROPROPANE
5U	UG/L	TRANS-1,3-DICHLOROPROPENE
5U	UG/L	TRICHLOROETHENE(TRICHLOROETHYLENE)
0.3J	UG/L	BENZENE
10U	UG/L	DIBROMOCHLOROMETHANE
5U	UG/L	1,1,2-TRICHLOROETHANE
5U	UG/L	CIS-1,3-DICHLOROPROPENE
10U	UG/L	2-CHLOROETHYLVINYL ETHER
5U	UG/L	BROMOFORM
5U	UG/L	1,1,2,2-TETRACHLOROETHANE
10U	UG/L	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
10U	UG/L	TOLUENE
10U	UG/L	CHLOROBENZENE
3J	UG/L	ETHYL BENZENE
5U	UG/L	M-XYLENE
5U	UG/L	O&P-XYLENE(MIXED)

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
WATER

SAMPLE NO.: 85C6275 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: 800TH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-2
STORET STATION NO: 370230D

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4647 INORG SAMPLE NO.: MDA416
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/L	ACROLEIN
NA	UG/L	ACRYLONITRILE
5U	UG/L	CHLOROMETHANE
5U	UG/L	BROMOMETHANE
5U	UG/L	VINYL CHLORIDE
5U	UG/L	CHLOROETHANE
5U	UG/L	METHYLENE CHLORIDE
5U	UG/L	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/L	1,1-DICHLOROETHANE
5U	UG/L	TRANS-1,2-DICHLOROETHENE
5U	UG/L	CHLOROFORM
5U	UG/L	1,2-DICHLOROETHANE
5U	UG/L	1,1,1-TRICHLOROETHANE
5U	UG/L	CARBON TETRACHLORIDE
5U	UG/L	BROMODICHLOROMETHANE
5U	UG/L	1,2-DICHLOROPROPANE
5U	UG/L	TRANS-1,3-DICHLOROPROPENE
5U	UG/L	TRICHLOROETHENE(TRICHLOROETHYLENE)
0.3J	UG/L	BENZENE
10U	UG/L	DIBROMOCHLOROMETHANE
5U	UG/L	1,1,2-TRICHLOROETHANE
5U	UG/L	CIS-1,3-DICHLOROPROPENE
10U	UG/L	2-CHLOROETHYLVINYL ETHER
5U	UG/L	BROMOFORM
5U	UG/L	1,1,2,2-TETRACHLOROETHANE
10U	UG/L	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
5.1	UG/L	TOLUENE
10U	UG/L	CHLOROBENZENE
5.1	UG/L	ETHYL BENZENE
5U	UG/L	M-XYLENE
5U	UG/L	O&P-XYLENE(MIXED)

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
WATER

SAMPLE NO.: 85C6276 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-4
STORET STATION NO: 370230F

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4648 INORG SAMPLE NO.: MDA417
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/L	ACROLEIN
NA	UG/L	ACRYLONITRILE
5U	UG/L	CHLOROMETHANE
5U	UG/L	BROMOMETHANE
5U	UG/L	VINYL CHLORIDE
5U	UG/L	CHLOROETHANE
5U	UG/L	METHYLENE CHLORIDE
5U	UG/L	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/L	1,1-DICHLOROETHANE
5U	UG/L	TRANS-1,2-DICHLOROETHENE
5U	UG/L	CHLOROFORM
5U	UG/L	1,2-DICHLOROETHANE
5U	UG/L	1,1,1-TRICHLOROETHANE
5U	UG/L	CARBON TETRACHLORIDE
5U	UG/L	BROMODICHLOROMETHANE
5U	UG/L	1,2-DICHLOROPROPANE
5U	UG/L	TRANS-1,3-DICHLOROPROPENE
5U	UG/L	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/L	BENZENE
10U	UG/L	DIBROMOCHLOROMETHANE
5U	UG/L	1,1,2-TRICHLOROETHANE
5U	UG/L	CIS-1,3-DICHLOROPROPENE
10U	UG/L	2-CHLOROETHYLVINYL ETHER
5U	UG/L	BROMOFORM
5U	UG/L	1,1,2,2-TETRACHLOROETHANE
10U	UG/L	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
16	UG/L	TOLUENE
10U	UG/L	CHLOROBENZENE
5U	UG/L	ETHYL BENZENE
5U	UG/L	M-XYLENE
5U	UG/L	O&P-XYLENE(MIXED)

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
WATER

SAMPLE NO.: 85C6273 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-5
STORET STATION NO: 370230F

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4645 INORG SAMPLE NO.: MDA414
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/L	ACROLEIN
NA	UG/L	ACRYLONITRILE
5U	UG/L	CHLOROMETHANE
5U	UG/L	BROMOMETHANE
5U	UG/L	VINYL CHLORIDE
5U	UG/L	CHLOROETHANE
5U	UG/L	METHYLENE CHLORIDE
10U	UG/L	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
5U	UG/L	1,1-DICHLOROETHANE
5U	UG/L	TRANS-1,2-DICHLOROETHENE
5U	UG/L	CHLOROFORM
5U	UG/L	1,2-DICHLOROETHANE
5U	UG/L	1,1,1-TRICHLOROETHANE
5U	UG/L	CARBON TETRACHLORIDE
5U	UG/L	BROMODICHLOROMETHANE
5U	UG/L	1,2-DICHLOROPROPANE
5U	UG/L	TRANS-1,3-DICHLOROPROPENE
5U	UG/L	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/L	BENZENE
10U	UG/L	DIBROMOCHLOROMETHANE
5U	UG/L	1,1,2-TRICHLOROETHANE
5U	UG/L	CIS-1,3-DICHLOROPROPENE
10U	UG/L	2-CHLOROETHYLVINYL ETHER
5U	UG/L	BROMOFORM
5U	UG/L	1,1,2,2-TETRACHLOROETHANE
10U	UG/L	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
10U	UG/L	TOLUENE
10U	UG/L	CHLOROBENZENE
5U	UG/L	ETHYL BENZENE
5U	UG/L	M-XYLENE
5U	UG/L	O&P-XYLENE(MIXED)

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
WATER

SAMPLE NO.: 85C6270 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-AW-01
STORET STATION NO: 370230A

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: S HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA657 INORG SAMPLE NO.: MDA419
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/L	ACROLEIN
NA	UG/L	ACRYLONITRILE
5U	UG/L	CHLOROMETHANE
5U	UG/L	BROMOMETHANE
5U	UG/L	VINYL CHLORIDE
5U	UG/L	CHLOROETHANE
37	UG/L	METHYLENE CHLORIDE
6.6	UG/L	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/L	1,1-DICHLOROETHANE
5U	UG/L	TRANS-1,2-DICHLOROETHENE
63	UG/L	CHLOROFORM
5S	UG/L	1,2-DICHLOROETHANE
14	UG/L	1,1,1-TRICHLOROETHANE
3A	UG/L	CARBON TETRACHLORIDE
6O	UG/L	BROMODICHLOROMETHANE
5U	UG/L	1,2-DICHLOROPROPANE
5U	UG/L	TRANS-1,3-DICHLOROPROPENE
15	UG/L	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/L	BENZENE
3A	UG/L	DIBROMOCHLOROMETHANE
5U	UG/L	1,1,2-TRICHLOROETHANE
5U	UG/L	CIS-1,3-DICHLOROPROPENE
10U	UG/L	2-CHLOROETHYLVINYL ETHER
14	UG/L	BROMOFORM
5U	UG/L	1,1,2,2-TETRACHLOROETHANE
81	UG/L	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
10U	UG/L	TOLUENE
26	UG/L	CHLOROBENZENE
5U	UG/L	ETHYL BENZENE
5U	UG/L	M-XYLENE
5U	UG/L	OEP-XYLENE(MIXED)

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
WATER

SAMPLE NO.: 85C6269 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RR-W
STORET STATION NO: 370230G

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA656 INORG SAMPLE NO.: MDA418
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/L	ACROLEIN
NA	UG/L	ACRYLONITRILE
5U	UG/L	CHLOROMETHANE
5U	UG/L	BROMOMETHANE
5U	UG/L	VINYL CHLORIDE
5U	UG/L	CHLOROETHANE
5U	UG/L	METHYLENE CHLORIDE
5U	UG/L	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/L	1,1-DICHLOROETHANE
5U	UG/L	TRANS-1,2-DICHLOROETHENE
5U	UG/L	CHLOROFORM
5U	UG/L	1,2-DICHLOROETHANE
5U	UG/L	1,1,1-TRICHLOROETHANE
5U	UG/L	CARBON TETRACHLORIDE
10U	UG/L	BROMODICHLOROMETHANE
5U	UG/L	1,2-DICHLOROPROPANE
5U	UG/L	TRANS-1,3-DICHLOROPROPENE
5U	UG/L	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/L	BENZENE
5U	UG/L	DIBROMOCHLOROMETHANE
5U	UG/L	1,1,2-TRICHLOROETHANE
5U	UG/L	CIS-1,3-DICHLOROPROPENE
10U	UG/L	2-CHLOROETHYLVINYL ETHER
5U	UG/L	BROMOFORM
5U	UG/L	1,1,2,2-TETRACHLOROETHANE
10U	UG/L	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
10U	UG/L	TOLUENE
10U	UG/L	CHLOROBENZENE
5U	UG/L	ETHYL BENZENE
5U	UG/L	M-XYLENE
5U	UG/L	O&P-XYLENE(MIXED)

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
WATER

SAMPLE NO.: 85C6268 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SNP-BK-W1
STORET STATION NO: 370230R

SAMPLE COLLECTION: START DATE/TIME 01/08/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA494 INORG SAMPLE NO.: MDA420
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/L	ACROLEIN
NA	UG/L	ACRYLONITRILE
5U	UG/L	CHLOROMETHANE
5U	UG/L	BROMOMETHANE
5U	UG/L	VINYL CHLORIDE
5U	UG/L	CHLOROETHANE
5U	UG/L	METHYLENE CHLORIDE
5U	UG/L	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
5U	UG/L	1,1-DICHLOROETHANE
5U	UG/L	TRANS-1,2-DICHLOROETHENE
5U	UG/L	CHLOROFORM
5U	UG/L	1,2-DICHLOROETHANE
5U	UG/L	1,1,1-TRICHLOROETHANE
5U	UG/L	CARBON TETRACHLORIDE
10U	UG/L	BROMODICHLOROMETHANE
5U	UG/L	1,2-DICHLOROPROPANE
5U	UG/L	TRANS-1,3-DICHLOROPROPENE
5U	UG/L	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/L	BENZENE
5U	UG/L	DIBROMOCHLOROMETHANE
5U	UG/L	1,1,2-TRICHLOROETHANE
5U	UG/L	CIS-1,3-DICHLOROPROPENE
10U	UG/L	2-CHLOROETHYLVINYL ETHER
5U	UG/L	BROMOFORM
5U	UG/L	1,1,2,2-TETRACHLOROETHANE
10U	UG/L	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
5U	UG/L	TOLUENE
10U	UG/L	CHLOROBENZENE
5U	UG/L	ETHYL BENZENE
5U	UG/L	M-XYLENE
5U	UG/L	O&P-XYLENE(MIXED)

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
WATER

SAMPLE NO.: R5C6274 SAMPLE TYPE: MONWL

PROJECT NO.: R5-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-1
STORET STATION NO: 370230C

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4646 INORG SAMPLE NO.: MDA415
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
15U	ACETONE
5U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
7J	METHYL BUTYL KETONE
5J	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE
800JN	PROPENE
4J	1 UNIDENTIFIED COMPOUND

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6275 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-2
STORET STATION NO: 370230D

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4647 INORG SAMPLE NO.: MDA416
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
500	ACETONE
5U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
7J	METHYL BUTYL KETONE
5U	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE
3JN	CHLOROMETHYLPROPANE
100JN	PROPENE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6276 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: 600TH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-4
STORET STATION NO: 370230F

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4648 INORG SAMPLE NO.: MDA417
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
1000	ACETONE
30	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
10U	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE
90JN	PROPENE
30JN	1 UNIDENTIFIED AROMATIC COMPOUND

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6273 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-5
STORET STATION NO: 370230F

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4645 INORG SAMPLE NO.: MDA414
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
15U	ACETONE
5U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
23	METHYL BUTYL KETONE
26	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6270 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOOTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-AW-01
STORET STATION NO: 370230A

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA657 INORG SAMPLE NO.: MDA419
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
15U	ACETONE
5U	METHYL ETHYL KETONE
10U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
5U	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6269 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RB-W
STORET STATION NO: 370230G

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA656 INORG SAMPLE NO.: MDA418
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
15U	ACETONE
5U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
10U	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6268 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-W1
STORET STATION NO: 3702308

SAMPLE COLLECTION: START DATE/TIME 01/08/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA494 INORG SAMPLE NO.: MDA420
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
15U	ACETONE
10U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
10U	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD, REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
WATER

SAMPLE NO.: 85C6274 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-1
STORET STATION NO: 370230C

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4646 INORG SAMPLE NO.: MDA415
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
10U	UG/L	N-NITROSODIMETHYLAMINE
NA	UG/L	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
11U	UG/L	BENZIDINE
5U	UG/L	1,3-DICHLOROBENZENE
5U	UG/L	1,4-DICHLOROBENZENE
5U	UG/L	1,2-DICHLOROBENZENE
5U	UG/L	BIS(2-CHLOROETHYL) ETHER
5U	UG/L	HEXACHLOROETHANE
10U	UG/L	BIS(2-CHLOROISOPROPYL) ETHER
10U	UG/L	N-NITROSODI-N-PROPYLAMINE
5U	UG/L	NITROBENZENE
5U	UG/L	HEXACHLOROBUTADIENE
5U	UG/L	1,2,4-TRICHLOROBENZENE
5U	UG/L	NAPHTHALENE
5U	UG/L	BIS(2-CHLOROETHOXY) METHANE
5U	UG/L	ISOPHORONE
10U	UG/L	HEXACHLOROCYCLOPENTADIENE (HCCP)
5U	UG/L	2-CHLORONAPHTHALENE
5U	UG/L	ACENAPHTHYLENE
5U	UG/L	ACENAPHTHENE
5U	UG/L	DIMETHYL PHTHALATE
5U	UG/L	2,4-DINITROTOLUENE
5U	UG/L	2,6-DINITROTOLUENE
5U	UG/L	4-CHLOROPHENYL PHENYL ETHER
5U	UG/L	FLUORENE
5U	UG/L	DIETHYL PHTHALATE
5U	UG/L	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
5U	UG/L	HEXACHLOROBENZENE (HCB)
5U	UG/L	4-BROMOPHENYL PHENYL ETHER
5U	UG/L	PHENANTHRENE
5U	UG/L	ANTHRACENE
10U	UG/L	DI-N-BUTYLPHTHALATE
10U	UG/L	FLUORANTHENE
10U	UG/L	PYRENE
10U	UG/L	BENZYL BUTYL PHTHALATE
10U	UG/L	BIS(2-ETHYLHEXYL) PHTHALATE
5U	UG/L	BENZO(A)ANTHRACENE
5U	UG/L	CHRYSENE
18U	UG/L	3,3'-DICHLOROBENZIDINE
10U	UG/L	DI-N-OCTYLPHTHALATE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO-A-PYRENE
10U	UG/L	INDENO (1,2,3-CD) PYRENE
10U	UG/L	DIBENZO(A,H)ANTHRACENE
10U	UG/L	BENZO(GHI)PERYLENE
5U	UG/L	2-CHLOROPHENOL
5U	UG/L	2-NITROPHENOL
5U	UG/L	PHENOL
5U	UG/L	2,4-DIMETHYLPHENOL
5U	UG/L	2,4-DICHLOROPHENOL
5U	UG/L	2,4,6-TRICHLOROPHENOL
5U	UG/L	4-CHLORO-3-METHYLPHENOL
10U	UG/L	2,4-DINITROPHENOL
5U	UG/L	2-METHYL-4,6-DINITROPHENOL
5U	UG/L	PENTACHLOROPHENOL
11U	UG/L	4-NITROPHENOL

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
WATER

SAMPLE NO.: 85C6275 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-2
STORET STATION NO: 370230D

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4647 INORG SAMPLE NO.: MDA416
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
10U	UG/L	N-NITROSODIMETHYLAMINE
NA	UG/L	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
11U	UG/L	BENZIDINE
5U	UG/L	1,3-DICHLOROBENZENE
5U	UG/L	1,4-DICHLOROBENZENE
5U	UG/L	1,2-DICHLOROBENZENE
5U	UG/L	BIS(2-CHLOROETHYL) ETHER
5U	UG/L	HEXACHLOROETHANE
10U	UG/L	BIS(2-CHLOROISOPROPYL) ETHER
10U	UG/L	N-NITROSODI-N-PROPYLAMINE
5U	UG/L	NITROBENZENE
5U	UG/L	HEXACHLOROBUTADIENE
5U	UG/L	1,2,4-TRICHLOROBENZENE
290	UG/L	NAPHTHALENE
5U	UG/L	BIS(2-CHLOROETHOXY) METHANE
5U	UG/L	ISOPHORONE
10U	UG/L	HEXACHLOROCYCLOPENTADIENE (HCCP)
5U	UG/L	2-CHLORONAPHTHALENE
5U	UG/L	ACENAPHTHYLENE
40	UG/L	ACENAPHTHENE
5U	UG/L	DIMETHYL PHTHALATE
5U	UG/L	2,4-DINITROTOLUENE
5U	UG/L	2,6-DINITROTOLUENE
5U	UG/L	4-CHLOROPHENYL PHENYL ETHER
15	UG/L	FLUORENE
5U	UG/L	DIETHYL PHTHALATE
5U	UG/L	N-NITROSODIPHENLYAMINE/DIPHENYLAMINE
5U	UG/L	HEXACHLOROBENZENE (HCB)
5U	UG/L	4-BROMOPHENYL PHENYL ETHER
7.8	UG/L	PHENANTHRENE
5U	UG/L	ANTHRACENE
10U	UG/L	DI-N-BUTYLPHTHALATE
10U	UG/L	FLUORANTHENE
10U	UG/L	PYRENE
10U	UG/L	BENZYL BUTYL PHTHALATE
10U	UG/L	BIS(2-ETHYLHEXYL) PHTHALATE
5U	UG/L	BENZO(A)ANTHRACENE
5U	UG/L	CHRYSENE
18U	UG/L	3,3'-DICHLOROBENZIDINE
10U	UG/L	DI-N-OCTYLPHTHALATE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO-A-PYRENE
10U	UG/L	INDENO (1,2,3-CD) PYRENE
10U	UG/L	DIBENZO(A,H)ANTHRACENE
10U	UG/L	BENZO(GHI)PERYLENE
5U	UG/L	2-CHLOROPHENOL
5U	UG/L	2-NITROPHENOL
5U	UG/L	PHENOL
5U	UG/L	2,4-DIMETHYLPHENOL
5U	UG/L	2,4-DICHLOROPHENOL
5U	UG/L	2,4,6-TRICHLOROPHENOL
5U	UG/L	4-CHLORO-3-METHYLPHENOL
10U	UG/L	2,4-DINITROPHENOL
5U	UG/L	2-METHYL-4,6-DINITROPHENOL
5U	UG/L	PENTACHLOROPHENOL
11U	UG/L	4-NITROPHENOL

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
WATER

SAMPLE NO.: 85C6276 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-4
STORET STATION NO: 370230E

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4648 INORG SAMPLE NO.: MDA417
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
10U	UG/L	N-NITROSODIMETHYLAMINE
NA	UG/L	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
11U	UG/L	BENZIDINE
5U	UG/L	1,3-DICHLOROBENZENE
5U	UG/L	1,4-DICHLOROBENZENE
5U	UG/L	1,2-DICHLOROBENZENE
5U	UG/L	BIS(2-CHLOROETHYL) ETHER
5U	UG/L	HEXACHLOROETHANE
10U	UG/L	BIS(2-CHLOROISOPROPYL) ETHER
10U	UG/L	N-NITROSODI-N-PROPYLAMINE
5U	UG/L	NITROBENZENE
5U	UG/L	HEXACHLOROBUTADIENE
5U	UG/L	1,2,4-TRICHLOROBENZENE
8U	UG/L	NAPHTHALENE
5U	UG/L	BIS(2-CHLOROETHOXY) METHANE
5U	UG/L	ISOPHORONE
10U	UG/L	HEXACHLOROCYCLOPENTADIENE (HCCP)
5U	UG/L	2-CHLORONAPHTHALENE
0.9J	UG/L	ACENAPHTHYLENE
3J	UG/L	ACENAPHTHENE
5U	UG/L	DIMETHYL PHTHALATE
5U	UG/L	2,4-DINITROTOLUENE
5U	UG/L	2,6-DINITROTOLUENE
5U	UG/L	4-CHLOROPHENYL PHENYL ETHER
0.7J	UG/L	FLUORENE
5U	UG/L	DIETHYL PHTHALATE
5U	UG/L	N-NITROSODIPHENLYAMINE/DIPHENYLAMINE
5U	UG/L	HEXACHLOROBENZENE (HCB)
5U	UG/L	4-BROMOPHENYL PHENYL ETHER
0.5	UG/L	PHENANTHRENE
2J	UG/L	ANTHRACENE
10U	UG/L	DI-N-BUTYLPHTHALATE
7.8	UG/L	FLUORANTHENE
10J	UG/L	PYRENE
10U	UG/L	BENZYL BUTYL PHTHALATE
10U	UG/L	BIS(2-ETHYLHEXYL) PHTHALATE
5U	UG/L	BENZO(A)ANTHRACENE
5U	UG/L	CHRYSENE
18U	UG/L	3,3'-DICHLOROBENZIDINE
10U	UG/L	DI-N-OCTYLPHTHALATE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO-A-PYRENE
10U	UG/L	INDENO (1,2,3-CD) PYRENE
10U	UG/L	DIBENZO(A,H)ANTHRACENE
10U	UG/L	BENZO(GHI)PERYLENE
5U	UG/L	2-CHLOROPHENOL
5U	UG/L	2-NITROPHENOL
5U	UG/L	PHENOL
5U	UG/L	2,4-DIMETHYLPHENOL
5U	UG/L	2,4-DICHLOROPHENOL
5U	UG/L	2,4,6-TRICHLOROPHENOL
5U	UG/L	4-CHLORO-3-METHYLPHENOL
10U	UG/L	2,4-DINITROPHENOL
5U	UG/L	2-METHYL-4,6-DINITROPHENOL
5U	UG/L	PENTACHLOROPHENOL
11U	UG/L	4-NITROPHENOL

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
WATER

SAMPLE NO.: 85C6273 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-5
STORET STATION NO: 370230F

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D. BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4445 INORG SAMPLE NO.: MDA414
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
10U	UG/L	N-NITROSODIMETHYLAMINE
NA	UG/L	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
11U	UG/L	BENZIDINE
5U	UG/L	1,3-DICHLOROBENZENE
5U	UG/L	1,4-DICHLOROBENZENE
5U	UG/L	1,2-DICHLOROBENZENE
5U	UG/L	BIS(2-CHLOROETHYL) ETHER
5U	UG/L	HEXACHLOROETHANE
10U	UG/L	BIS(2-CHLOROISOPROPYL) ETHER
10U	UG/L	N-NITROSODI-N-PROPYLAMINE
5U	UG/L	NITROBENZENE
5U	UG/L	HEXACHLOROBUTADIENE
5U	UG/L	1,2,4-TRICHLOROBENZENE
5U	UG/L	NAPHTHALENE
5U	UG/L	BIS(2-CHLOROETHOXY) METHANE
5U	UG/L	ISOPHORONE
10U	UG/L	HEXACHLOROCYCLOPENTADIENE (HCCP)
5U	UG/L	2-CHLORONAPHTHALENE
5U	UG/L	ACENAPHTHYLENE
5U	UG/L	ACENAPHTHENE
5U	UG/L	DIMETHYL PHTHALATE
5U	UG/L	2,4-DINITROTOLUENE
5U	UG/L	2,6-DINITROTOLUENE
5U	UG/L	4-CHLOROPHENYL PHENYL ETHER
5U	UG/L	FLUORENE
5U	UG/L	DIETHYL PHTHALATE
5U	UG/L	N-NITROSODIPHENLYAMINE/DIPHENYLAMINE
5U	UG/L	HEXACHLOROBENZENE (HCB)
5U	UG/L	4-BROMOPHENYL PHENYL ETHER
5U	UG/L	PHENANTHRENE
5U	UG/L	ANTHRACENE
5U	UG/L	DI-N-BUTYLPHTHALATE
10U	UG/L	FLUORANTHENE
10U	UG/L	PYRENE
10U	UG/L	BENZYL BUTYL PHTHALATE
10U	UG/L	BIS(2-ETHYLHEXYL) PHTHALATE
5U	UG/L	BENZO(A)ANTHRACENE
5U	UG/L	CHRYSENE
10U	UG/L	3,3'-DICHLOROBENZIDINE
10U	UG/L	DI-N-OCTYLPHTHALATE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO-A-PYRENE
10U	UG/L	INDENO (1,2,3-CD) PYRENE
10U	UG/L	DIBENZO(A,H)ANTHRACENE
10U	UG/L	BENZO(GHI)PERYLENE
5U	UG/L	2-CHLOROPHENOL
5U	UG/L	2-NITROPHENOL
5U	UG/L	PHENOL
5U	UG/L	2,4-DIMETHYLPHENOL
5U	UG/L	2,4-DICHLOROPHENOL
5U	UG/L	2,4,6-TRICHLOROPHENOL
5U	UG/L	4-CHLORO-3-METHYLPHENOL
10U	UG/L	2,4-DINITROPHENOL
5U	UG/L	2-METHYL-4,6-DINITROPHENOL
5U	UG/L	PENTACHLOROPHENOL
11U	UG/L	4-NITROPHENOL

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
WATER

SAMPLE NO.: 85C6270 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-AW-01
STORET STATION NO: 370230A

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA657 INORG SAMPLE NO.: MDA419
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW,
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
10U	UG/L	N-NITROSODIMETHYLAMINE
NA	UG/L	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
11U	UG/L	BENZIDINE
5U	UG/L	1,3-DICHLOROBENZENE
5U	UG/L	1,4-DICHLOROBENZENE
5U	UG/L	1,2-DICHLOROBENZENE
5U	UG/L	BIS(2-CHLOROETHYL) ETHER
5U	UG/L	HEXACHLOROETHANE
10U	UG/L	BIS(2-CHLOROISOPROPYL) ETHER
10U	UG/L	N-NITROSODI-N-PROPYLAMINE
5U	UG/L	NITROBENZENE
5U	UG/L	HEXACHLOROBUTADIENE
5U	UG/L	1,2,4-TRICHLOROBENZENE
5U	UG/L	NAPHTHALENE
5U	UG/L	BIS(2-CHLOROETHOXY) METHANE
5U	UG/L	ISOPHORONE
10U	UG/L	HEXACHLOROCYCLOPENTADIENE (HCCP)
5U	UG/L	2-CHLORONAPHTHALENE
5U	UG/L	ACENAPHTHYLENE
5U	UG/L	ACENAPHTHENE
5U	UG/L	DIMETHYL PHTHALATE
5U	UG/L	2,4-DINITROTOLUENE
5U	UG/L	2,6-DINITROTOLUENE
5U	UG/L	4-CHLOROPHENYL PHENYL ETHER
5U	UG/L	FLUORENE
5U	UG/L	DIETHYL PHTHALATE
5U	UG/L	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
5U	UG/L	HEXACHLOROBENZENE (HCB)
5U	UG/L	4-BROMOPHENYL PHENYL ETHER
5U	UG/L	PHENANTHRENE
5U	UG/L	ANTHRACENE
10U	UG/L	DI-N-BUTYLPHTHALATE
10U	UG/L	FLUORANTHENE
10U	UG/L	PYRENE
10U	UG/L	BENZYL BUTYL PHTHALATE
10U	UG/L	BIS(2-ETHYLHEXYL) PHTHALATE
5U	UG/L	BENZO(A)ANTHRACENE
5U	UG/L	CHRYSENE
18U	UG/L	3,3'-DICHLOROBENZIDINE
5U	UG/L	DI-N-OCTYLPHTHALATE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO-A-PYRENE
10U	UG/L	INDENO (1,2,3-CD) PYRENE
10U	UG/L	DIBENZO(A,H)ANTHRACENE
10U	UG/L	BENZO(GHI)PERYLENE
5U	UG/L	2-CHLOROPHENOL
5U	UG/L	2-NITROPHENOL
5U	UG/L	PHENOL
5U	UG/L	2,4-DIMETHYLPHENOL
5U	UG/L	2,4-DICHLOROPHENOL
5U	UG/L	2,4,6-TRICHLOROPHENOL
5U	UG/L	4-CHLORO-3-METHYLPHENOL
10U	UG/L	2,4-DINITROPHENOL
5U	UG/L	2-METHYL-4,6-DINITROPHENOL
5U	UG/L	PENTACHLOROPHENOL
11U	UG/L	4-NITROPHENOL

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
WATER

SAMPLE NO.: 85C6269 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RR-W
STORET STATION NO: 3702300

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA656 INORG SAMPLE NO.: NDA418
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
10U	UG/L	N-NITROSODIMETHYLAMINE
NA	UG/L	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
11U	UG/L	BENZIDINE
10U	UG/L	1,3-DICHLOROBENZENE
10U	UG/L	1,4-DICHLOROBENZENE
10U	UG/L	1,2-DICHLOROBENZENE
10U	UG/L	BIS(2-CHLOROETHYL) ETHER
10U	UG/L	HEXACHLOROETHANE
10U	UG/L	BIS(2-CHLOROISOPROPYL) ETHER
10U	UG/L	N-NITROSODI-N-PROPYLAMINE
10U	UG/L	NITROBENZENE
10U	UG/L	HEXACHLOROBUTADIENE
10U	UG/L	1,2,4-TRICHLOROBENZENE
10U	UG/L	NAPHTHALENE
10U	UG/L	BIS(2-CHLOROETHOXY) METHANE
10U	UG/L	ISOPHORONE
10U	UG/L	HEXACHLOROCYCLOPENTADIENE (HCCP)
10U	UG/L	2-CHLORONAPHTHALENE
10U	UG/L	ACENAPHTHYLENE
10U	UG/L	ACENAPHTHENE
10U	UG/L	DIMETHYL PHTHALATE
10U	UG/L	2,4-DINITROTOLUENE
10U	UG/L	2,6-DINITROTOLUENE
10U	UG/L	4-CHLOROPHENYL PHENYL ETHER
10U	UG/L	FLUORENE
10U	UG/L	DIETHYL PHTHALATE
10U	UG/L	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
10U	UG/L	HEXACHLOROBENZENE (HCB)
10U	UG/L	4-BROMOPHENYL PHENYL ETHER
10U	UG/L	PHENANTHRENE
10U	UG/L	ANTHRACENE
10U	UG/L	DI-N-BUTYLPHTHALATE
10U	UG/L	FLUORANTHENE
10U	UG/L	PYRENE
10U	UG/L	BENZYL BUTYL PHTHALATE
10U	UG/L	BIS(2-ETHYLHEXYL) PHTHALATE
10U	UG/L	BENZO(A)ANTHRACENE
10U	UG/L	CHRYSENE
10U	UG/L	3,3'-DICHLOROBENZIDINE
10U	UG/L	DI-N-OCTYLPHTHALATE
10U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
10U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
10U	UG/L	BENZO-A-PYRENE
10U	UG/L	INDENO (1,2,3-CD) PYRENE
10U	UG/L	DIBENZO(A,H)ANTHRACENE
10U	UG/L	BENZO(GHI)PERYLENE
10U	UG/L	2-CHLOROPHENOL
10U	UG/L	2-NITROPHENOL
10U	UG/L	PHENOL
10U	UG/L	2,4-DIMETHYLPHENOL
10U	UG/L	2,4-DICHLOROPHENOL
10U	UG/L	2,4,6-TRICHLOROPHENOL
10U	UG/L	4-CHLORO-3-METHYLPHENOL
10U	UG/L	2,4-DINITROPHENOL
10U	UG/L	2-METHYL-4,6-DINITROPHENOL
10U	UG/L	PENTACHLOROPHENOL
11U	UG/L	4-NITROPHENOL

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
WATER

SAMPLE NO.: 85C6268 SAMPLE TYPE: NONNL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-W1
STORET STATION NO: 3702308

SAMPLE COLLECTION: START DATE/TIME 01/08/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA494 INORG SAMPLE NO.: MDA420
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
10U	UG/L	N-NITROSODIMETHYLAMINE
NA	UG/L	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
11U	UG/L	BENZIDINE
5U	UG/L	1,3-DICHLOROBENZENE
5U	UG/L	1,4-DICHLOROBENZENE
5U	UG/L	1,2-DICHLOROBENZENE
10U	UG/L	BIS(2-CHLOROETHYL) ETHER
5U	UG/L	HEXACHLOROETHANE
5U	UG/L	BIS(2-CHLOROISOPROPYL) ETHER
5U	UG/L	N-NITROSODI-N-PROPYLAMINE
5U	UG/L	NITROBENZENE
5U	UG/L	HEXACHLOROBUTADIENE
5U	UG/L	1,2,4-TRICHLOROBENZENE
5U	UG/L	NAPHTHALENE
5U	UG/L	BIS(2-CHLOROETHOXY) METHANE
5U	UG/L	ISOPHORONE
10U	UG/L	HEXACHLOROCYCLOPENTADIENE (HCCP)
5U	UG/L	2-CHLORONAPHTHALENE
5U	UG/L	ACENAPHTHYLENE
5U	UG/L	ACENAPHTHENE
5U	UG/L	DIMETHYL PHTHALATE
5U	UG/L	2,4-DINITROTOLUENE
5U	UG/L	2,6-DINITROTOLUENE
5U	UG/L	4-CHLOROPHENYL PHENYL ETHER
5U	UG/L	FLUORENE
5U	UG/L	DIETHYL PHTHALATE
5U	UG/L	N-NITROSODIPHENYLAMINE/DIPHENYLAMINE
5U	UG/L	HEXACHLOROBENZENE (HCB)
5U	UG/L	4-BROMOPHENYL PHENYL ETHER
5U	UG/L	PHENANTHRENE
5U	UG/L	ANTHRACENE
10U	UG/L	DI-N-BUTYLPHTHALATE
10U	UG/L	FLUORANTHENE
10U	UG/L	PYRENE
10U	UG/L	BENZYL BUTYL PHTHALATE
10U	UG/L	BIS(2-ETHYLHEXYL) PHTHALATE
5U	UG/L	BENZO(A)ANTHRACENE
5U	UG/L	CHRYSENE
20U	UG/L	3,3'-DICHLOROBENZIDINE
5U	UG/L	DI-N-OCTYLPHTHALATE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO(B AND/OR K)FLUORANTHENE
5U	UG/L	BENZO-A-PYRENE
10U	UG/L	INDENO (1,2,3-CD) PYRENE
10U	UG/L	DIBENZO(A,H)ANTHRACENE
10U	UG/L	BENZO(GHI)PERYLENE
5U	UG/L	2-CHLOROPHENOL
5U	UG/L	2-NITROPHENOL
5U	UG/L	PHENOL
5U	UG/L	2,4-DIMETHYLPHENOL
5U	UG/L	2,4-DICHLOROPHENOL
5U	UG/L	2,4,6-TRICHLOROPHENOL
5U	UG/L	4-CHLORO-3-METHYLPHENOL
10U	UG/L	2,4-DINITROPHENOL
5U	UG/L	2-METHYL-4,6-DINITROPHENOL
5U	UG/L	PENTACHLOROPHENOL
11U	UG/L	4-NITROPHENOL

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6274 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-1
STORET STATION NO: 370230C

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4646 INORG SAMPLE NO.: MDA415
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW,
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
10U	BENZOIC ACID
10U	2-METHYLPHENOL
10U	4-METHYLPHENOL
5U	2,4,5-TRICHLOROPHENOL
10U	ANILINE
5U	BENZYL ALCOHOL
10U	4-CHLOROANILINE
5U	DIBENZOFURAN
10U	2-METHYL NAPHTHALENE
5U	2-NITROANILINE
21U	3-NITROANILINE
5U	4-NITROANILINE
8JN	PROTECT
50JN	PROMETON
20JN	TETRAHYDRODIMETHYLPYRANONE
10JN	METHYLHEPTANOL
7JN	C5 ALKYL-BENZENE
100J	8 UNIDENTIFIED COMPOUNDS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6275 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-2
STORET STATION NO: 370230D

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: R HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4647 INORG SAMPLE NO.: MDA416
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLR DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
5U	BENZOIC ACID
10U	2-METHYLPHENOL
10U	4-METHYLPHENOL
5U	2,4,5-TRICHLOROPHENOL
10U	ANILINE
5U	BENZYL ALCOHOL
10U	4-CHLOROANILINE
14	DIBENZOFURAN
18	2-METHYL NAPHTHALENE
5U	2-NITROANILINE
21U	3-NITROANILINE
5U	4-NITROANILINE
100JN	C3 ALKYLBENZENE
20JN	BENZOTHIOPHENE
10JN	NITROCARBAZOLE
30J	3 UNIDENTIFIED COMPOUNDS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6276 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-4
STORET STATION NO: 370230E

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4648 INORG SAMPLE NO.: MDA417
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW,
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED, THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
5U	BENZOIC ACID
10U	2-METHYLPHENOL
10U	4-METHYLPHENOL
10U	2,4,5-TRICHLOROPHENOL
10U	ANILINE
5U	BENZYL ALCOHOL
10U	4-CHLOROANILINE
8.0	DIBENZOFURAN
10U	2-METHYL NAPHTHALENE
5U	2-NITROANILINE
21U	3-NITROANILINE
5U	4-NITROANILINE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6273 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-5
STORET STATION NO: 370230F

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4645 INORG SAMPLE NO.: MDA414
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
5U	BENZOIC ACID
10U	2-METHYLPHENOL
10U	4-METHYLPHENOL
5U	2,4,5-TRICHLOROPHENOL
10U	ANILINE
5U	BENZYL ALCOHOL
10U	4-CHLOROANILINE
5U	DIBENZOFURAN
10U	2-METHYL NAPHTHALENE
5U	2-NITROANILINE
21U	3-NITROANILINE
5U	4-NITROANILINE
10J	2 UNIDENTIFIED COMPOUNDS

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6270 SAMPLE TYPE: NONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-AW-01
STORET STATION NO: 370230A

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA657 INORG SAMPLE NO.: MDA419
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
5U	BENZOIC ACID
10U	2-METHYLPHENOL
10U	4-METHYLPHENOL
5U	2,4,5-TRICHLOROPHENOL
10U	ANILINE
5U	BENZYL ALCOHOL
10U	4-CHLOROANILINE
5U	DIBENZOFURAN
10U	2-METHYL NAPHTHALENE
5U	2-NITROANILINE
21U	3-NITROANILINE
5U	4-NITROANILINE
10JN	TRIBROMOPHENOL
20J	2 UNIDENTIFIED COMPOUNDS

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6269 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RR-W
STORET STATION NO: 370230G

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA656 INORG SAMPLE NO.: MDA418
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLR DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
5U	BENZOIC ACID
10U	2-METHYLPHENOL
10U	4-METHYLPHENOL
5U	2,4,5-TRICHLOROPHENOL
10U	ANILINE
5U	BENZYL ALCOHOL
10U	4-CHLOROANILINE
5U	DIBENZOFURAN
10U	2-METHYL NAPHTHALENE
5U	2-NITROANILINE
21U	3-NITROANILINE
5U	4-NITROANILINE
30J	3 UNIDENTIFIED COMPOUNDS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
WATER

SAMPLE NO.: 85C6768 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-W1
STORET STATION NO: 370230R

SAMPLE COLLECTION: START DATE/TIME 01/08/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA494 INORG SAMPLE NO.: MDA420
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/L	COMPOUND NAME
5U	BENZOIC ACID
10U	2-METHYLPHENOL
10U	4-METHYLPHENOL
5U	2,4,5-TRICHLOROPHENOL
10U	ANILINE
5U	BENZYL ALCOHOL
10U	4-CHLOROANILINE
5U	DIBENZOFURAN
5U	2-METHYL NAPHTHALENE
5U	2-NITROANILINE
30U	3-NITROANILINE
5U	4-NITROANILINE
100J	5 UNIDENTIFIED COMPOUNDS

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
WATER

SAMPLE NO.: 85C6274 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-1
STORET STATION NO: 370230C

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4646 INORG SAMPLE NO.: MDA415
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
0.01U	UG/L	ALDRIN
0.01U	UG/L	HEPTACHLOR
0.01U	UG/L	HEPTACHLOR EPOXIDE
0.01U	UG/L	ALPHA-BHC
0.01U	UG/L	BETA-BHC
0.01U	UG/L	GAMMA-BHC (LINDANE)
0.01U	UG/L	DELTA-BHC
0.01U	UG/L	ENDOSULFAN I (ALPHA)
0.01U	UG/L	DIELDRIN
0.1U	UG/L	4,4'-DDT (P,P'-DDT)
0.01U	UG/L	4,4'-DDE (P,P'-DDE)
0.01U	UG/L	4,4'-DDD (P,P'-DDD)
0.01U	UG/L	ENDRIN
0.01U	UG/L	ENDOSULFAN II (BETA)
0.3U	UG/L	ENDOSULFAN SULFATE
0.1U	UG/L	CHLORDANE (TECH. MIXTURE) /1
0.3U	UG/L	PCB-1242 (AROCLOR 1242)
0.3U	UG/L	PCB-1254 (AROCLOR 1254)
0.3U	UG/L	PCB-1221 (AROCLOR 1221)
0.3U	UG/L	PCB-1232 (AROCLOR 1232)
0.3U	UG/L	PCB-1248 (AROCLOR 1248)
0.3U	UG/L	PCB-1260 (AROCLOR 1260)
0.3U	UG/L	PCB-1016 (AROCLOR 1016)
0.1U	UG/L	TOXAPHENE
0.1U	UG/L	ENDRIN ALDEHYDE
NA	UG/L	2,3,7,8 TCDD(DIOXIN)
--	UG/L	CHLORDENE /2
--	UG/L	ALPHA-CHLORDENE /2
--	UG/L	GAMMA-CHLORDENE /2
--	UG/L	1-HYDROXYCHLORDENE /2
--	UG/L	GAMMA-CHLORDANE /2
--	UG/L	TRANS-NONACHLOR /2
--	UG/L	ALPHA-CHLORDANE /2
--	UG/L	CIS-NONACHLOR /2
0.1U	UG/L	METHOXYCHLOR
0.1U	UG/L	ENDRIN KETONE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
WATER

SAMPLE NO.: 85C6275 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-2
STORET STATION NO: 370230D

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4647 INORG SAMPLE NO.: MDA416
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND	
0.01U	UG/L	ALDRIN	
0.01U	UG/L	HEPTACHLOR	
0.01U	UG/L	HEPTACHLOR EPOXIDE	
0.01U	UG/L	ALPHA-BHC	
0.01U	UG/L	BETA-BHC	
0.01U	UG/L	GAMMA-BHC (LINDANE)	
0.01U	UG/L	DELTA-BHC	
0.01U	UG/L	ENDOSULFAN I (ALPHA)	
0.01U	UG/L	DIELDRIN	
0.1U	UG/L	4,4'-DDT (P,P'-DDT)	
0.01U	UG/L	4,4'-DDE (P,P'-DDE)	
0.01U	UG/L	4,4'-DDD (P,P'-DDD)	
0.01U	UG/L	ENDRIN	
0.01U	UG/L	ENDOSULFAN II (BETA)	
0.3U	UG/L	ENDOSULFAN SULFATE	
0.1U	UG/L	CHLORDANE (TECH. MIXTURE)	/1
0.3U	UG/L	PCB-1242 (AROCLOR 1242)	
0.3U	UG/L	PCB-1254 (AROCLOR 1254)	
0.3U	UG/L	PCB-1221 (AROCLOR 1221)	
0.3U	UG/L	PCB-1232 (AROCLOR 1232)	
0.3U	UG/L	PCB-1248 (AROCLOR 1248)	
0.3U	UG/L	PCB-1260 (AROCLOR 1260)	
0.3U	UG/L	PCB-1016 (AROCLOR 1016)	
0.3U	UG/L	TOXAPHENE	
0.02U	UG/L	ENDRIN ALDEHYDE	
NA	UG/L	2,3,7,8 TCDD(DIOXIN)	
--	UG/L	CHLORDENE	/2
--	UG/L	ALPHA-CHLORDENE	/2
--	UG/L	GAMMA-CHLORDENE	/2
--	UG/L	1-HYDROXYCHLORDENE	/2
--	UG/L	GAMMA-CHLORDANE	/2
--	UG/L	TRANS-NONACHLOR	/2
--	UG/L	ALPHA-CHLORDANE	/2
--	UG/L	CIS-NONACHLOR	/2
0.1U	UG/L	METHOXYCHLOR	
0.1U	UG/L	ENDRIN KETONE	

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
WATER

SAMPLE NO.: 85C6276 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-4
STORET STATION NO: 370230E

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4648 INORG SAMPLE NO.: MDA417
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
0.01U	UG/L	ALDRIN
0.01U	UG/L	HEPTACHLOR
0.01U	UG/L	HEPTACHLOR EPOXIDE
0.01U	UG/L	ALPHA-BHC
0.01U	UG/L	BETA-BHC
0.01U	UG/L	GAMMA-BHC (LINDANE)
0.01U	UG/L	DELTA-BHC
0.01U	UG/L	ENDOSULFAN I (ALPHA)
0.01U	UG/L	DIELDRIN
0.1U	UG/L	4,4'-DDT (P,P'-DDT)
0.01U	UG/L	4,4'-DDE (P,P'-DDE)
0.01U	UG/L	4,4'-DDD (P,P'-DDD)
0.01U	UG/L	ENDRIN
0.01U	UG/L	ENDOSULFAN II (BETA)
0.3U	UG/L	ENDOSULFAN SULFATE
0.1U	UG/L	CHLORDANE (TECH. MIXTURE) /1
0.3U	UG/L	PCB-1242 (AROCLOR 1242)
0.3U	UG/L	PCB-1254 (AROCLOR 1254)
0.3U	UG/L	PCB-1221 (AROCLOR 1221)
0.3U	UG/L	PCB-1232 (AROCLOR 1232)
0.3U	UG/L	PCB-1248 (AROCLOR 1248)
0.3U	UG/L	PCB-1260 (AROCLOR 1260)
0.3U	UG/L	PCB-1016 (AROCLOR 1016)
0.3U	UG/L	TOXAPHENE
0.1U	UG/L	ENDRIN ALDEHYDE
NA	UG/L	2,3,7,8 TCDD(DIOXIN)
--	UG/L	CHLORDENE /2
--	UG/L	ALPHA-CHLORDENE /2
--	UG/L	GAMMA-CHLORDENE /2
--	UG/L	1-HYDROXYCHLORDENE /2
--	UG/L	GAMMA-CHLORDANE /2
--	UG/L	TRANS-NONACHLOR /2
--	UG/L	ALPHA-CHLORDANE /2
--	UG/L	CIS-NONACHLOR /2
0.1U	UG/L	METHOXYCHLOR
0.1U	UG/L	ENDRIN KETONE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
FPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
WATER

SAMPLE NO.: 85C6273 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-GW-5
STORET STATION NO: 370230F

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHH
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4645 INORG SAMPLE NO.: MDA414
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND	
0.01U	UG/L	ALDRIN	
0.01U	UG/L	HEPTACHLOR	
0.01U	UG/L	HEPTACHLOR EPOXIDE	
0.01U	UG/L	ALPHA-BHC	
0.01U	UG/L	BETA-BHC	
0.01U	UG/L	GAMMA-BHC (LINDANE)	
0.01U	UG/L	DELTA-BHC	
0.01U	UG/L	ENDOSULFAN I (ALPHA)	
0.01U	UG/L	DIELDRIN	
0.1U	UG/L	4,4'-DDT (P,P'-DDT)	
0.01U	UG/L	4,4'-DDE (P,P'-DDE)	
0.01U	UG/L	4,4'-DDD (P,P'-DDD)	
0.01U	UG/L	ENDRIN	
0.01U	UG/L	ENDOSULFAN II (BETA)	
0.3U	UG/L	ENDOSULFAN SULFATE	
0.1U	UG/L	CHLORDANE (TECH. MIXTURE)	/1
0.1U	UG/L	PCB-1242 (AROCLOR 1242)	
0.3U	UG/L	PCB-1254 (AROCLOR 1254)	
0.3U	UG/L	PCB-1221 (AROCLOR 1221)	
0.1U	UG/L	PCB-1232 (AROCLOR 1232)	
0.1U	UG/L	PCB-1248 (AROCLOR 1248)	
0.1U	UG/L	PCB-1260 (AROCLOR 1260)	
0.3U	UG/L	PCB-1016 (AROCLOR 1016)	
0.1U	UG/L	TOXAPHENE	
0.1U	UG/L	ENDRIN ALDEHYDE	
NA	UG/L	2,3,7,8 TCDD(DIOXIN)	
--	UG/L	CHLORDENE	/2
--	UG/L	ALPHA-CHLORDENE	/2
--	UG/L	GAMMA-CHLORDENE	/2
--	UG/L	1-HYDROXYCHLORDENE	/2
--	UG/L	GAMMA-CHLORDANE	/2
--	UG/L	TRANS-NONACHLOR	/2
--	UG/L	ALPHA-CHLORDANE	/2
--	UG/L	CIS-NONACHLOR	/2
0.1U	UG/L	METHOXYCHLOR	
0.1U	UG/L	ENDRIN KETONE	

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
FPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
WATER

SAMPLE NO.: 85C6270 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-AW-01
STORET STATION NO: 370230A

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA657 INORG SAMPLE NO.: MDA419
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO STFF SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
0.01U	UG/L	ALDRIN
0.01U	UG/L	HEPTACHLOR
0.01U	UG/L	HEPTACHLOR EPOXIDE
0.01U	UG/L	ALPHA-BHC
0.01U	UG/L	BETA-BHC
0.01U	UG/L	GAMMA-BHC (LINDANE)
0.01U	UG/L	DELTA-BHC
0.01U	UG/L	ENDOSULFAN I (ALPHA)
0.01U	UG/L	DIELDRIN
0.1U	UG/L	4,4'-DDT (P,P'-DDT)
0.01U	UG/L	4,4'-DDE (P,P'-DDE)
0.01U	UG/L	4,4'-DDD (P,P'-DDD)
0.01U	UG/L	ENDRIN
0.01U	UG/L	ENDOSULFAN II (BETA)
0.3U	UG/L	ENDOSULFAN SULFATE
0.1U	UG/L	CHLORDANE (TECH. MIXTURE) /1
0.1U	UG/L	PCB-1242 (AROCLOR 1242)
0.3U	UG/L	PCB-1254 (AROCLOR 1254)
0.3U	UG/L	PCB-1221 (AROCLOR 1221)
0.1U	UG/L	PCB-1232 (AROCLOR 1232)
0.1U	UG/L	PCB-1248 (AROCLOR 1248)
0.1U	UG/L	PCB-1260 (AROCLOR 1260)
0.3U	UG/L	PCB-1016 (AROCLOR 1016)
0.1U	UG/L	TOXAPHENE
0.1U	UG/L	ENDRIN ALDEHYDE
NA	UG/L	2,3,7,8 TCDD(DIOXIN)
--	UG/L	CHLORDENE /2
--	UG/L	ALPHA-CHLORDENE /2
--	UG/L	GAMMA-CHLORDENE /2
--	UG/L	1-HYDROXYCHLORDENE /2
--	UG/L	GAMMA-CHLORDANE /2
--	UG/L	TRANS-NONACHLOR /2
--	UG/L	ALPHA-CHLORDANE /2
--	UG/L	CIS-NONACHLOR /2
0.1U	UG/L	METHOXYCHLOR
0.1U	UG/L	ENDRIN KETONE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-F&D,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
WATER

SAMPLE NO.: 85C6269 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RB-W
STORET STATION NO: 370230G

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA656 INORG SAMPLE NO.: MDA418
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
0.01U	UG/L	ALDRIN
0.01U	UG/L	HEPTACHLOR
0.01U	UG/L	HEPTACHLOR EPOXIDE
0.01U	UG/L	ALPHA-BHC
0.01U	UG/L	BETA-BHC
0.01U	UG/L	GAMMA-BHC (LINDANE)
0.01U	UG/L	DELTA-BHC
0.01U	UG/L	ENDOSULFAN I (ALPHA)
0.01U	UG/L	DIELDRIN
0.01U	UG/L	4,4'-DDT (P,P'-DDT)
0.01U	UG/L	4,4'-DDE (P,P'-DDE)
0.01U	UG/L	4,4'-DDD (P,P'-DDD)
0.01U	UG/L	ENDRIN
0.01U	UG/L	ENDOSULFAN II (BETA)
0.3U	UG/L	ENDOSULFAN SULFATE
0.1U	UG/L	CHLORDANE (TECH. MIXTURE) /1
0.3U	UG/L	PCB-1242 (AROCLOR 1242)
0.3U	UG/L	PCB-1254 (AROCLOR 1254)
0.3U	UG/L	PCB-1221 (AROCLOR 1221)
0.3U	UG/L	PCB-1232 (AROCLOR 1232)
0.3U	UG/L	PCB-1248 (AROCLOR 1248)
0.3U	UG/L	PCB-1260 (AROCLOR 1260)
0.3U	UG/L	PCB-1016 (AROCLOR 1016)
0.1U	UG/L	TOXAPHENE
0.06U	UG/L	ENDRIN ALDEHYDE
NA	UG/L	2,3,7,8 TCDD(DIOXIN)
--	UG/L	CHLORDENE /2
--	UG/L	ALPHA-CHLORDENE /2
--	UG/L	GAMMA-CHLORDENE /2
--	UG/L	1-HYDROXYCHLORDENE /2
--	UG/L	GAMMA-CHLORDANE /2
--	UG/L	TRANS-NONACHLOR /2
--	UG/L	ALPHA-CHLORDANE /2
--	UG/L	CIS-NONACHLOR /2
0.06U	UG/L	METHOXYCHLOR
0.06U	UG/L	ENDRIN KETONE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
WATER

SAMPLE NO.: 85C6268 SAMPLE TYPE: MONWL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-W1
STORET STATION NO: 3702308

SAMPLE COLLECTION: START DATE/TIME 01/08/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA494 INORG SAMPLE NO.: MDA420
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
0.01U	UG/L	ALDRIN
0.01U	UG/L	HEPTACHLOR
0.01U	UG/L	HEPTACHLOR EPOXIDE
0.01U	UG/L	ALPHA-BHC
0.01U	UG/L	BETA-BHC
0.01U	UG/L	GAMMA-BHC (LINDANE)
0.01U	UG/L	DELTA-BHC
0.01U	UG/L	ENDOSULFAN I (ALPHA)
0.01U	UG/L	DIELDRIN
0.03U	UG/L	4,4'-DDT (P,P'-DDT)
0.01U	UG/L	4,4'-DDE (P,P'-DDE)
0.01U	UG/L	4,4'-DDD (P,P'-DDD)
0.01U	UG/L	ENDRIN
0.01U	UG/L	ENDOSULFAN II (BETA)
0.3U	UG/L	ENDOSULFAN SULFATE
0.1U	UG/L	CHLORDANE (TECH. MIXTURE) /1
0.3U	UG/L	PCB-1242 (AROCLOR 1242)
0.3U	UG/L	PCB-1254 (AROCLOR 1254)
0.3U	UG/L	PCB-1221 (AROCLOR 1221)
0.3U	UG/L	PCB-1232 (AROCLOR 1232)
0.3U	UG/L	PCB-1248 (AROCLOR 1248)
0.3U	UG/L	PCB-1260 (AROCLOR 1260)
0.3U	UG/L	PCB-1016 (AROCLOR 1016)
0.1U	UG/L	TOXAPHENE
0.1U	UG/L	ENDRIN ALDEHYDE
NA	UG/L	2,3,7,8 TCDD(DIOXIN)
--	UG/L	CHLORDENE /2
--	UG/L	ALPHA-CHLORDENE /2
--	UG/L	GAMMA-CHLORDENE /2
--	UG/L	1-HYDROXYCHLORDENE /2
--	UG/L	GAMMA-CHLORDANE /2
--	UG/L	TRANS-NONACHLOR /2
--	UG/L	ALPHA-CHLORDANE /2
--	UG/L	CIS-NONACHLOR /2
0.1U	UG/L	METHOXYCHLOR
0.1U	UG/L	ENDRIN KETONE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER	STORET
0.88	MG/KG	CYANIDE	00721

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: R5C6279 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-JA-C1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA497 INORG SAMPLE NO.: MDA423
CONTRACT LABORATORY(ORGANIC): DATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6280 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LA-C2
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA498 INORG SAMPLE NO.: MDA474
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER	STORET
0.41	MG/KG	CYANIDE	00721

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: H5C6281 SAMPLE TYPE: SOIL

PROJECT NO.: H5-04H PROGRAM ELEMENT: HSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: 5WP-LB-C3
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00
COLLECTED BY: H HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: WAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 1454 ORG SAMPLE NO: DA499 INORG SAMPLE NO.: MDA425
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLD DATA VERIFIED BY: WAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER	STORET
0.11	MG/KG	CYANIDE	00721

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6284 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: HSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: S-P-LC-C4
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4644 INORG SAMPLE NO.: MDA413
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER
0.130	MG/KG	CYANIDE

STORET
00721

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER	STORET
0.22	MG/KG	CYANIDE	00721

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: H5C627H SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, 400D PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SMP-RH-S
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: R HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA496 INORG SAMPLE NO.: MDA422
CONTRACT LABORATORY(ORGANIC): DATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

03/26/85

SPECIFIED ANALYSIS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: H5C6277 SAMPLE TYPE: SOIL

PROJECT NO.: H5-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-81
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA495 INORG SAMPLE NO.: HDA421
CONTRACT LABORATORY(ORGANIC): ORTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	PARAMETER	STORET
0.43	MG/KG	CYANIDE	00721

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6279 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-JA-C1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA497 INORG SAMPLE NO.: MDA423
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
6U	MG/KG	SILVER
10	MG/KG	ARSENIC
NA	MG/KG	BORON
100U	MG/KG	BARIUM
2U	MG/KG	BERYLLIUM
1U	MG/KG	CADMIUM
20U	MG/KG	COBALT
6U	MG/KG	CHROMIUM
40	MG/KG	COPPER
NA	MG/KG	MOLYBDENUM
10U	MG/KG	NICKEL
12	MG/KG	LEAD
40U	MG/KG	ANTIMONY
4U	MG/KG	SELENIUM
20U	MG/KG	TIN
NA	MG/KG	STRONTIUM
NA	MG/KG	TELLURIUM
NA	MG/KG	TITANIUM
9U	MG/KG	THALLIUM
6U	MG/KG	VANADIUM
NA	MG/KG	YTTRIUM
10U	MG/KG	ZINC
NA	MG/KG	ZIRCONIUM
0.06U	MG/KG	MERCURY
2600	MG/KG	ALUMINUM
40	MG/KG	MANGANESE
4000	MG/KG	CALCIUM
1000U	MG/KG	MAGNESIUM
4800	MG/KG	IRON
3000U	MG/KG	SODIUM
1000U	MG/KG	POTASSIUM
20	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6280 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LA-C2
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: H HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA498 INORG SAMPLE NO.: MDA424
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLM SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
70	MG/KG	SILVER
610	MG/KG	ARSENIC
NA	MG/KG	BORON
1000	MG/KG	BARIUM
2U	MG/KG	BERYLLIUM
1U	MG/KG	CADMIUM
20U	MG/KG	COBALT
390	MG/KG	CHROMIUM
620	MG/KG	COPPER
NA	MG/KG	MOLYBDENUM
10U	MG/KG	NICKEL
150	MG/KG	LEAD
40U	MG/KG	ANTIMONY
4U	MG/KG	SELENIUM
30U	MG/KG	TIN
NA	MG/KG	STRONTIUM
NA	MG/KG	TELLURIUM
NA	MG/KG	TITANIUM
9U	MG/KG	THALLIUM
20	MG/KG	VANADIUM
NA	MG/KG	YTTRIUM
75	MG/KG	ZINC
NA	MG/KG	ZIRCONIUM
0.48	MG/KG	MERCURY
4300	MG/KG	ALUMINUM
100	MG/KG	MANGANESE
12000	MG/KG	CALCIUM
1000U	MG/KG	MAGNESIUM
12000	MG/KG	IRON
3000U	MG/KG	SODIUM
1000U	MG/KG	POTASSIUM
27	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: R5C6281 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LB-C3
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: HAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA499 INORG SAMPLE NO.: MDA425
CONTRACT LABORATORY(ORGANIC): UNIL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: HAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
50	MG/KG	SILVER
10	MG/KG	ARSENIC
NA	MG/KG	BORON
1000	MG/KG	BARIUM
20	MG/KG	BERYLLIUM
10	MG/KG	CADMIUM
200	MG/KG	COBALT
50	MG/KG	CHROMIUM
30	MG/KG	COPPER
NA	MG/KG	MOLYBDENUM
100	MG/KG	NICKEL
33	MG/KG	LEAD
300	MG/KG	ANTIMONY
30	MG/KG	SELENIUM
200	MG/KG	TIN
NA	MG/KG	STRONTIUM
NA	MG/KG	TELLURIUM
NA	MG/KG	TITANIUM
70	MG/KG	THALLIUM
50	MG/KG	VANADIUM
NA	MG/KG	YTTRIUM
20	MG/KG	ZINC
NA	MG/KG	ZIRCONIUM
0.050	MG/KG	MERCURY
2100	MG/KG	ALUMINUM
52	MG/KG	MANGANESE
6300	MG/KG	CALCIUM
10000	MG/KG	MAGNESIUM
5800	MG/KG	IRON
30000	MG/KG	SODIUM
10000	MG/KG	POTASSIUM
5	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6281 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SHP-LC-C4
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: R HANSEN. RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4644 INORG SAMPLE NO.: MDA413
CONTRACT LABORATORY(ORGANIC): ORFL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLH SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
6U	MG/KG	SILVER
20	MG/KG	ARSENIC
NA	MG/KG	BORON
100U	MG/KG	BARIUM
2U	MG/KG	BERYLLIUM
1U	MG/KG	CADMIUM
20U	MG/KG	COBALT
10	MG/KG	CHROMIUM
60	MG/KG	COPPER
NA	MG/KG	MOLYBDENUM
10U	MG/KG	NICKEL
61	MG/KG	LEAD
40U	MG/KG	ANTIMONY
4U	MG/KG	SELENIUM
20U	MG/KG	TIN
NA	MG/KG	STRONTIUM
NA	MG/KG	TELLURIUM
NA	MG/KG	TITANIUM
9U	MG/KG	THALLIUM
6U	MG/KG	VANADIUM
NA	MG/KG	YTTRIUM
87	MG/KG	ZINC
NA	MG/KG	ZIRCONIUM
0.45	MG/KG	MERCURY
1700	MG/KG	ALUMINUM
50	MG/KG	MANGANESE
2000	MG/KG	CALCIUM
10000	MG/KG	MAGNESIUM
6600	MG/KG	IRON
3000U	MG/KG	SODIUM
1000U	MG/KG	POTASSIUM
20	%	MOISTURE

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: H5C6278 SAMPLE TYPE: SOIL

PROJECT NO.: H5-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RB-S
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: H HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA496 INORG SAMPLE NO.: MDA422
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLR SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
5U	MG/KG	SILVER
10U	MG/KG	ARSENIC
NA	MG/KG	BORON
1000	MG/KG	BARIUM
2U	MG/KG	BERYLLIUM
1U	MG/KG	CADMIUM
20U	MG/KG	COBALT
5U	MG/KG	CHROMIUM
5U	MG/KG	COPPER
NA	MG/KG	MOLYBDENUM
10U	MG/KG	NICKEL
15	MG/KG	LEAD
30U	MG/KG	ANTIMONY
3U	MG/KG	SELENIUM
20U	MG/KG	TIN
NA	MG/KG	STRONTIUM
NA	MG/KG	TELLURIUM
NA	MG/KG	TITANIUM
7U	MG/KG	THALLIUM
5U	MG/KG	VANADIUM
NA	MG/KG	YTTRIUM
10U	MG/KG	ZINC
NA	MG/KG	ZIRCONIUM
0.05U	MG/KG	MERCURY
750	MG/KG	ALUMINUM
20	MG/KG	MANGANESE
5000	MG/KG	CALCIUM
10000	MG/KG	MAGNESIUM
1400	MG/KG	IRON
30000	MG/KG	SODIUM
10000	MG/KG	POTASSIUM
7	%	MOISTURE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

03/26/85

METALS
DATA REPORTING SHEET
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6277 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, AOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: S-P-BK-S1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MAW
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA495 INORG SAMPLE NO.: MDA421
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLH SAMPLE DATA VERIFIED BY: MAW

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	ELEMENT
7U	MG/KG	SILVER
10U	MG/KG	ARSENIC
NA	MG/KG	BORON
100U	MG/KG	BARIUM
2U	MG/KG	BERYLLIUM
1U	MG/KG	CADMIUM
20U	MG/KG	COBALT
7U	MG/KG	CHROMIUM
7U	MG/KG	COPPER
NA	MG/KG	MOLYBDENUM
10U	MG/KG	NICKEL
6	MG/KG	LEAD
40U	MG/KG	ANTIMONY
4U	MG/KG	SELENIUM
30U	MG/KG	TIN
NA	MG/KG	STRONTIUM
NA	MG/KG	TELLURIUM
NA	MG/KG	TITANIUM
10U	MG/KG	THALLIUM
7U	MG/KG	VANADIUM
NA	MG/KG	YTTRIUM
10U	MG/KG	ZINC
NA	MG/KG	ZIRCONIUM
0.07U	MG/KG	MERCURY
17U	MG/KG	ALUMINUM
10U	MG/KG	MANGANESE
700U	MG/KG	CALCIUM
1000U	MG/KG	MAGNESIUM
93U	MG/KG	IRON
4000U	MG/KG	SODIUM
1000U	MG/KG	POTASSIUM
31	%	MOISTURE

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6279 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-JA-C1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA497 INORG SAMPLE NO.: MDA423
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/KG	ACROLEIN
NA	UG/KG	ACRYLONITRILE
5U	UG/KG	CHLOROMETHANE
5U	UG/KG	BROMOMETHANE
10U	UG/KG	VINYL CHLORIDE
5U	UG/KG	CHLOROETHANE
5U	UG/KG	METHYLENE CHLORIDE
5U	UG/KG	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/KG	1,1-DICHLOROETHANE
5U	UG/KG	TRANS-1,2-DICHLOROETHENE
5U	UG/KG	CHLOROFORM
5U	UG/KG	1,2-DICHLOROETHANE
5U	UG/KG	1,1,1-TRICHLOROETHANE
5U	UG/KG	CARBON TETRACHLORIDE
5U	UG/KG	BROMODICHLOROMETHANE
5U	UG/KG	1,2-DICHLOROPROPANE
5U	UG/KG	TRANS-1,3-DICHLOROPROPENE
5U	UG/KG	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/KG	BENZENE
10U	UG/KG	DIBROMOCHLOROMETHANE
5U	UG/KG	1,1,2-TRICHLOROETHANE
5U	UG/KG	CIS-1,3-DICHLOROPROPENE
10U	UG/KG	2-CHLOROETHYLVINYL ETHER
5U	UG/KG	BROMOFORM
5U	UG/KG	1,1,2,2-TETRACHLOROETHANE
11U	UG/KG	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
10U	UG/KG	TOLUENE
10U	UG/KG	CHLOROBENZENE
5U	UG/KG	ETHYL BENZENE
5U	UG/KG	M-XYLENE
5U	UG/KG	O&P-XYLENE(MIXED)
7.7	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6280 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LA-C2
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA498 INORG SAMPLE NO.: MDA424
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/KG	ACROLEIN
NA	UG/KG	ACRYLONITRILE
5U	UG/KG	CHLOROMETHANE
5U	UG/KG	BROMOMETHANE
10U	UG/KG	VINYL CHLORIDE
5U	UG/KG	CHLOROETHANE
5U	UG/KG	METHYLENE CHLORIDE
5U	UG/KG	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/KG	1,1-DICHLOROETHANE
5U	UG/KG	TRANS-1,2-DICHLOROETHENE
5U	UG/KG	CHLOROFORM
5U	UG/KG	1,2-DICHLOROETHANE
5U	UG/KG	1,1,1-TRICHLOROETHANE
5U	UG/KG	CARBON TETRACHLORIDE
5U	UG/KG	BROMODICHLOROMETHANE
10U	UG/KG	1,2-DICHLOROPROPANE
5U	UG/KG	TRANS-1,3-DICHLOROPROPENE
5U	UG/KG	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/KG	BENZENE
10U	UG/KG	DIBROMOCHLOROMETHANE
5U	UG/KG	1,1,2-TRICHLOROETHANE
5U	UG/KG	CIS-1,3-DICHLOROPROPENE
10U	UG/KG	2-CHLOROETHYLVINYL ETHER
5U	UG/KG	BROMOFORM
12U	UG/KG	1,1,2,2-TETRACHLOROETHANE
5U	UG/KG	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
10U	UG/KG	TOLUENE
10U	UG/KG	CHLOROBENZENE
5U	UG/KG	ETHYL BENZENE
10U	UG/KG	M-XYLENE
10U	UG/KG	O&P-XYLENE(MIXED)
16	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6281 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LR-C3
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALITICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA499 INORG SAMPLE NO.: MDA425
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/KG	ACROLEIN
NA	UG/KG	ACRYLONITRILE
5U	UG/KG	CHLOROMETHANE
5U	UG/KG	BROMOMETHANE
10U	UG/KG	VINYL CHLORIDE
5U	UG/KG	CHLOROETHANE
5U	UG/KG	METHYLENE CHLORIDE
5U	UG/KG	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/KG	1,1-DICHLOROETHANE
5U	UG/KG	TRANS-1,2-DICHLOROETHENE
5U	UG/KG	CHLOROFORM
5U	UG/KG	1,2-DICHLOROETHANE
5U	UG/KG	1,1,1-TRICHLOROETHANE
5U	UG/KG	CARBON TETRACHLORIDE
5U	UG/KG	BROMODICHLOROMETHANE
5U	UG/KG	1,2-DICHLOROPROPANE
5U	UG/KG	TRANS-1,3-DICHLOROPROPENE
5U	UG/KG	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/KG	BENZENE
10U	UG/KG	DIBROMOCHLOROMETHANE
5U	UG/KG	1,1,2-TRICHLOROETHANE
5U	UG/KG	CIS-1,3-DICHLOROPROPENE
10U	UG/KG	2-CHLOROETHYLVINYL ETHER
5U	UG/KG	BROMOFORM
5U	UG/KG	1,1,2,2-TETRACHLOROETHANE
11U	UG/KG	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
10U	UG/KG	TOLUENE
10U	UG/KG	CHLOROBENZENE
5U	UG/KG	ETHYL BENZENE
5U	UG/KG	M-XYLENE
5U	UG/KG	OLP-XYLENE(MIXED)
5.8	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6284 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LC-C4
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4644 INORG SAMPLE NO.: MDA413
CONTRACT LABORATORY(ORGANIC): UNTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/KG	ACROLEIN
NA	UG/KG	ACRYLONITRILE
5U	UG/KG	CHLOROMETHANE
5U	UG/KG	BROMOMETHANE
10U	UG/KG	VINYL CHLORIDE
5U	UG/KG	CHLOROETHANE
5U	UG/KG	METHYLENE CHLORIDE
10U	UG/KG	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
5U	UG/KG	1,1-DICHLOROETHANE
5U	UG/KG	TRANS-1,2-DICHLOROETHENE
5U	UG/KG	CHLOROFORM
5U	UG/KG	1,2-DICHLOROETHANE
5U	UG/KG	1,1,1-TRICHLOROETHANE
5U	UG/KG	CARBON TETRACHLORIDE
10U	UG/KG	BROMODICHLOROMETHANE
5U	UG/KG	1,2-DICHLOROPROPANE
5U	UG/KG	TRANS-1,3-DICHLOROPROPENE
5U	UG/KG	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/KG	BENZENE
5U	UG/KG	DIBROMOCHLOROMETHANE
5U	UG/KG	1,1,2-TRICHLOROETHANE
5U	UG/KG	CIS-1,3-DICHLOROPROPENE
10U	UG/KG	2-CHLOROETHYLVINYL ETHER
5U	UG/KG	BROMOFORM
5U	UG/KG	1,1,2,2-TETRACHLOROETHANE
11U	UG/KG	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
5U	UG/KG	TOLUENE
5U	UG/KG	CHLOROBENZENE
5U	UG/KG	ETHYL BENZENE
5U	UG/KG	M-XYLENE
5U	UG/KG	O&P-XYLENE(MIXED)
8.3	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: R5C627R SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RR-S
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA496 INORG SAMPLE NO.: MDA422
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/KG	ACROLEIN
NA	UG/KG	ACRYLONITRILE
5U	UG/KG	CHLOROMETHANE
5U	UG/KG	BROMOMETHANE
10U	UG/KG	VINYL CHLORIDE
5U	UG/KG	CHLOROETHANE
5U	UG/KG	METHYLENE CHLORIDE
5U	UG/KG	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/KG	1,1-DICHLOROETHANE
5U	UG/KG	TRANS-1,2-DICHLOROETHENE
5U	UG/KG	CHLOROFORM
5U	UG/KG	1,2-DICHLOROETHANE
5U	UG/KG	1,1,1-TRICHLOROETHANE
5U	UG/KG	CARBON TETRACHLORIDE
5U	UG/KG	BROMODICHLOROMETHANE
10U	UG/KG	1,2-DICHLOROPROPANE
5U	UG/KG	TRANS-1,3-DICHLOROPROPENE
5U	UG/KG	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/KG	BENZENE
10U	UG/KG	DIBROMOCHLOROMETHANE
5U	UG/KG	1,1,2-TRICHLOROETHANE
5U	UG/KG	CIS-1,3-DICHLOROPROPENE
10U	UG/KG	2-CHLOROETHYLVINYL ETHER
5U	UG/KG	BROMOFORM
5U	UG/KG	1,1,2,2-TETRACHLOROETHANE
11U	UG/KG	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
10U	UG/KG	TOLUENE
10U	UG/KG	CHLOROBENZENE
10U	UG/KG	ETHYL BENZENE
5U	UG/KG	M-XYLENE
5U	UG/KG	O&P-XYLENE(MIXED)
12	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6277 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-S1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA495 INORG SAMPLE NO.: MDA421
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB SAMPLE DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
NA	UG/KG	ACROLEIN
NA	UG/KG	ACRYLONITRILE
5U	UG/KG	CHLOROMETHANE
5U	UG/KG	BROMOMETHANE
5U	UG/KG	VINYL CHLORIDE
5U	UG/KG	CHLOROETHANE
5U	UG/KG	METHYLENE CHLORIDE
5U	UG/KG	1,1-DICHLOROETHENE(1,1-DICHLOROETHYLENE)
10U	UG/KG	1,1-DICHLOROETHANE
5U	UG/KG	TRANS-1,2-DICHLOROETHENE
5U	UG/KG	CHLOROFORM
5U	UG/KG	1,2-DICHLOROETHANE
10U	UG/KG	1,1,1-TRICHLOROETHANE
5U	UG/KG	CARBON TETRACHLORIDE
5U	UG/KG	BROMODICHLOROMETHANE
10U	UG/KG	1,2-DICHLOROPROPANE
5U	UG/KG	TRANS-1,3-DICHLOROPROPENE
5U	UG/KG	TRICHLOROETHENE(TRICHLOROETHYLENE)
5U	UG/KG	BENZENE
10U	UG/KG	DIBROMOCHLOROMETHANE
5U	UG/KG	1,1,2-TRICHLOROETHANE
5U	UG/KG	CIS-1,3-DICHLOROPROPENE
11U	UG/KG	2-CHLOROETHYLVINYL ETHER
5U	UG/KG	BROMOFORM
5U	UG/KG	1,1,2,2-TETRACHLOROETHANE
25U	UG/KG	TETRACHLOROETHENE(TETRACHLOROETHYLENE)
10U	UG/KG	TOLUENE
10U	UG/KG	CHLOROBENZENE
5U	UG/KG	ETHYL BENZENE
10U	UG/KG	M-XYLENE
10U	UG/KG	O&P-XYLENE(MIXED)
32	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD, REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6279 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-JA-C1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA497 INORG SAMPLE NO.: MDA423
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
16U	ACETONE
10U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
10U	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6280 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LA-C2
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA498 INORG SAMPLE NO.: MDA474
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLH DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
20UJ	ACETONE
10U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
10U	METHYL ISOBUTYL KETONE
10U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
10JN	FLUOROTRICHLOROMETHANE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6281 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LR-C3
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA499 INORG SAMPLE NO.: MDA425
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
16U	ACETONE
10U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
10U	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
10JN	FLUOROTRICHLOROMETHANE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6284 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LC-C4
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4644 INORG SAMPLE NO.: MDA413
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
16U	ACETONE
10U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
10U	METHYL ISOBUTYL KETONE
5U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE
7JN	PINENE
6JN	TRIMETHYLCYCLOHEXANONE

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6278 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RR-S
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA496 INORG SAMPLE NO.: MDA422
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW,
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
20U	ACETONE
10U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
10U	METHYL ISOBUTYL KETONE
10U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PURGEABLE ORGANICS ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6277 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RK-S1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA495 INORG SAMPLE NO.: MDA471
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
25U	ACETONE
10U	METHYL ETHYL KETONE
5U	CARBON DISULFIDE
10U	METHYL BUTYL KETONE
10U	METHYL ISOBUTYL KETONE
10U	STYRENE
5U	VINYL ACETATE
NA	DICHLORODIFLUOROMETHANE
NA	FLUOROTRICHLOROMETHANE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NA1-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85

EXTRACTABLE ORGANIC ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6279 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-JA-C1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA497 INORG SAMPLE NO.: MDA423
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
100000U	UG/KG	N-NITROSODIMETHYLAMINE
NA	UG/KG	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
20000U	UG/KG	BENZIDINE
1000U	UG/KG	1,3-DICHLOROBENZENE
1000U	UG/KG	1,4-DICHLOROBENZENE
1000U	UG/KG	1,2-DICHLOROBENZENE
5000U	UG/KG	BIS(2-CHLOROETHYL) ETHER
5000U	UG/KG	HEXACHLOROETHANE
10000U	UG/KG	BIS(2-CHLOROISOPROPYL) ETHER
100000U	UG/KG	N-NITROSODI-N-PROPYLAMINE
2000U	UG/KG	NITROBENZENE
2000U	UG/KG	HEXACHLOROBUTADIENE
2000U	UG/KG	1,2,4-TRICHLOROBENZENE
1000U	UG/KG	NAPHTHALENE
5000U	UG/KG	BIS(2-CHLOROETHOXY) METHANE
2000U	UG/KG	ISOPHORONE
110000U	UG/KG	HEXACHLOROCYCLOPENTADIENE (HCCP)
400J	UG/KG	2-CHLORONAPHTHALENE
1000U	UG/KG	ACENAPHTHYLENE
5000U	UG/KG	ACENAPHTHENE
1000U	UG/KG	DIMETHYL PHTHALATE
1000U	UG/KG	2,4-DINITROTOLUENE
3000U	UG/KG	2,6-DINITROTOLUENE
1000U	UG/KG	4-CHLOROPHENYL PHENYL ETHER
1000U	UG/KG	FLUORENE
3000U	UG/KG	DIETHYL PHTHALATE
2000U	UG/KG	N-NITROSODIPHENLYAMINE/DIPHENYLAMINE
3000U	UG/KG	HEXACHLOROBENZENE (HCB)
3000U	UG/KG	4-BROMOPHENYL PHENYL ETHER
4400	UG/KG	PHENANTHRENE
2000J	UG/KG	ANTHRACENE
5000U	UG/KG	DI-N-BUTYLPHTHALATE
15000	UG/KG	FLUORANTHENE
12000	UG/KG	PYRENE
4000U	UG/KG	BENZYL BUTYL PHTHALATE
3000U	UG/KG	BIS(2-ETHYLHEXYL) PHTHALATE
2700	UG/KG	BENZO(A)ANTHRACENE
3000U	UG/KG	CHRYSENE
20000U	UG/KG	3,3'-DICHLOROBENZIDINE
100000U	UG/KG	DI-N-OCTYLPHTHALATE
5600	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
5600	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
4600	UG/KG	BENZO-A-PYRENE
11000U	UG/KG	INDENO (1,2,3-CD) PYRENE
11000U	UG/KG	DIBENZO(A,H)ANTHRACENE
100000U	UG/KG	BENZO(GHI)PERYLENE
1000U	UG/KG	2-CHLOROPHENOL
2000U	UG/KG	2-NITROPHENOL
5000U	UG/KG	PHENOL
4000U	UG/KG	2,4-DIMETHYLPHENOL
2000U	UG/KG	2,4-DICHLOROPHENOL
1000U	UG/KG	2,4,6-TRICHLOROPHENOL
3000U	UG/KG	4-CHLORO-3-METHYLPHENOL
11000U	UG/KG	2,4-DINITROPHENOL
4000U	UG/KG	2-METHYL-4,6-DINITROPHENOL
4000U	UG/KG	PENTACHLOROPHENOL
12000U	UG/KG	4-NITROPHENOL
7.7	%	MOISTURE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6280 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LA-C2
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA498 INORG SAMPLE NO.: MDA424
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
8000U	UG/KG	N-NITROSODIMETHYLAMINE
NA	UG/KG	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
11000U	UG/KG	BENZIDINE
1000U	UG/KG	1,3-DICHLOROBENZENE
1000U	UG/KG	1,4-DICHLOROBENZENE
1000U	UG/KG	1,2-DICHLOROBENZENE
5000U	UG/KG	BIS(2-CHLOROETHYL) ETHER
4000U	UG/KG	HEXACHLOROETHANE
8000U	UG/KG	BIS(2-CHLOROISOPROPYL) ETHER
8000U	UG/KG	N-NITROSODI-N-PROPYLAMINE
2000U	UG/KG	NITROBENZENE
4000U	UG/KG	HEXACHLOROBUTADIENE
2000U	UG/KG	1,2,4-TRICHLOROBENZENE
1200	UG/KG	NAPHTHALENE
2000U	UG/KG	BIS(2-CHLOROETHOXY) METHANE
2000U	UG/KG	ISOPHORONE
12000U	UG/KG	HEXACHLOROCYCLOPENTADIENE (HCCP)
800J	UG/KG	2-CHLORONAPHTHALENE
1500	UG/KG	ACENAPHTHYLENE
5000U	UG/KG	ACENAPHTHENE
1000U	UG/KG	DIMETHYL PHTHALATE
2000U	UG/KG	2,4-DINITROTOLUENE
3000U	UG/KG	2,6-DINITROTOLUENE
1000U	UG/KG	4-CHLOROPHENYL PHENYL ETHER
1000U	UG/KG	FLUORENE
3000U	UG/KG	DIETHYL PHTHALATE
2000U	UG/KG	N-NITROSODIPHENLYAMINE/DIPHENYLAMINE
3000U	UG/KG	HEXACHLOROBENZENE (HCB)
3000U	UG/KG	4-BROMOPHENYL PHENYL ETHER
5400	UG/KG	PHENANTHRENE
8200	UG/KG	ANTHRACENE
8000U	UG/KG	DI-N-BUTYLPHTHALATE
25000	UG/KG	FLUORANTHENE
22000	UG/KG	PYRENE
4000U	UG/KG	BENZYL BUTYL PHTHALATE
3000U	UG/KG	BIS(2-ETHYLHEXYL) PHTHALATE
11000	UG/KG	BENZO(A)ANTHRACENE
4000U	UG/KG	CHRYSENE
21000U	UG/KG	3,3'-DICHLOROBENZIDINE
10000U	UG/KG	DI-N-OCTYLPHTHALATE
14000	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
12000	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
11000	UG/KG	BENZO-A-PYRENE
12000U	UG/KG	INDENO (1,2,3-CD) PYRENE
12000U	UG/KG	DIBENZO(A,H)ANTHRACENE
7000U	UG/KG	BENZO(GHI)PERYLENE
1000U	UG/KG	2-CHLOROPHENOL
2000U	UG/KG	2-NITROPHENOL
3000U	UG/KG	PHENOL
4000U	UG/KG	2,4-DIMETHYLPHENOL
2000U	UG/KG	2,4-DICHLOROPHENOL
1000U	UG/KG	2,4,6-TRICHLOROPHENOL
3000U	UG/KG	4-CHLORO-3-METHYLPHENOL
12000U	UG/KG	2,4-DINITROPHENOL
4000U	UG/KG	2-METHYL-4,6-DINITROPHENOL
4000J	UG/KG	PENTACHLOROPHENOL
11000U	UG/KG	4-NITROPHENOL
16	%	MOISTURE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: RSC6281 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LR-C3
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA499 INORG SAMPLE NO.: MDA425
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A=AVERAGE VALUE *NA=NOT ANALYZED *NAI=INTERFERENCES
*J=ESTIMATED VALUE *N=PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K=ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L=ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U=MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
7000U	UG/KG	N-NITROSODIMETHYLAMINE
NA	UG/KG	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
12000U	UG/KG	BENZIDINE
1000U	UG/KG	1,3-DICHLOROBENZENE
1000U	UG/KG	1,4-DICHLOROBENZENE
1000U	UG/KG	1,2-DICHLOROBENZENE
4000U	UG/KG	BIS(2-CHLOROETHYL) ETHER
4000U	UG/KG	HEXACHLOROETHANE
7000U	UG/KG	BIS(2-CHLOROISOPROPYL) ETHER
6000U	UG/KG	N-NITROSODI-N-PROPYLAMINE
2000U	UG/KG	NITROBENZENE
5000U	UG/KG	HEXACHLOROBUTADIENE
2000U	UG/KG	1,2,4-TRICHLOROBENZENE
1000U	UG/KG	NAPHTHALENE
3000U	UG/KG	BIS(2-CHLOROETHOXY) METHANE
2000U	UG/KG	ISOPHORONE
10000U	UG/KG	HEXACHLOROCYCLOPENTADIENE (HCCP)
400J	UG/KG	2-CHLORONAPHTHALENE
1000J	UG/KG	ACENAPHTHYLENE
5000U	UG/KG	ACENAPHTHENE
1000U	UG/KG	DIMETHYL PHTHALATE
1000U	UG/KG	2,4-DINITROTOLUENE
3000U	UG/KG	2,6-DINITROTOLUENE
1000U	UG/KG	4-CHLOROPHENYL PHENYL ETHER
1000U	UG/KG	FLUORENE
3000U	UG/KG	DIETHYL PHTHALATE
2000U	UG/KG	N-NITROSODIPHENLYAMINE/DIPHENYLAMINE
2000U	UG/KG	HEXACHLOROBENZENE (HCB)
3000U	UG/KG	4-BROMOPHENYL PHENYL ETHER
1400	UG/KG	PHENANTHRENE
2000J	UG/KG	ANTHRACENE
10000U	UG/KG	DI-N-BUTYLPHTHALATE
10000	UG/KG	FLUORANTHENE
10000J	UG/KG	PYRENE
4000U	UG/KG	BENZYL BUTYL PHTHALATE
3000U	UG/KG	BIS(2-ETHYLHEXYL) PHTHALATE
3900	UG/KG	BENZO(A)ANTHRACENE
7100	UG/KG	CHRYSENE
20000U	UG/KG	3,3'-DICHLOROBENZIDINE
10000U	UG/KG	DI-N-OCTYLPHTHALATE
7300	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
6600	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
5800	UG/KG	BENZO-A-PYRENE
20000U	UG/KG	INDENO (1,2,3-CD) PYRENE
10000U	UG/KG	DIBENZO(A,H)ANTHRACENE
10000U	UG/KG	BENZO(GHI)PERYLENE
1000U	UG/KG	2-CHLOROPHENOL
2000U	UG/KG	2-NITROPHENOL
3000U	UG/KG	PHENOL
4000U	UG/KG	2,4-DIMETHYLPHENOL
2000U	UG/KG	2,4-DICHLOROPHENOL
1000U	UG/KG	2,4,6-TRICHLOROPHENOL
1000U	UG/KG	4-CHLORO-3-METHYLPHENOL
11000U	UG/KG	2,4-DINITROPHENOL
4000U	UG/KG	2-METHYL-4,6-DINITROPHENOL
4000U	UG/KG	PENTACHLOROPHENOL
12000U	UG/KG	4-NITROPHENOL
5.8	%	MOISTURE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85

EXTRACTABLE ORGANIC ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: ASC6284 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LC-C4
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4644 INORG SAMPLE NO.: MDA413
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
10000U	UG/KG	N-NITROSODIMETHYLAMINE
NA	UG/KG	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
12000U	UG/KG	BENZIDINE
1000U	UG/KG	1,3-DICHLOROBENZENE
1000U	UG/KG	1,4-DICHLOROBENZENE
1000U	UG/KG	1,2-DICHLOROBENZENE
4000U	UG/KG	BIS(2-CHLOROETHYL) ETHER
4000U	UG/KG	HEXACHLOROETHANE
7000U	UG/KG	BIS(2-CHLOROISOPROPYL) ETHER
7000U	UG/KG	N-NITROSODI-N-PROPYLAMINE
2000U	UG/KG	NITROBENZENE
5000U	UG/KG	HEXACHLOROBUTADIENE
2000U	UG/KG	1,2,4-TRICHLOROBENZENE
1000U	UG/KG	NAPHTHALENE
3000U	UG/KG	BIS(2-CHLOROETHOXY) METHANE
2000U	UG/KG	ISOPHORONE
11000U	UG/KG	HEXACHLOROCYCLOPENTADIENE (HCCP)
1000U	UG/KG	2-CHLORONAPHTHALENE
6300	UG/KG	ACENAPHTHYLENE
170000	UG/KG	ACENAPHTHENE
1000U	UG/KG	DIMETHYL PHTHALATE
1000U	UG/KG	2,4-DINITROTOLUENE
3000U	UG/KG	2,6-DINITROTOLUENE
1000U	UG/KG	4-CHLOROPHENYL PHENYL ETHER
170000	UG/KG	FLUORENE
4000U	UG/KG	DIETHYL PHTHALATE
4000U	UG/KG	N-NITROSODIPHENLYAMINE/DIPHENYLAMINE
4000U	UG/KG	HEXACHLOROBENZENE (HCB)
4000U	UG/KG	4-BROMOPHENYL PHENYL ETHER
390000	UG/KG	PHENANTHRENE
170000	UG/KG	ANTHRACENE
6500	UG/KG	DI-N-BUTYLPHTHALATE
29000	UG/KG	FLUORANTHENE
220000	UG/KG	PYRENE
4000U	UG/KG	BENZYL BUTYL PHTHALATE
4000U	UG/KG	BIS(2-ETHYLHEXYL) PHTHALATE
130000	UG/KG	BENZO(A)ANTHRACENE
120000	UG/KG	CHRYSENE
20000U	UG/KG	3,3'-DICHLOROBENZIDINE
10000U	UG/KG	DI-N-OCTYLPHTHALATE
48000	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
45000	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
37000	UG/KG	BENZO-A-PYRENE
10000J	UG/KG	INDENO (1,2,3-CD) PYRENE
11000U	UG/KG	DIBENZO(A,H)ANTHRACENE
9000	UG/KG	BENZO(GHI)PERYLENE
1000U	UG/KG	2-CHLOROPHENOL
2000U	UG/KG	2-NITROPHENOL
4000U	UG/KG	PHENOL
4000U	UG/KG	2,4-DIMETHYLPHENOL
2000U	UG/KG	2,4-DICHLOROPHENOL
2000U	UG/KG	2,4,6-TRICHLOROPHENOL
4000U	UG/KG	4-CHLORO-3-METHYLPHENOL
11000U	UG/KG	2,4-DINITROPHENOL
4000U	UG/KG	2-METHYL-4,6-DINITROPHENOL
150000	UG/KG	PENTACHLOROPHENOL
12000U	UG/KG	4-NITROPHENOL
8.3	%	MOISTURE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85

EXTRACTABLE ORGANIC ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6278 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RB-S
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA496 INORG SAMPLE NO.: MDA422
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
400U	UG/KG	N-NITROSODIMETHYLAMINE
NA	UG/KG	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
500U	UG/KG	BENZIDINE
100U	UG/KG	1,3-DICHLOROBENZENE
100U	UG/KG	1,4-DICHLOROBENZENE
100U	UG/KG	1,2-DICHLOROBENZENE
400U	UG/KG	BIS(2-CHLOROETHYL) ETHER
200U	UG/KG	HEXACHLOROETHANE
400U	UG/KG	BIS(2-CHLOROISOPROPYL) ETHER
400U	UG/KG	N-NITROSODI-N-PROPYLAMINE
100U	UG/KG	NITROBENZENE
200U	UG/KG	HEXACHLOROBUTADIENE
100U	UG/KG	1,2,4-TRICHLOROBENZENE
100U	UG/KG	NAPHTHALENE
100U	UG/KG	BIS(2-CHLOROETHOXY) METHANE
60J	UG/KG	ISOPHORONE
400U	UG/KG	HEXACHLOROCYCLOPENTADIENE (HCCP)
19	UG/KG	2-CHLORONAPHTHALENE
30J	UG/KG	ACENAPHTHYLENE
200U	UG/KG	ACENAPHTHENE
100U	UG/KG	DIMETHYL PHTHALATE
100U	UG/KG	2,4-DINITROTOLUENE
100U	UG/KG	2,6-DINITROTOLUENE
100U	UG/KG	4-CHLOROPHENYL PHENYL ETHER
100U	UG/KG	FLUORENE
100U	UG/KG	DIETHYL PHTHALATE
100U	UG/KG	N-NITROSODIPHENLYAMINE/DIPHENYLAMINE
100U	UG/KG	HEXACHLOROBENZENE (HCB)
100U	UG/KG	4-BROMOPHENYL PHENYL ETHER
70	UG/KG	PHENANTHRENE
70J	UG/KG	ANTHRACENE
200U	UG/KG	DI-N-BUTYLPHTHALATE
350	UG/KG	FLUORANTHENE
300J	UG/KG	PYRENE
200U	UG/KG	BENZYL BUTYL PHTHALATE
100U	UG/KG	BIS(2-ETHYLHEXYL) PHTHALATE
78	UG/KG	BENZO(A)ANTHRACENE
160	UG/KG	CHRYSENE
700U	UG/KG	3,3'-DICHLOROBENZIDINE
400U	UG/KG	DI-N-OCTYLPHTHALATE
110	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
100J	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
90J	UG/KG	BENZO-A-PYRENE
400U	UG/KG	INDENO (1,2,3-CD) PYRENE
400U	UG/KG	DIBENZO(A,H)ANTHRACENE
400U	UG/KG	BENZO(GHI)PERYLENE
100U	UG/KG	2-CHLOROPHENOL
100U	UG/KG	2-NITROPHENOL
100U	UG/KG	PHENOL
200U	UG/KG	2,4-DIMETHYLPHENOL
100U	UG/KG	2,4-DICHLOROPHENOL
100U	UG/KG	2,4,6-TRICHLOROPHENOL
100U	UG/KG	4-CHLORO-3-METHYLPHENOL
400U	UG/KG	2,4-DINITROPHENOL
200U	UG/KG	2-METHYL-4,6-DINITROPHENOL
200U	UG/KG	PENTACHLOROPHENOL
500U	UG/KG	4-NITROPHENOL
12	%	MOISTURE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6277 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-S1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA495 INORG SAMPLE NO.: MDA421
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS THE ESTIMATED MINIMUM QUANTITATION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
400U	UG/KG	N-NITROSODIMETHYLAMINE
NA	UG/KG	1,2-DIPHENYLHYDRAZINE/AZOBENZENE
600U	UG/KG	BENZIDINE
100U	UG/KG	1,3-DICHLOROBENZENE
100U	UG/KG	1,4-DICHLOROBENZENE
100U	UG/KG	1,2-DICHLOROBENZENE
200U	UG/KG	BIS(2-CHLOROETHYL) ETHER
200U	UG/KG	HEXACHLOROETHANE
400U	UG/KG	BIS(2-CHLOROISOPROPYL) ETHER
400U	UG/KG	N-NITROSODI-N-PROPYLAMINE
100U	UG/KG	NITROBENZENE
400U	UG/KG	HEXACHLOROBUTADIENE
100U	UG/KG	1,2,4-TRICHLOROBENZENE
100U	UG/KG	NAPHTHALENE
200U	UG/KG	BIS(2-CHLOROETHOXY) METHANE
80J	UG/KG	ISOPHORONE
500U	UG/KG	HEXACHLOROCYCLOPENTADIENE (HCCP)
24	UG/KG	2-CHLORONAPHTHALENE
100U	UG/KG	ACENAPHTHYLENE
200U	UG/KG	ACENAPHTHENE
100U	UG/KG	DIMETHYL PHTHALATE
100U	UG/KG	2,4-DINITROTOLUENE
100U	UG/KG	2,6-DINITROTOLUENE
100U	UG/KG	4-CHLOROPHENYL PHENYL ETHER
100U	UG/KG	FLUORENE
100U	UG/KG	DIETHYL PHTHALATE
100U	UG/KG	N-NITROSODIPHENLYAMINE/DIPHENYLAMINE
100U	UG/KG	HEXACHLOROBENZENE (HCB)
200U	UG/KG	4-BROMOPHENYL PHENYL ETHER
100U	UG/KG	PHENANTHRENE
100U	UG/KG	ANTHRACENE
200U	UG/KG	DI-N-BUTYLPHTHALATE
300J	UG/KG	FLUORANTHENE
500J	UG/KG	PYRENE
200U	UG/KG	BENZYL BUTYL PHTHALATE
200U	UG/KG	BIS(2-ETHYLHEXYL) PHTHALATE
100U	UG/KG	BENZO(A)ANTHRACENE
200U	UG/KG	CHRYSENE
1000U	UG/KG	3,3'-DICHLOROBENZIDINE
500U	UG/KG	DI-N-OCTYLPHTHALATE
100U	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
200U	UG/KG	BENZO(B AND/OR K)FLUORANTHENE
200U	UG/KG	BENZO-A-PYRENE
500U	UG/KG	INDENO (1,2,3-CD) PYRENE
500U	UG/KG	DIBENZO(A,H)ANTHRACENE
500U	UG/KG	BENZO(GHI)PERYLENE
100U	UG/KG	2-CHLOROPHENOL
100U	UG/KG	2-NITROPHENOL
200U	UG/KG	PHENOL
200U	UG/KG	2,4-DIMETHYLPHENOL
100U	UG/KG	2,4-DICHLOROPHENOL
100U	UG/KG	2,4,6-TRICHLOROPHENOL
200U	UG/KG	4-CHLORO-3-METHYLPHENOL
500U	UG/KG	2,4-DINITROPHENOL
200U	UG/KG	2-METHYL-4,6-DINITHOPHENOL
200U	UG/KG	PENTACHLOROPHENOL
600U	UG/KG	4-NITROPHENOL
32	%	MOISTURE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6279 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-JA-C1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA497 INORG SAMPLE NO.: MDA423
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
2000U	BENZOIC ACID
10000U	2-METHYLPHENOL
10000U	4-METHYLPHENOL
5000U	2,4,5-TRICHLOROPHENOL
10000U	ANILINE
2000U	BENZYL ALCOHOL
11000U	4-CHLOROANILINE
300J	DIBENZOFURAN
6000U	2-METHYL NAPHTHALENE
2000U	2-NITROANILINE
23000U	3-NITROANILINE
5000U	4-NITROANILINE
7000JN	TETRAHYDRODIMETHYLPYRANONE
3000JN	BENZO(J)FLUORANTHENE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6280 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LA-C2
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA498 INORG SAMPLE NO.: MDA424
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
2000U	BENZOIC ACID
8000U	2-METHYLPHENOL
8000U	4-METHYLPHENOL
3000U	2,4,5-TRICHLOROPHENOL
11000U	ANILINE
2000U	BENZYL ALCOHOL
12000U	4-CHLOROANILINE
900J	DIBENZOFURAN
7000U	2-METHYL NAPHTHALENE
2000U	2-NITROANILINE
25000U	3-NITROANILINE
5000U	4-NITROANILINE
8000JN	DIMETHYLTETRAHYDROPYRAN-2-ONE
6000JN	BENZO(J)FLUORANTHENE
4000JN	BENZO(GHI)FLUORANTHENE
5000J	2 UNIDENTIFIED POLYNUCLEAR AROMATICS

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6281 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LB-C3
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA499 INORG SAMPLE NO.: MDA425
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG COMPOUND NAME

2000U	BENZOIC ACID
7000U	2-METHYLPHENOL
7000U	4-METHYLPHENOL
2000U	2,4,5-TRICHLOROPHENOL
10000U	ANILINE
2000U	BENZYL ALCOHOL
12000U	4-CHLOROANILINE
300J	DIBENZOFURAN
6000U	2-METHYL NAPHTHALENE
2000U	2-NITROANILINE
22000U	3-NITROANILINE
4000U	4-NITROANILINE
4000JN	BENZO[J]FLUORANTHENE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6284 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LC-C4
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4644 INORG SAMPLE NO.: MDA413
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
2000U	BENZOIC ACID
100000U	2-METHYLPHENOL
100000U	4-METHYLPHENOL
3000U	2,4,5-TRICHLOROPHENOL
100000U	ANILINE
2000U	BENZYL ALCOHOL
11000U	4-CHLOROANILINE
110000	DIBENZOFURAN
16000	2-METHYL NAPHTHALENE
2000U	2-NITROANILINE
230000U	3-NITROANILINE
5000U	4-NITROANILINE
10000JN	ETHYLIDENEINDENE
50000JN	DIMETHYLNAPHTHALENE
20000JN	TRIMETHYLNAPHTHALENES
20000JN	XANTHENE
40000JN	METHYLDIBENZOFURAN
20000JN	METHYLFLUORENE
8000JN	DIHYDRONAPHTHOFURAN
70000J	2 UNIDENTIFIED METHYLPHENANTHRENES
70000JN	CYCLOPENTAPHENANTHRENE
100000J	2 UNIDENTIFIED BENZOFLUORENE COMPOUNDS
40000JN	BENZO[B]NAPHTHOTHIOPHENE
40000JN	BENZO[J]FLUORANTHENE
60000J	3 UNIDENTIFIED METHYLPYRENES

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6278 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RB-S
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN. RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA496 INORG SAMPLE NO.: MDA422
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
100U	BENZOIC ACID
400U	2-METHYLPHENOL
400U	4-METHYLPHENOL
100U	2,4,5-TRICHLOROPHENOL
400U	ANILINE
100U	BENZYL ALCOHOL
400U	4-CHLOROANILINE
100U	DIBENZOFURAN
200U	2-METHYL NAPHTHALENE
100U	2-NITROANILINE
800U	3-NITROANILINE
200U	4-NITROANILINE
2000JN	ACETYLOXYHEXANONE
5000JN	DIMETHYLFURANONE
10000J	3 UNIDENTIFIED HYDROCARBONS
30000JN	1 UNIDENTIFIED BROMINATED COMPOUND

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD, REG IV
ATHENS GEORGIA

06/14/85 EXTRACTABLE ORGANIC ANALYSIS, MISC
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6277 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-S1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: R HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE,/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST:
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA495 INORG SAMPLE NO.: MDA421
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*L-ACTUAL VALUE IS KNOWN TO BE GREATER THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE MINIMUM DETECTION LIMIT.

*****ANALYTICAL RESULTS*****

RESULTS IN: UG/KG	COMPOUND NAME
100U	BENZOIC ACID
400U	2-METHYLPHENOL
300U	4-METHYLPHENOL
100U	2,4,5-TRICHLOROPHENOL
500U	ANILINE
100U	BENZYL ALCOHOL
500U	4-CHLOROANILINE
100U	DIBENZOFURAN
300U	2-METHYL NAPHTHALENE
100U	2-NITROANILINE
1000U	3-NITROANILINE
200U	4-NITROANILINE
200000J	11 UNIDENTIFIED COMPOUNDS
5000J	1 UNIDENTIFIED BROMINATED COMPOUND
10000JN	DIMETHYLHEPTANONE
20JN	HEXADECANOIC ACID
2000JN	ACETYLOXYHEXANONE
8000JN	DIMETHYLFURANONE

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6279 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOOTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-JA-C1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHB
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA497 INORG SAMPLE NO.: MDA423
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.
DATA REPORTED ON DRY WEIGHT BASIS

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND	
0.5U	UG/KG	ALDRIN	
0.5U	UG/KG	HEPTACHLOR	
1.0U	UG/KG	HEPTACHLOR EPOXIDE	
0.5U	UG/KG	ALPHA-BHC	
1.0U	UG/KG	BETA-BHC	
0.5U	UG/KG	GAMMA-BHC (LINDANE)	
1.0U	UG/KG	DELTA-BHC	
0.5U	UG/KG	ENDOSULFAN I (ALPHA)	
1.0U	UG/KG	DIELDRIN	
1.0U	UG/KG	4,4'-DDT (P,P'-DDT)	
2.0U	UG/KG	4,4'-DDE (P,P'-DDE)	
4.0U	UG/KG	4,4'-DDD (P,P'-DDD)	
0.5U	UG/KG	ENDRIN	
1.0U	UG/KG	ENDOSULFAN II (BETA)	
3.0U	UG/KG	ENDOSULFAN SULFATE	
10U	UG/KG	CHLORDANE (TECH. MIXTURE)	/1
11U	UG/KG	PCB-1242 (AROCLOR 1242)	
21U	UG/KG	PCB-1254 (AROCLOR 1254)	
31U	UG/KG	PCB-1221 (AROCLOR 1221)	
11U	UG/KG	PCB-1232 (AROCLOR 1232)	
11U	UG/KG	PCB-1248 (AROCLOR 1248)	
11U	UG/KG	PCB-1260 (AROCLOR 1260)	
31U	UG/KG	PCB-1016 (AROCLOR 1016)	
11U	UG/KG	TOXAPHENE	
2.2U	UG/KG	ENDRIN ALDEHYDE	
NA	UG/KG	2,3,7,8 TCDD(DIOXIN)	
**	UG/KG	CHLORDENE	/2
**	UG/KG	ALPHA-CHLORDENE	/2
**	UG/KG	GAMMA-CHLORDENE	/2
**	UG/KG	1-HYDROXYCHLORDENE	/2
**	UG/KG	GAMMA-CHLORDANE	/2
**	UG/KG	TRANS-NONACHLOR	/2
**	UG/KG	ALPHA-CHLORDANE	/2
**	UG/KG	CIS-NONACHLOR	/2
10U	UG/KG	METHOXYCHLOR	
10U	UG/KG	ENDRIN KETONE	
7.7	%	MOISTURE	

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6280 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LA-C2
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA498 INORG SAMPLE NO.: MDA424
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW,
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
0.2U	UG/KG	ALDRIN
0.7U	UG/KG	HEPTACHLOR
0.7U	UG/KG	HEPTACHLOR EPOXIDE
0.4U	UG/KG	ALPHA-BHC
0.7U	UG/KG	BETA-BHC
0.1U	UG/KG	GAMMA-BHC (LINDANE)
0.8U	UG/KG	DELTA-BHC
0.2U	UG/KG	ENDOSULFAN I (ALPHA)
1.1U	UG/KG	DIELDRIN
4U	UG/KG	4,4'-DDT (P,P'-DDT)
0.7U	UG/KG	4,4'-DDE (P,P'-DDE)
1.2U	UG/KG	4,4'-DDD (P,P'-DDD)
0.2U	UG/KG	ENDRIN
6U	UG/KG	ENDOSULFAN II (BETA)
36U	UG/KG	ENDOSULFAN SULFATE
12U	UG/KG	CHLORDANE (TECH. MIXTURE) /1
12U	UG/KG	PCB-1242 (AROCLOR 1242)
24U	UG/KG	PCB-1254 (AROCLOR 1254)
36U	UG/KG	PCB-1221 (AROCLOR 1221)
12U	UG/KG	PCB-1232 (AROCLOR 1232)
12U	UG/KG	PCB-1248 (AROCLOR 1248)
12U	UG/KG	PCB-1260 (AROCLOR 1260)
36U	UG/KG	PCB-1016 (AROCLOR 1016)
12U	UG/KG	TOXAPHENE
7U	UG/KG	ENDRIN ALDEHYDE
NA	UG/KG	2,3,7,8 TCDD(DIOXIN)
--	UG/KG	CHLORDENE /2
--	UG/KG	ALPHA-CHLORDENE /2
--	UG/KG	GAMMA-CHLORDENE /2
--	UG/KG	1-HYDROXYCHLORDENE /2
--	UG/KG	GAMMA-CHLORDANE /2
--	UG/KG	TRANS-NONACHLOR /2
--	UG/KG	ALPHA-CHLORDANE /2
--	UG/KG	CIS-NONACHLOR /2
7U	UG/KG	METHOXYCHLOR
7U	UG/KG	ENDRIN KETONE
16	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED, THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-ESD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6281 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LR-C3
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA499 INORG SAMPLE NO.: NDA425
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
0.5U	UG/KG	ALDRIN
0.5U	UG/KG	HEPTACHLOR
1U	UG/KG	HEPTACHLOR EPOXIDE
0.5U	UG/KG	ALPHA-BHC
1U	UG/KG	BETA-BHC
0.5U	UG/KG	GAMMA-BHC (LINDANE)
1U	UG/KG	DELTA-BHC
0.5U	UG/KG	ENDOSULFAN I (ALPHA)
1U	UG/KG	DIELDRIN
5U	UG/KG	4,4'-DDT (P,P'-DDT)
1U	UG/KG	4,4'-DDE (P,P'-DDE)
2U	UG/KG	4,4'-DDD (P,P'-DDD)
0.5U	UG/KG	ENDRIN
1U	UG/KG	ENDOSULFAN II (BETA)
37U	UG/KG	ENDOSULFAN SULFATE
10U	UG/KG	CHLORDANE (TECH. MIXTURE) /1
10U	UG/KG	PCB-1242 (AROCLOR 1242)
30U	UG/KG	PCB-1254 (AROCLOR 1254)
40U	UG/KG	PCB-1221 (AROCLOR 1221)
20U	UG/KG	PCB-1232 (AROCLOR 1232)
20U	UG/KG	PCB-1248 (AROCLOR 1248)
20U	UG/KG	PCB-1260 (AROCLOR 1260)
40U	UG/KG	PCB-1016 (AROCLOR 1016)
20U	UG/KG	TOXAPHENE
3U	UG/KG	ENDRIN ALDEHYDE
NA	UG/KG	2,3,7,8 TCDD(DIOXIN)
--	UG/KG	CHLORDENE /2
--	UG/KG	ALPHA-CHLORDENE /2
--	UG/KG	GAMMA-CHLORDENE /2
--	UG/KG	1-HYDROXYCHLORDENE /2
--	UG/KG	GAMMA-CHLORDANE /2
--	UG/KG	TRANS-NONACHLOR /2
--	UG/KG	ALPHA-CHLORDANE /2
--	UG/KG	CIS-NONACHLOR /2
10U	UG/KG	METHOXYCHLOR
10U	UG/KG	ENDRIN KETONE
5.8	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6284 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-LC-C4
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: D4644 INORG SAMPLE NO.: MDA413
CONTRACT LABORATORY(ORGANIC): UATL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
0.5U	UG/KG	ALDRIN
0.5U	UG/KG	HEPTACHLOR
1.0U	UG/KG	HEPTACHLOR EPOXIDE
0.5U	UG/KG	ALPHA-BHC
1.0U	UG/KG	BETA-BHC
0.5U	UG/KG	GAMMA-BHC (LINDANE)
1.0U	UG/KG	DELTA-BHC
0.5U	UG/KG	ENDOSULFAN I (ALPHA)
1.0U	UG/KG	DIELDRIN
5U	UG/KG	4,4'-DDT (P,P'-DDT)
1U	UG/KG	4,4'-DDE (P,P'-DDE)
5U	UG/KG	4,4'-DDD (P,P'-DDD)
0.5U	UG/KG	ENDRIN
1.0U	UG/KG	ENDOSULFAN II (BETA)
33U	UG/KG	ENDOSULFAN SULFATE
10U	UG/KG	CHLORDANE (TECH. MIXTURE) /1
33U	UG/KG	PCB-1242 (AROCLOR 1242)
33U	UG/KG	PCB-1254 (AROCLOR 1254)
33U	UG/KG	PCB-1221 (AROCLOR 1221)
33U	UG/KG	PCB-1232 (AROCLOR 1232)
33U	UG/KG	PCB-1248 (AROCLOR 1248)
33U	UG/KG	PCB-1260 (AROCLOR 1260)
33U	UG/KG	PCB-1016 (AROCLOR 1016)
33U	UG/KG	TOXAPHENE
3U	UG/KG	ENDRIN ALDEHYDE
NA	UG/KG	2,3,7,8 TCDD(DIOXIN)
--	UG/KG	CHLORDENE /2
--	UG/KG	ALPHA-CHLORDENE /2
--	UG/KG	GAMMA-CHLORDENE /2
--	UG/KG	1-HYDROXYCHLORDENE /2
--	UG/KG	GAMMA-CHLORDANE /2
--	UG/KG	TRANS-NONACHLOR /2
--	UG/KG	ALPHA-CHLORDANE /2
--	UG/KG	CIS-NONACHLOR /2
10U	UG/KG	METHOXYCHLOR
10U	UG/KG	ENDRIN KETONE
8.3%	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6278 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH. WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-RB-S
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: B HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: HHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA496 INORG SAMPLE NO.: MDA422
CONTRACT LABORATORY(ORGANIC): UBTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND	
0.04U	UG/KG	ALDRIN	
0.08U	UG/KG	HEPTACHLOR	
0.1U	UG/KG	HEPTACHLOR EPOXIDE	
0.08U	UG/KG	ALPHA-BHC	
0.1U	UG/KG	BETA-BHC	
0.04U	UG/KG	GAMMA-BHC (LINDANE)	
0.1U	UG/KG	DELTA-BHC	
0.04U	UG/KG	ENDOSULFAN I (ALPHA)	
0.2U	UG/KG	DIELDRIN	
0.6U	UG/KG	4,4'-DDT (P,P'-DDT)	
0.1U	UG/KG	4,4'-DDE (P,P'-DDE)	
0.2U	UG/KG	4,4'-DDD (P,P'-DDD)	
0.04U	UG/KG	ENDRIN	
0.1U	UG/KG	ENDOSULFAN II (BETA)	
10U	UG/KG	ENDOSULFAN SULFATE	
5U	UG/KG	CHLORDANE (TECH. MIXTURE)	/1
5U	UG/KG	PCB-1242 (AROCLOR 1242)	
5U	UG/KG	PCB-1254 (AROCLOR 1254)	
10U	UG/KG	PCB-1221 (AROCLOR 1221)	
5U	UG/KG	PCB-1232 (AROCLOR 1232)	
5U	UG/KG	PCB-1248 (AROCLOR 1248)	
5U	UG/KG	PCB-1260 (AROCLOR 1260)	
10U	UG/KG	PCB-1016 (AROCLOR 1016)	
5U	UG/KG	TOXAPHENE	
0.4U	UG/KG	ENDRIN ALDEHYDE	
NA	UG/KG	2,3,7,8 TCDD(DIOXIN)	
**	UG/KG	CHLORDENE /2	
**	UG/KG	ALPHA-CHLORDENE	/2
**	UG/KG	GAMMA-CHLORDENE	/2
**	UG/KG	1-HYDROXYCHLORDENE	/2
**	UG/KG	GAMMA-CHLORDANE	/2
**	UG/KG	TRANS-NONACHLOR	/2
**	UG/KG	ALPHA-CHLORDANE	/2
**	UG/KG	CIS-NONACHLOR	/2
2U	UG/KG	METHOXYCHLOR	
2U	UG/KG	ENDRIN KETONE	
12	%	MOISTURE	

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

SAMPLE AND ANALYSIS MANAGEMENT SYSTEM
EPA-FSD,REG IV
ATHENS GEORGIA

06/14/85 PESTICIDES/PCB'S AND OTHER CHLORINATED COMPOUNDS
SEDIMENT/SOIL/SLUDGE(DRY WT)

SAMPLE NO.: 85C6277 SAMPLE TYPE: SOIL

PROJECT NO.: 85-048 PROGRAM ELEMENT: NSF
SOURCE: SOUTH, WOOD PIEDMONT
CITY: WILMINGTON STATE: NC

STATION I.D.: SWP-BK-S1
STORET STATION NO:

SAMPLE COLLECTION: START DATE/TIME 01/07/85
SAMPLE COLLECTION: STOP DATE/TIME 00/00/00

COLLECTED BY: S HANSEN RECEIVED FROM:
SAMPLE REC'D: DATE/TIME 00/00/00 REC'D BY:
SEALED:

CHEMIST: MHR
ANALYTICAL METHOD:

CASE NO.: 3454 ORG SAMPLE NO: DA495 INORG SAMPLE NO.: MDA421
CONTRACT LABORATORY(ORGANIC): URTL
CONTRACT LABORATORY(INORGANIC): WILSON

REMARK:
REMARK:

SAMPLE LOG VERIFIED BY: PLB DATA VERIFIED BY: JWT

REMARKS
THIS DATA HAS NOT BEEN SUBJECTED TO A QC REVIEW.
DATA SHOULD BE LIMITED TO SITE SCREENING.

*****ANALYTICAL RESULTS*****

RESULTS	UNITS	COMPOUND
0.05U	UG/KG	ALDRIN
0.1U	UG/KG	HEPTACHLOR
0.1U	UG/KG	HEPTACHLOR EPOXIDE
0.1U	UG/KG	ALPHA-BHC
0.1U	UG/KG	BETA-BHC
0.1U	UG/KG	GAMMA-BHC (LINDANE)
0.2U	UG/KG	DELTA-BHC
0.05U	UG/KG	ENDOSULFAN I (ALPHA)
0.2U	UG/KG	DIELDRIN
0.7U	UG/KG	4,4'-DDT (P,P'-DDT)
7.4	UG/KG	4,4'-DDE (P,P'-DDE)
5.9	UG/KG	4,4'-DDD (P,P'-DDD)
0.05U	UG/KG	ENDRIN
0.1U	UG/KG	ENDOSULFAN II (BETA)
1U	UG/KG	ENDOSULFAN SULFATE
2.2U	UG/KG	CHLORDANE (TECH. MIXTURE) /1
2.2U	UG/KG	PCB-1242 (AROCLOR 1242)
5.9U	UG/KG	PCB-1254 (AROCLOR 1254)
7.4U	UG/KG	PCB-1221 (AROCLOR 1221)
2.5U	UG/KG	PCB-1232 (AROCLOR 1232)
2.5U	UG/KG	PCB-1248 (AROCLOR 1248)
2.5U	UG/KG	PCB-1260 (AROCLOR 1260)
7.4U	UG/KG	PCB-1016 (AROCLOR 1016)
2.5U	UG/KG	TOXAPHENE
0.5U	UG/KG	ENDRIN ALDEHYDE
NA	UG/KG	2,3,7,8 TCDD(DIOXIN)
--	UG/KG	CHLORDENE /2
--	UG/KG	ALPHA-CHLORDENE /2
--	UG/KG	GAMMA-CHLORDENE /2
--	UG/KG	1-HYDROXYCHLORDENE /2
--	UG/KG	GAMMA-CHLORDANE /2
--	UG/KG	TRANS-NONACHLOR /2
--	UG/KG	ALPHA-CHLORDANE /2
--	UG/KG	CIS-NONACHLOR /2
1.5U	UG/KG	METHOXYCHLOR
1.5U	UG/KG	ENDRIN KETONE
37	%	MOISTURE

****

FOOTNOTES
*A-AVERAGE VALUE *NA-NOT ANALYZED *NAI-INTERFERENCES
*J-ESTIMATED VALUE *N-PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
*K-ACTUAL VALUE IS KNOWN TO BE LESS THAN VALUE GIVEN
*U-MATERIAL WAS ANALYZED FOR BUT NOT DETECTED. THE NUMBER IS
THE ESTIMATED MINIMUM QUANTITATION LIMIT.
1. WHEN NO VALUE IS REPORTED, SEE CHLORDANE CONSTITUENTS.
2. CONSTITUENTS OR METABOLITES OF TECHNICAL CHLORDANE.

APPENDIX B

EPA

Potential Hazardous Waste Site

Site Inspection Report

DRAFT

Site Inspection Report

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION
01 STATE: NC | 02 SITE NUMBER: D058174 67

II. SITE NAME AND LOCATION

01 SITE NAME: Southern Wood Piedmont
02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER:
03 CITY: Wilmington
04 STATE: NC | 05 ZIP CODE: | 06 COUNTY: New Hanover | 07 COUNTY CODE: | 08 CONG DIST:
09 COORDINATES: LATITUDE ___ LONGITUDE ___
10 TYPE OF OWNERSHIP (Check one): [X] A. PRIVATE [ ] B. FEDERAL ___ [ ] C. STATE [ ] D. COUNTY [ ] E. MUNICIPAL [ ] F. OTHER ___ [ ] G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION: 1 7 85 (MONTH DAY YEAR)
02 SITE STATUS: [ ] ACTIVE [X] INACTIVE
03 YEARS OF OPERATION: 1932 / 1983 (BEGINNING YEAR / ENDING YEAR) ___ UNKNOWN
04 AGENCY PERFORMING INSPECTION (Check all that apply): [ ] A. EPA [X] B. EPA CONTRACTOR NUS, Region III FIT (Name of firm) [ ] C. MUNICIPAL [ ] D. MUNICIPAL CONTRACTOR ___ (Name of firm) [ ] E. STATE [ ] F. STATE CONTRACTOR ___ (Name of firm) [ ] G. OTHER ___ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
Barbara Hanson	Chemist	NUS	(404) 938-7710

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Maurice Lowran	Field Technician	"	( ) "
Bob Donaghue		"	( ) "
Bob Rose	Environmental Sci.	"	( ) "
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Denny Phillips	Manager	Southern Wood Piedmont	( )
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one): [X] PERMISSION [ ] WARRANT
18 TIME OF INSPECTION: 0910
19 WEATHER CONDITIONS: Windy, Clear, Cold (≈ 36°F)

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Charles Burdell	Southern Wood Piedmont	(803) 576-7460

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
Barbara Hanson		NUS	(404) 938-7710	1 23 85 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D058517467

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☒ C. SLUDGE
- ☐ D. OTHER _____ (Specify)
- ☐ E. SLURRY
- ☐ F. LIQUID
- ☐ G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- ☐ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently used CAS numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION

V. FEEDSTOCKS (See Appendix for CAS numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Unknown

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Unknown

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

None observed

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

None observed

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Unknown

01 ☒ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED _____ (Acres) — 04 NARRATIVE DESCRIPTION

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Unknown

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

None observed

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

None observed

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: NC
02 SITE NUMBER: D005851746 7

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None observed

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include number(s) of species)
None observed

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None observed

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids/Leaking drums) — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION
None observed

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None observed

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS
Unknown

III. TOTAL POPULATION POTENTIALLY AFFECTED: Unknown

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling results, photos)
Site investigation 1/7/85

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D0585174 67

II. PERMIT INFORMATION Unknown - To be updated

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A NPDES				
☐ B UIC				
☐ C AIR				
☐ D RCRA				
☐ E RCRA INTERIM STATUS				
☐ F SPCC PLAN				
☐ G. STATE (Specify)				
☐ H LOCAL (Specify)				
☐ I OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A SURFACE IMPOUNDMENT		
☐ B PILES		
☐ C DRUMS, ABOVE GROUND		
☐ D TANK ABOVE GROUND		
☐ E TANK, BELOW GROUND		
☐ F LANDFILL		
☒ G LANDFARM		
☐ H OPEN DUMP		
☐ I OTHER _____ (Specify)		

04 TREATMENT (Check all that apply)
- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H OTHER _____ (Specify)

05 OTHER
- ☐ A BUILDINGS ON SITE

06 AREA OF SITE
_____ Acres

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A ADEQUATE SECURE ☒ B. MODERATE ☐ C INADEQUATE, POOR ☐ D INSECURE, UNSOUND DANGEROUS

02 DESCRIPTION OF DRUMS DIKING LINERS, BARRIERS, ETC

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☐ YES ☐ NO

02 COMMENTS

Contaminated ~~waste~~ Soils landfarmed in 3 areas on site

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sampling results)

Site inspection 1/23/85
7
BJR

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D058517467

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A. ☐	B. ☒
NON-COMMUNITY	C. ☐	D. ☐

02 STATUS Unknown

ENDANGERED	AFFECTED	MONITORED
A. ☐	B. ☐	C. ☐
D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE
A. 0.75 (mi)
B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A ONLY SOURCE FOR DRINKING ☒ B DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☐ C COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER Unknown

03 DISTANCE TO NEAREST DRINKING WATER WELL 0.75 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
Unknown (ft)	Unknown	Unknown (ft)	Unknown (gpd)	☐ YES ☒ NO Unknown

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

Artesian well located less than a mile south-southeast of the site. This well is open for public use.

10 RECHARGE AREA
☐ YES
☐ NO
COMMENTS Unknown

11 DISCHARGE AREA
☐ YES
☐ NO
COMMENTS Unknown

IV. SURFACE WATER

01 SURFACE WATER USE (Check one) Unknown

☐ A RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
Cape Fear River	☐	0 (mi)
	☐	(mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN Unknown

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. _____ NO OF PERSONS	B. _____ NO OF PERSONS	C. _____ NO OF PERSONS

02 DISTANCE TO NEAREST POPULATION Unknown (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE ≈ 200

04 DISTANCE TO NEAREST OFF-SITE BUILDING 500 ft (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site (e.g., density, villages, farms, institutions, industrial/commercial establishments, agricultural lands, protected areas, recreational areas))

Unknown, will update with letter report containing sampling results.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NC | 02 SITE NUMBER: D058517467

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one) Unknown

☐ A $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one) Unknown

☐ A IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
Unknown (ft)	Unknown (ft)	Unknown

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
~~48.52~~ 7.5 (in)	3.8-4.0 (in)	0 %	west	%

09 FLOOD POTENTIAL: SITE IS IN _____ YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A _____ (mi) OTHER: B _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES. _____

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AG LAND
A 0.25 (mi)	B _____ (mi)	C _____ (mi)	D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling records, reports)

Prept. - Climatic Atlas of the U.S., U.S. Dept. of Commerce, Natl. Climatic Ctr, Asheville, NC., 1979.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D058517467

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	5	UBTL	
SURFACE WATER	2	520 Wakara Way	
WASTE	0	Salt Lake City, Utah 84108	
AIR	0	for organic analysis	
RUNOFF	0		
SPILL	0	Wilson Labs	
SOIL	6	528 North 9th St	
VEGETATION	0	Salina Ks 67401	July 1985
OTHER		inorganic analysis	

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Mini-alert	NUS Health & Safety Requirement - No ~~readings~~ detection of Radiation
HNU	No readings above background

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL

02 IN CUSTODY OF _____ (NAME OF ORGANIZATION OR INDIVIDUAL)

03 MAPS ☐ YES ☒ NO

04 LOCATION OF MAPS Maps to be generated & submitted with report

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

None

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site inspection 1/7/85

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NC	D058517467

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
Southern Wood Piedmont	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE / 14 ZIP CODE
08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE / 14 ZIP CODE
08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE / 14 ZIP CODE
08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE / 14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D058516467

II. CURRENT OPERATOR (Provide if different from owner)				OPERATOR'S PARENT COMPANY (If applicable)			
01 NAME			02 D+B NUMBER	10 NAME			11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)			13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE		14 CITY	15 STATE	16 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER						

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)				PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)			
01 NAME			02 D+B NUMBER	10 NAME			11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)			13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE		14 CITY	15 STATE	16 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD						
01 NAME			02 D+B NUMBER	10 NAME			11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)			13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE		14 CITY	15 STATE	16 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD						
01 NAME			02 D+B NUMBER	10 NAME			11 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE	12 STREET ADDRESS (P.O. Box, RFD #, etc.)			13 SIC CODE
05 CITY	06 STATE	07 ZIP CODE		14 CITY	15 STATE	16 ZIP CODE	
08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD						

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D058517467

II. ON-SITE GENERATOR

01 NAME: Southern Wood Piedmont	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D058517467

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION None

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION No

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION No

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Non-applicable

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Landfarmed

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Unknown

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Unknown

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Landfarmed

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Unknown

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Unknown

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Unknown

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION None

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION No

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION None installed

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION No

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION None observed

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION None installed

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D058517467

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION None observed

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION No

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Non-applicable

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION No

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION No

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Unknown

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Unknown

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION None observed

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION No

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION Unknown

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION None

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

Five monitoring wells have been installed by SWP, one is no longer functional.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site inspection 1/7/85

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NC	D058517643

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION YES X NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY ENFORCEMENT ACTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling equipment, reports)

EPA FORM 2070-13 (7-81)

REFERENCE 66

SOUTHERN WOOD PIEDMONT COMPANY
GROUNDWATER QUALITY ASSESSMENT
WILMINGTON, NORTH CAROLINA FACILITY

Prepared For:

Southern Wood Piedmont Company
Spartanburg, South Carolina

Prepared By:

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.

ETE JOB NO. 530-06-501
530\06501\ASSESS.RPT

August 3, 1992

TABLE OF CONTENTS

1.0 BACKGROUND 1
1.1 Previous Assessment Activities 1
1.2 Proposed Assessment Activities 1

2.0 FIELD ACTIVITIES 1
2.1 Permanent Well Installation 1
2.2 Temporary Well Installation 2
2.3 Ground Water Sampling 3
2.4 Site Surveying 3
2.5 Ground Water Elevation Tests 3

3.0 SUMMARY OF FINDINGS 4
3.1 Geologic Conditions 4
3.2 Hydrogeologic Conditions 4
3.3 Soils Quality 6
3.4 Ground Water Quality 7

FIGURES

Figure 1 - Scaled Site Map
Figure 2 - Total Dissolved Organics Isoconcentration Map

ATTACHMENTS

Attachment A - Boring & Construction Logs
Attachment B - OVA Data
Attachment C - Laboratory Data
Attachment D - 12-Hour Well Test Data
Attachment E - Potentiometric Surface Maps
Attachment F - Geologic Cross Sections

GROUND WATER QUALITY ASSESSMENT
SOUTHERN WOOD PIEDMONT
WILMINGTON, NORTH CAROLINA FACILITY

1.0 BACKGROUND

1.1 Previous Assessment Activities

In September, 1985, Law Environmental Services (LES) completed the installation of four (4) ground water monitoring wells at the Southern Wood Piedmont (SWP) facility in Wilmington, North Carolina. These wells were installed around the limits of the old land farming area in order to monitor ground water quality. The wells were designated MW-6 through MW-9. Each well was installed to an approximate depth of 20 feet below land surface. The soil boring logs from the LES report indicated that the site is underlain primarily by fine to medium sands with a peat unit located beneath the sand.

Hydraulic conductivity testing was conducted on these wells and values ranged from 3×10^{-5} cm/sec to 1×10^{-6} cm/sec. Also, the average ground water flow velocity was evaluated to be 0.10 feet per year for the screened well interval.

1.2 Proposed Assessment Activities

Environmental Technology Engineering, Inc. (ETE) was contracted by SWP to conduct additional ground water quality assessment activities at the Wilmington, North Carolina facility. These activities were proposed in a letter dated November 14, 1991 to Mr. T.M. Davis of SWP. The purpose of this investigation was to characterize site hydrogeology and to evaluate potential ground water degradation associated with past wood preserving activities at the referenced site. The following discussion will describe in detail the work conducted at the site and the findings from this investigation.

2.0 FIELD ACTIVITIES

2.1 Permanent Well Installation

ETE installed eight (8) permanent monitoring wells at the facility. A scaled site map (Figure 1) illustrates the locations of these permanent wells. Each permanent well, designated MW-10 through MW-17 was installed into the surficial aquifer beneath the site.

At the specified locations, a 6.625-inch diameter borehole was advanced into the substrate with a hollow stem auger. Pit casings were not installed in the boreholes due to the shallow water table present the site. Boreholes MW-10 through MW-13, and MW-15 through MW-17 were advanced until the peat unit located beneath the fine to medium sand unit was encountered. Borehole MW-14 was advanced until the contact between the peat unit and the next underlying

unit was encountered. Borehole depths ranged from 12.0 feet below land surface to 22.0 feet below land surface. Boring logs illustrating the approximate depths of each borehole are provided in Attachment A.

During advancement of the soil borings, split-spoon samples were retrieved on five foot intervals. A soil sample from each split-spoon was placed in a zip lock plastic bag and sealed. Upon temperature equalization, the soil samples were screened with a Photovac organic vapor analyzer (OVA). A summary of OVA measurements taken from the soil samples is provided in Attachment B. All soil excavated during completion of the soil borings was containerized in an approved roll-off container and disposed of properly.

Upon completion of the boreholes, monitoring wells were constructed. Each well was constructed using 2-inch diameter, 10-foot sections of flush joint threaded PVC riser with a 10-foot section of continuous slot (0.010 inch) stainless steel well screen. However, MW-14 was constructed of stainless steel riser and screen due to the site conditions in this area. All permanent wells except for MW-14 were installed to bracket the water table. Monitoring well MW-14 screened the zone from 6.0 feet to 16.0 feet below land surface. Construction details are provided in the boring logs located in Attachment A.

2.2 Temporary Well Installation

During field activities, five (5) temporary monitoring wells were installed. These wells are designated B-2 through B-6. A site map (Figure 1) illustrates the locations of these temporary wells.

As with the permanent well installations, the boreholes for the temporary wells were advanced using a 6.625-inch diameter hollow stem auger. The boreholes were advanced until the peat unit was encountered. Borehole depths ranged from 9.0 feet to 15.0 feet below land surface. A complete description of the encountered strata from each borehole is provided in Attachment A.

During auger advancement, split-spoon samples were collected at five foot intervals in each borehole. A portion of each sample was placed in a zip lock bag and sealed. Upon temperature equalization, the samples were screened with an OVA. A summary of the OVA measurements from these soil samples is provided in Attachment B. All soil excavated during completion of the borings, was also containerized in an approved roll-off container and properly disposed.

Upon completion of the boreholes, temporary monitoring wells were installed. These wells were installed so that the base of the screen rests on or near the top of the peat. Wells were constructed using 2-inch diameter, 10-foot sections of flush joint threaded PVC riser with a 5-foot section of factory slotted (0.010 inch) PVC well screen. Construction details are provided in Attachment A.

2.3 Ground Water Sampling

Once monitoring well installation was complete each well not containing free product was developed utilizing a centrifugal pump. Impacted ground water was containerized in approved roll-off containers and was properly disposed off-site.

Subsequent to well development activities, all monitoring wells not containing free product were sampled for a list of site-specific constituents as determined by SWP. A dedicated bailer was utilized to evacuate three well volumes of ground water from each well. The pH, conductivity, and temperature of the ground water was recorded and a ground water sample taken from each newly installed monitoring well. The ground water sample was placed into sterilized ground water sample containers for each individual monitoring well. The samples were placed on ice and delivered to EMS Heritage Laboratories, Inc. for analysis. All sample collection summary sheets, chain-of-custody records and laboratory data is provided in Attachment C.

2.4 Site Surveying

On April 1, 1992, ETE conducted surveying activities at the Wilmington facility. The top of casing elevation and horizontal position of each monitoring well was surveyed. The precise horizontal location (±0.01 foot) and elevation of the top of pad and top of casing (TOC; ±0.01 foot) of the monitoring wells was determined by a registered land surveyor. Also, staff gauges were installed on the bank of the Cape Fear River and in the drainage ditch in the vicinity of the railroad (see Figure 1). The locations and elevations of the two staff gauges were also determined by a registered land surveyor.

2.5 Ground Water Elevation Tests

Ground water elevation tests were conducted on April 1, 1992 utilizing all seventeen (17) monitoring wells and the two (2) staff gauges located in the river and the drainage ditch. Beginning that morning, water level measurements were taken every two (2) hours from each monitoring well and from the staff gauges. These recorded measurements were then converted to water level elevations so that ground water flow directions under tidal influences could be calculated. A total of seven (7) measurements were collected from each well and staff gauge. These measurements are provided in Attachment D. Potentiometric surface maps were constructed for each time interval and are included in Attachment E.

3.0 SUMMARY OF FINDINGS

3.1 Geologic Conditions

The site is generally underlain by a brown-tan, to brown, fine to medium sand. Some of the boring logs indicate that the base of the upper sand unit is approximately 15.0 feet below land surface. During drilling activities, it was determined that sands were flowing into the hollow stem augers and making representative sample retrieval impossible. Based on the samples retrieved from borehole MW-14, where "flowing" sands were not encountered, and the boring log from MW-8, the estimated base of the sand unit appears to be approximately 10.0 feet below land surface.

Encountered beneath the sand is a dark brown to black peat with varying amounts of wood and root fragments. The upper portion of the peat is a water saturated, moderately decomposed peat that overlies a mostly dry, decomposed more fibrous peat. The lower peat unit was intentionally breached to evaluate peat thickness while installing the borehole for monitoring well MW-14. The peat appears to be approximately 10.0 to 11.5 feet thick in this area. Underlying the peat is a brown-tan, medium to coarse sand. The thickness of this underlying sand and the depth of the next confining unit is unknown at this time. Two cross-sections were constructed that graphically show the geologic units encountered beneath the site. These cross-sections are shown in Attachment F.

3.2 Hydrogeologic Conditions

In order to characterize the hydrogeologic conditions beneath the site, it was proposed that a twelve (12) hour water level evaluation test be conducted. The information gained from this test enabled ETE to calculate the surficial aquifer ground water flow direction(s) under tidal influences.

After data collection, all measurements were converted to mean sea level elevations based on the site survey. Elevations were plotted on a scaled site map so that the water table surface could be mapped. A total of seven (7) water table maps were produced, each depicting one of the two hour intervals of data collection. These maps are provided as Attachment E.

As the maps illustrate, there is a water table high that exists beneath the center of the site. From this high point, ground water appears to flow to the east towards the drainage ditch and to the west towards the Cape Fear river. However, there are significant changes that occur along the boundaries between the site, the Cape Fear river, and drainage ditch. These boundaries can be considered discharge/recharge points depending on the time of day and the point of tidal fluctuation.

At Time 1 of the test, the water level in the river is higher than the ground water level near temporary well B-2 and B-3. Therefore, a stagnation point results near this discharge/recharge boundary. This stagnation point is represented on the map by a continuous dashed line with no numerical value assigned. This stagnation point is caused by water from the river moving into the aquifer material beneath the site during high tide (recharge) and ground water from the aquifer material moving west towards the river (discharge). Ultimately this stagnation point is where the discharge and recharge reach equilibrium. No stagnation point is noted at the drainage ditch discharge/recharge boundary during Time 1.

If the later time maps are observed, it is apparent that the stagnation point occurs not only at the river discharge/recharge boundary, but also at the drainage ditch discharge/recharge boundary. This drainage ditch is controlled by the same tidal fluctuations that control the river, but on a smaller scale. The Time 2 map illustrates a stagnation point at both the river and the drainage ditch. This map shows that the water has continued to rise in both the river and the drainage ditch, thus producing the stagnation points. The monitoring wells located in the central high point area of the site also appear to change as a result of the tidal fluctuations. The water levels in these wells increased slightly from the levels indicated on the Time 1 map.

The Time 3 map shows a stagnation point at the drainage ditch boundary but not at the river boundary. The water in the river has dropped dramatically due to low tide conditions, but the drainage ditch water level has only decreased slightly. The water levels in the monitoring wells located in the center of the site also appear to be influenced by the tidal fluctuations, but on a much smaller scale.

No stagnation points are noted on the Time 4 map. This is due to the lower water levels in the river and drainage ditch at low tide. Also, the monitoring wells located in the center of the site indicate a small increase in the water level from the last recording interval (Time 3). The wells in the center of the site appear to have a delayed response to the tidal fluctuations.

The Time 5 map depicts the lowest water levels recorded in both the river and the drainage ditch. The wells in the center of the site continue to increase since the latest recording interval (Time 4) even though the water levels in the river and drainage ditch are at their lowest. This shows the basic time lag between the ground water at the center of the site and the water located in the river and ditch.

Water levels in the river and drainage ditch are beginning to rise at Time 6. The water level in the monitoring wells located in the center of the site have appeared to reach their peak and are approximately the same as the latest recording event (Time 5). As long as the water levels in the river and drainage ditch remain below the water levels in the monitoring wells located at the discharge/recharge boundaries, no stagnation points are created.

The last recording event in the 12 hour water level test is shown on the Time 7 map. Here the tidal fluctuation has completed one cycle. The water level in the river is slightly above the level recorded at Time 1 and the water level in the drainage ditch is slightly below the level recorded at Time 1. As in the case of the Time 1 map, the Time 7 map shows a stagnation point along the river discharge/recharge boundary. The water levels in the monitoring wells located in the center of the site have started to decrease as a result of the tidal fluctuations.

In summary, the tidal cycle appears to have an effect on the water levels recorded in the monitoring wells located at the site. At certain times during the tidal cycle, stagnation points are created as a result of water moving from the river into the aquifer material (recharge) beneath the site and also from water being discharged from the aquifer material towards the river. This same event occurs at certain times throughout the tidal cycle near the discharge/recharge boundary of the drainage ditch. The tidal cycle appears to only slightly influence water levels in the center of the site. As illustrated in all of the potentiometric surface maps, the ground water elevation in the center of the site remains approximately the same. Ground water appears to flow from the center of the site to the east and to the west towards the drainage ditch and river. Little information is known as to the flow direction of ground water at the southern edge of the site. In this area, it is assumed that ground water flows towards the drainage ditch that flows into the Cape Fear River.

3.3 Soils Quality

During installation of the monitoring wells, close attention was given to the condition of the soils encountered. Soils encountered in boreholes B-2, B-3, B-5, B-6, and MW-10 appear to have no visual wood preserving or diesel fuel constituents present. The OVA results listed in Attachment B support this observation with low OVA readings for most samples. However, borehole B-5 yielded elevated OVA concentrations in samples from the upper part of the borehole even though no visual contamination was observed.

The remainder of the boreholes all yielded signs of visual creosote or diesel fuel constituents. Soil samples from boreholes B-4, MW-11, MW-12, MW-13, and MW-14 were noted to have visual creosote. Borehole B-4 had visual creosote near the surface of the borehole and again near the bottom of the borehole. Boreholes MW-11 and MW-12 were observed to have visual creosote from approximately 3.0 feet below land surface to the sand and peat contact. Visual creosote was present only at the surface of borehole MW-13. The sand below the surface in MW-13 appeared to be free of visual creosote. The borehole for MW-14 was different from the other boreholes in that the hole was drilled to a deeper depth. Visual creosote was encountered almost immediately upon initiation of drilling activities. The creosote continued to be observed below the sand and peat contact to a point approximately 14.0 feet below land surface. No visual creosote was noted below this point to a depth of approximately 21.5 feet below land surface. The borehole was terminated at this depth (21.5' below land surface) when the peat

unit was breached and a medium to coarse sand was encountered. All OVA readings confirmed the presence of creosote and are listed in Attachment B.

Visual diesel fuel was noted in soils encountered in the southwestern portion of the site. Boreholes for monitoring wells MW-15, MW-16, and MW-17 yielded OVA and visual indications of diesel constituents. Soils from borehole MW-15 were saturated with diesel fuel near the surface of the borehole, but no visual diesel fuel was noted beyond 5.0 feet below land surface. Borehole MW-16 yielded soils that were saturated with diesel fuel from the surface to approximately 5.0 feet below land surface. From this point, no visual diesel fuel was observed, only a strong diesel fuel odor. The MW-17 borehole encountered soils saturated with diesel fuel from the surface to the bottom of the borehole (14 feet). All OVA readings are listed in Attachment B and confirm the findings discussed above.

3.4 Ground Water Quality

The quality of the ground water beneath the site is based on laboratory data obtained from sampling of all monitoring wells not containing free product. Sampling of the wells was completed on March 13, 1992 and the results are included in Attachment C. All ground water samples were analyzed for metals, which include chromium, copper, arsenic, and lead. In addition, samples were analyzed for halogenated and aromatic volatile organics by method SW864-8021 and semi-volatile organics by method SW846-8270.

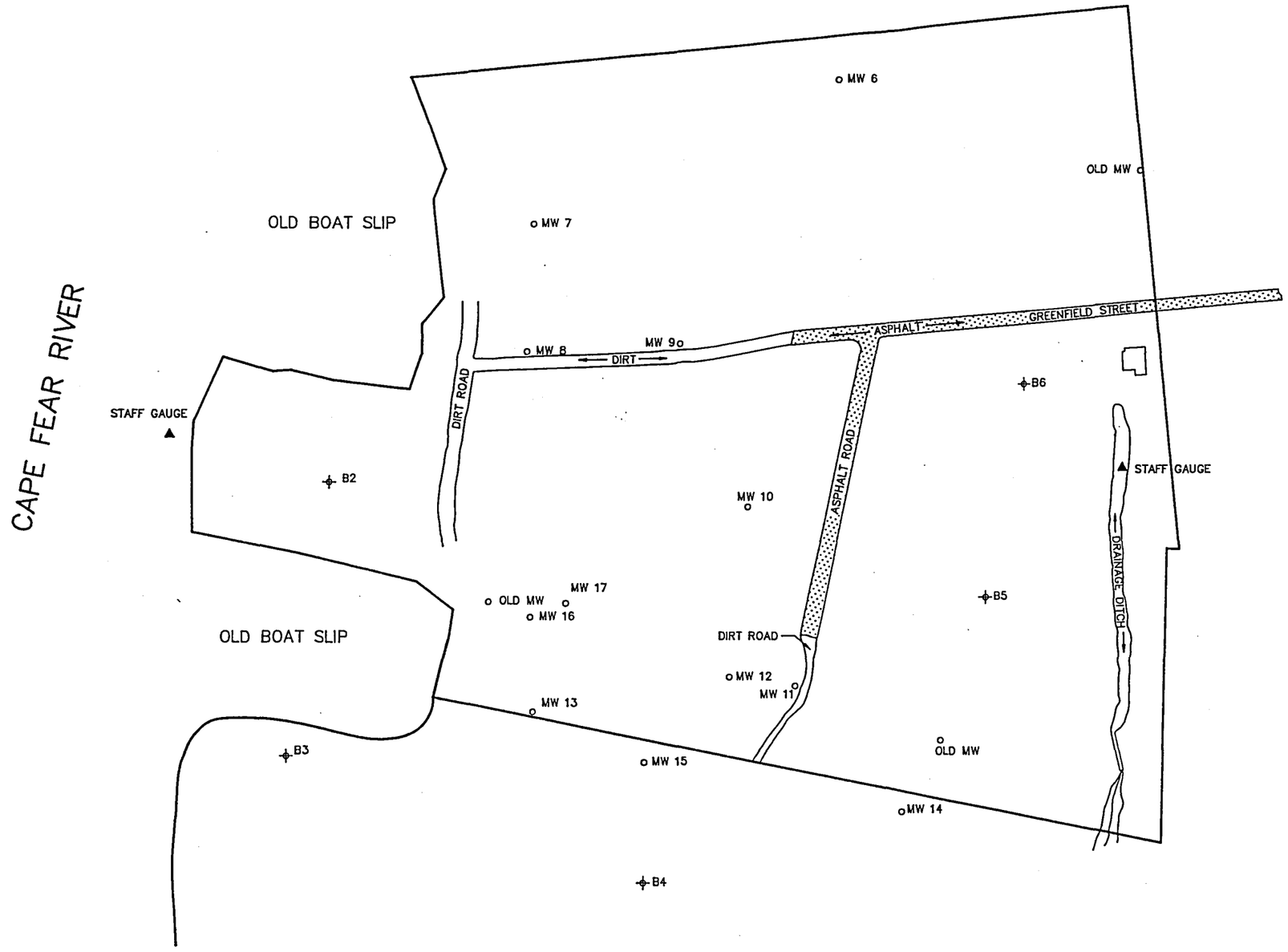
In constructing isoconcentration maps for the various constituents present in the ground water, ETE chose to combine the semi-volatile and general organics values for each monitoring well and plot the resulting values as total organics. The total organics isoconcentration map is depicted as Figure 2. This isoconcentration map illustrates the dissolved constituent plume present beneath the site. The plume appears to be partially defined in the northern, eastern, and western portions of the site. However, the southern edge of the plume is not defined.

Of the monitoring wells sampled, total organic concentrations were highest in temporary monitoring well B-4 with a value of 28.222 mg/l (ppm). Monitoring wells MW-13 and MW-14 yielded the next highest concentrations with values of 6.335 mg/l and 6.268 mg/l, respectively. Low concentrations of organic constituents were also detected in monitoring wells MW-15, MW-16, MW-17, and temporary well B-6. Free phase oil was detected in monitoring well MW-11 and MW-12, thus no ground water samples were retrieved for analysis.

All ground water samples collected were analyzed for metals using the above methodology. The samples were analyzed prior to filtration and then again after filtration. Concentrations of metals were detected in all ground water samples before filtration. However, all concentrations were listed below detection limits after filtration of the ground water, except for temporary well B-5. Ground water from this well yielded a concentration of 0.006 mg/l for copper after filtration.

Since only one constituent was detected in the ground water sample from B-5, no isoconcentration map was prepared.

FIGURE 1
SCALED SITE MAP



LEGEND

- PERMANENT MONITORING WELLS (12)
- TEMPORARY MONITORING WELLS (5)
- STAFF GAUGE

GRAPHIC SCALE

0 100 200 400 600 800

Environmental Technology Engineering, Inc.

SCALE	1"=200'
DRAWN BY	CAB
CHECKED BY	CKA
DATE	6/3/92

SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

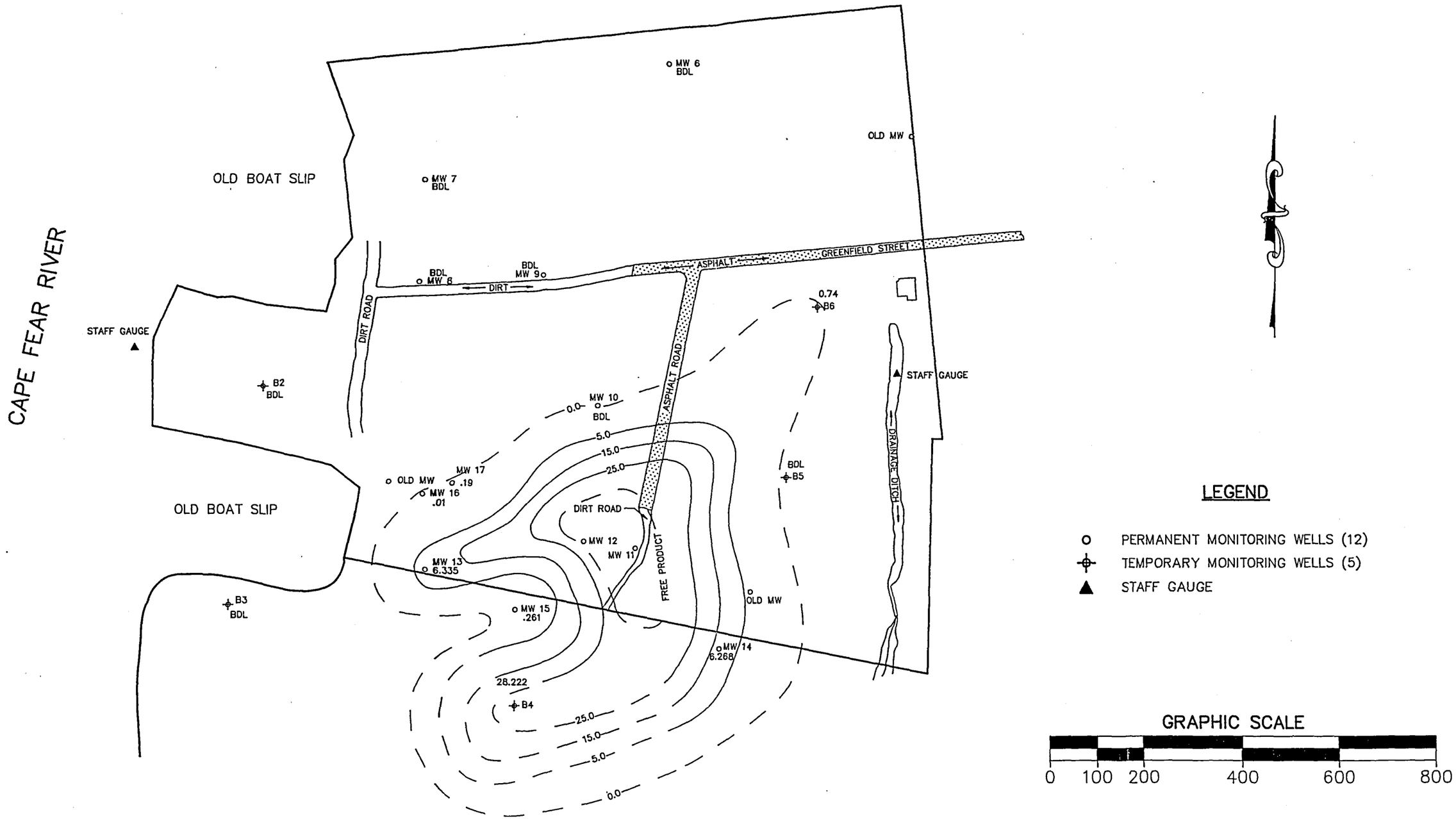
SITE MAP

SHEET OF

CADD NO. 53050105

PROJECT NO. 530-06-501

FIGURE 2
DISSOLVED ORGANICS ISOCONCENTRATION MAP



ETE Environmental Technology Engineering, Inc.	SCALE 1"=200' DRAWN BY CAB CHECKED BY CKA DATE 6/3/92	SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA	TOTAL ORGANIC ISOCONCENTRATION MAP UNITS = mg/l CONTOUR INTERVAL = 10 mg/l	SHEET OF CADD NO. 53050105 PROJECT NO. 530-06-501

ATTACHMENT A
BORING & WELL CONSTRUCTION DATA

WELL LOG DATABASE
SOUTHERN WOOD PIEDMONT
WILMINGTON, NORTH CAROLINA

Plant	Well	Inst Date	Boring Term	Surface Elev	Riser Elev	Bottom Elev	Well Depth	Riser Depth
WIL	MW-6	09/05/85	20.0	3.40	5.07	-16.38	19.78	21.45
WIL	MW-7	09/06/85	19.8	3.87	6.03	-15.65	19.52	21.68
WIL	MW-8	09/09/85	19.20	4.16	6.80	-14.86	19.02	21.66
WIL	MW-9	09/10/85	19.4	4.26	6.43	-14.96	19.22	21.39
WIL	MW-10	02/18/92	13.0	3.63	7.41	-6.87	10.50	14.28
WIL	MW-11	02/18/92	13.0	4.31	8.02	-6.19	10.50	14.21
WIL	MW-12	02/18/92	12.0	4.60	8.22	-5.90	10.50	14.12
WIL	MW-13	02/18/92	12.0	3.31	6.97	-7.19	10.50	14.16
WIL	MW-14	02/19/92	22.0	2.62	6.30	-13.38	16.0	19.68
WIL	MW-15	02/19/92	13.0	3.26	7.07	-7.24	10.50	14.31
WIL	MW-16	02/19/92	13.0	3.88	7.69	-6.62	10.50	14.31
WIL	MW-17	02/19/92	15.0	3.86	7.65	-6.64	10.50	14.29
WIL	B-2	02/19/92	18.0	4.18	6.96	-8.82	13.0	15.78
WIL	B-3	02/20/92	18.0	2.23	5.13	-13.77	16.0	18.90
WIL	B-4	02/20/92	15.0	3.12	4.18	-10.88	14.0	15.06
WIL	B-5	02/20/92	12.0	3.02	5.79	-8.98	12.0	14.77
WIL	B-6	02/20/92	10.0	3.15	6.06	-6.85	10.0	12.91

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-2

PROJECT: SOUTHERN WOOD PIEDMONNT – WILMINGTON, NC			SHEET NO. 1 OF 1
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED	2-19-92	JOB NO. 530-06-501
BORING CONTRACTOR: ETE	DRILLER	C. AARON	ELEVATION
RIG USED MOBILE B-57	INSPECTOR	K. ANDERSON	DATE STARTED 2-19-92

WELL CONSTRUCTION: CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	SAMPLE TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0					
5	1	SS		Medium to coarse brown SAND	Water saturated OVA = 0.0
10	2	SS		Same as above	No visual contamination OVA = 0.0
15	3	SS		Brown to black PEAT with root fragments	No visual contamination OVA = 2.0
20					
25					
30					
35					
40					
45					
50					

H:530501B2

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-3

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC			SHEET NO. 1 OF 1
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED	2-20-92	JOB NO. 530-06-501
BORING CONTRACTOR: ETE	DRILLER	C. AARON	ELEVATION
RIG USED MOBILE B-57	INSPECTOR	K. ANDERSON	DATE STARTED 2-20-92

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	SAMPLE: No.	SAMPLE: TYPE	SAMPLE: BLOWS PER 6"	CLASSIFICATION	REMARKS
	0						
			1	SS		Fine to medium brown SAND with small wood fragments at 4.5 feet	Water saturated OVA = 3.1
	5						
CLAY / PLUG			2	SS		Same as above	No visual contamination OVA = 0.9
SAND PACK / SAND PACK	10						
			3	SS		Dark brown to black PEAT with wood fragments	No visual contamination OVA = 0.8
	15						
	20						
	25						
	30						
	35						
	40						
	45						
	50						

H:530501B3

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-4

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC			SHEET NO. 1 OF 1
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED	2-20-92	JOB NO. 530-06-501
BORING CONTRACTOR: ETE	DRILLER	C. AARON	ELEVATION
RIG USED MOBILE B-57	INSPECTOR	K. ANDERSON	DATE STARTED 2-20-92

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
	0						Visual creosote at top of hole
			1	SS		Fine to medium brown SAND with wood fragments	No visual contamination OVA = 1.7
CLAY / PLUG	5						
SAND PACK / SAND PACK			2	SS		Same as above	No visual contamination OVA = 5.1
	10						
			3	SS			Visual creosote in sand above PEAT
	15					Dark brown to black PEAT with wood fragments	OVA = 98.9
	20						
	25						
	30						
	35						
	40						
	45						
	50						

H:530501B4

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-5

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-20-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-20-92	

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
	0		1	SS		Fine to medium brown SAND	Water saturated No visual contamiation OVA = 54.3
CLAY							
PLUG	5						
SAND PACK			2	SS		Same as above	OVA = 21.7
SAND PACK	10						
			3	SS		Dark black to brown PEAT with wood fragments	No visual contamination OVA = 3.9
	15						
	20						
	25						
	30						
	35						
	40						
	45						
	50						

H:530501B5

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. B-6

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-20-923	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-20-92	

WELL CONSTRUCTION	DEPTH FEET	SAMPLE: LITHOLOGY	No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
CLAY	0						
PLUG			1	SS		Fine to mdedium brown SAND	Water saturated No visual contamination OVA = 1.7
SAND PACK	5						
SAND PACK			2	SS		Dark brown to black PEAT with wood fragments	OVA = 1.0
	10						
	15						
	20						
	25						
	30						
	35						
	40						
	45						
	50						

H:530501B6

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-10

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-18-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-18-92	

WELL CONSTRUCTION: CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	06-10 10-15	Black – tan fine to meduium SAND	Saturated with water OVA = 0.0
5	2	SS	04-26 50	Tan fine to medium SAND	Saturated with water; OVA = 0.0
10	3	SS		Tan fine to medium SAND in upper portion of spoon; Dark brown to black PEAT at bottom of spoon	Boring terminated at 13.0 ft. OVA = 0.0
15					
20					
25					
30					
35					
40					
45					
50					

H:53050110

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-11

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-18-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-18-92	

WELL CONSTRUCTION: CLAY; SAND PACK; PLUG; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0					
	1	SS		Hit concrete and other buried debris	
5	2	SS	10-05 05-05	Brown-tan fine to medium SAND	Saturated with Creosote from 5 to 7 feet: OVA = 34.1
	3	SS	02-02 02-01	Brown-tan fine to medium SAND	Saturated with Creosote OVA = 38.1
10					
	4	SS		Brown-tan fine to medium SAND in upper spoon; Encountered a dark brown to black PEAT with roots at 15.0'	Sand unit saturated with Creosote; OVA = 69.8
15					
20					
25					
30					
35					
40					
45					
50					

H:53050111

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-12

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-18-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-18-92	

WELL CONSTRUCTION: CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	19-14 06-07	Brown-tan fine to medium well sorted SAND	No visual Creosote OVA = 13.3
5	2	SS	03-05 10-18	Same as above except Sand is saturated with Creosote	OVA = 72.7
10	3	SS	08-11 19-28	Same as above	OVA = 45.1
15				Organic rich dark brown to black PEAT with roots	
20					
25					
30					
35					
40					
45					
50					

H:53050112

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-13

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-18-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-18-92	

WELL CONSTRUCTION: CLAY; SAND PACK; PLUG; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0–5	1	SS	03-01 / 01-0	Brown-tan fine to medium SAND	Visual Creosote encountered in borehole immediately upon drilling OVA = 102.0
5–10	2	SS	05-07 / 12	Same as above	No visual Creosote; OVA = 47.8
10–15	3	SS		Dark brown to balck organic rich PEAT	No visual Creosote OVA = 3.0

H:53050113

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-14

PROJECT: SOUTHERN WOOD PIEDMONT -- WILMINGTON, NC			SHEET NO. 1 OF 1
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED	2-19-92	JOB NO. 530-06-501
BORING CONTRACTOR: ETE	DRILLER	C. AARON	ELEVATION
RIG USED MOBILE B-57	INSPECTOR	K. ANDERSON	DATE STARTED 2-19-92

WELL CONSTRUCTION: CLAY; PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS	2-5, 6-5	Dark brown-black Fill material	OVA = 0.0
	2	SS	9-5, 4-3	Brown-tan fine to medium SAND	Visual Creosote OVA = 0.0
5	3	SS	2-2, 4-3	Same as above	Visual Creosote OVA = 19.3
	4	SS	3-3, 4-10	Same as above	Visual Creosote OVA = 34.7
	5	SS		Black-brown organic rich PEAT with roots	Visual Creosote OVA = 27.1
10	6	SS		Same as above with large wood fragments throughout	Visual Creosote OVA = 9.6
	7	SS		Black PEAT with brown-orange wood fragment at end of spoon	Visual Creosote OVA = 25.3
15	8	SS		Black-brown PEAT with root fragments	Visual Creosote OVA = 19.4
	9	SS		No sample retrieved	
	10	SS		Black-brown PEAT with root fragments	No visual Creosote OVA = 8.0
20	11	SS		Black-brown PEAT to approximately 21.5 ft bgs; Brown-tan medium to coarse SAND below peat	No visual Creosote OVA = 5.2
25					
30					
35					
40					
45					
50					

H:53050114

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-15

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 2	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-19-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-19-92	

WELL CONSTRUCTION: CLAY PLUG; SAND PACK; SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0–5	1	SS	1-1 / 4-4	Fine to medium, loose to very loose brown SAND	Visual oil; diesel fuel odor OVA = 58.3
5–10	2	SS		Fine to medium, brown SAND	No visual oil; OVA = 15.6
10–15	3	SS		Fine to medium, brown SAND in upper spoon; Dark brown to black PEAT with root fragments in lower part of spoon	No visual oil OVA = 5.4

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

H:53050115

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-16

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-19-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-19-92	

WELL CONSTRUCTION: CLAY, PLUG, SAND PACK, SAND PACK

DEPTH FEET	SAMPLE No.	SAMPLE TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0	1	SS		Fine to medium, brown SAND	Saturated with diesel fuel OVA = 104
5	2	SS		Medium tan to brown SAND with some wood fragments	Little odor OVA = 42.6
10				Same as above	Slight diesel odor OVA = 32.5
15	3	SS		Dark brown to black PEAT contact at 15.0 ft.	
20					
25					
30					
35					
40					
45					
50					

H:53050116

ENVIRONMENTAL TECHNOLOGY ENGINEERING, INC.
CONSULTING ENGINEERS, SURVEYORS AND HYDROGEOLOGISTS
HYDROGEOLOGIC SERVICES

TEST BORING LOG

BORING NO. MW-17

PROJECT: SOUTHERN WOOD PIEDMONT – WILMINGTON, NC		SHEET NO. 1 OF 1	
CLIENT: SOUTHERN WOOD PIEDMONT	DATE FINISHED 2-19-92	JOB NO. 530-06-501	
BORING CONTRACTOR: ETE	DRILLER C. AARON	ELEVATION	
RIG USED MOBILE B-57	INSPECTOR K. ANDERSON	DATE STARTED 2-19-92	

WELL CONSTRUCTION: CLAY, PLUG, SAND PACK, SAND PACK

DEPTH FEET	SAMPLE No.	TYPE	BLOWS PER 6"	CLASSIFICATION	REMARKS
0					
	1	SS	10-2 / 2-2	Fine to medium brown SAND with wood fragment at bottom of spoon	Saturated with diesel fuel: OVA = 118
5					
	2	SS	2-2 / 2-2	Wood fragments in upper portion of spoon with a fine to medium brown SAND in bottom of spoon	Diesel fuel odor OVA = 57.1
10					
	3	SS		Fine to medium brown SAND	Saturated with diesel fuel; OVA = 72.3
15	4	SS		Dark Brown PEAT with root fragments	No visual oil OVA = 39.1
20					
25					
30					
35					
40					
45					
50					

H:53050117

ATTACHMENT B
OVA DATA

SOUTHERN WOOD PIEDMONT - WILMINGTON, NC OVA DATA			
Well #	Depth (ft.)	OVA reading (ppm)	Visual Oil (yes/no)
B-2	3-5	0.0	NO
	8-10	0.0	NO
	13-15	2.0	NO
B-3	3-5	3.1	NO
	8-10	0.9	NO
	13-15	0.8	NO
B-4	3-5	1.7	NO
	8-10	5.1	NO
	13-15	98.9	YES
B-5	3-5	54.3	NO
	8-10	21.7	NO
	13-15	3.9	NO
B-6	3-5	1.7	NO
	8-10	1.0	NO
MW-10	3-5	0.0	NO
	8-10	0.0	NO
	13-15	0.0	NO
MW-11	5-7	34.1	YES
	8-10	38.1	YES
	13-15	69.8	YES
MW-12	3-5	13.3	NO
	8-10	72.7	YES
	13-15	45.1	YES
MW-13	3-5	102	YES
	8-10	47.8	NO
	13-15	3.0	NO
MW-14	0-2	0.0	NO
	2-4	0.0	YES

SOUTHERN WOOD PIEDMONT - WILMINGTON, NC OVA DATA			
Well #	Depth (ft.)	OVA reading (ppm)	Visual Oil (yes/no)
MW-14	4-6	19.3	YES
	6-8	34.7	YES
	8-10	27.1	YES
	10-12	9.6	YES
	12-14	25.3	YES
	14-16	19.4	YES
	16-18	N/A	N/A
	18-20	8.0	NO
	20-21.5	5.2	NO
MW-15	3-5	58.3	YES
	8-10	15.6	NO
	13-15	5.4	NO
MW-16	3-5	104	YES
	8-10	42.6	NO
	13-15	32.5	NO
MW-17	3-5	118	YES
	8-10	57.1	NO
	12-14	72.3	YES
	14-15	39.1	NO

ATTACHMENT C
LABORATORY DATA

GROUND WATER QUALITY SUMMARY
SOUTHERN WOOD PIEDMONT
WILMINGTON, SOUTH CAROLINA

Well	Date	Total Metals (mg/L)				Dissolved Metals (mg/L)				Total Semi-Volatile Org. (mg/L)	Total Volatile Org. (mg/L)
		Arsenic	Chromium	Copper	Lead	Arsenic	Chromium	Copper	Lead		
B-2	03/11/92	0.11	0.10	0.05	0.35	ND	ND	ND	ND	ND	ND
B-3	03/13/92	0.049	0.095	0.085	0.12	ND	ND	ND	ND	ND	ND
B-4	03/12/92	0.031	0.190	0.13	0.21	ND	ND	ND	ND	27.982	0.24
B-5	03/11/92	ND	0.006	0.014	0.010	ND	ND	0.0064	ND	ND	ND
B-6	03/11/92	0.051	0.066	0.056	0.100	ND	ND	ND	ND	0.052	ND
MW-6	03/12/92	ND	ND	0.012	0.0092	ND	ND	ND	ND	ND	ND
MW-7	03/12/92	0.0062	0.031	0.012	0.023	ND	ND	ND	ND	ND	ND
MW-8	03/12/92	ND	0.015	0.012	0.016	ND	ND	ND	ND	ND	ND
MW-9	03/11/92	ND	ND	0.007	ND	ND	ND	ND	ND	ND	ND
MW-10	03/11/92	0.077	0.059	0.091	0.084	ND	ND	ND	ND	ND	ND
MW-13	03/11/92	0.050	0.059	0.080	0.14	ND	ND	ND	ND	6.121	0.214
MW-14	03/11/92	0.010	0.033	0.023	0.029	ND	ND	ND	ND	6.015	0.2531
MW-15	03/11/92	0.10	0.051	0.086	0.094	ND	ND	ND	ND	0.348	0.022
MW-16	03/11/92	0.027	0.120	0.14	0.064	ND	ND	ND	ND	ND	0.0096
MW-17	03/11/92	0.14	0.18	0.40	0.39	ND	ND	ND	ND	0.172	0.0184

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 2 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114018
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 16:30

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: B-2
LOG #: 9998
FIELD INFORMATION: TD 15.05, WL 5.10, PH 6.4, COND. 225

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.10	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.05	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.11	0.025	mg/L

Note: Analysis performed by 3 point MSA.

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114018

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.35	0.25	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114018

IALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 16-MAR-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
LORODIFLUOROMETHANE	BDL	0.005	mg/L
HLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
HLOROETHANE	BDL	0.005	mg/L
RICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
ICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
ROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 17-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	925		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: O505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
NZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114018

Parameter	Result	Det. Limit	Units
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	47		% Rec
PHENOL-D5	36		% Rec
NITROBENZENE-D5	68		% Rec
2-FLUOROBIPHENYL	60		% Rec
2,4,6-TRIBROMOPHENOL	78		% Rec
TERPHENYL-D14	67		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 13438.

Quality Assurance Officer: Deborah MB Jensen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 32 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114025
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 13-MAR-92 16:15

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: B-3
LOG #: 10003
FIELD INFORMATION: TD NOT GIVEN, WL NOT GIVEN, PH 5.76, COND. 145

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.095	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.085	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.049	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114025

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.12	0.025	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	250		mL
FINAL VOLUME	250		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114025

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 18-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 19-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	985		mL
FINAL VOLUME	1		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 23-MAR-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114025

Parameter	Result	Det. Limit	Units
PHENANTHRENE	BDL	0.01	mg/L
[illegible]LORO-3-METHYLPHENOL	BDL	0.01	mg/L
[illegible]HLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	* 10		% Rec
PHENOL-D5	15		% Rec
NITROBENZENE-D5	* 22		% Rec
2-FLUOROBIPHENYL	* 19		% Rec
2,4,6-TRIBROMOPHENOL	20		% Rec
TERPHENYL-D14	* 27		% Rec

*Note: * - Surrogate recovery outside of QC limits. Sample was not re-extracted due to lack of sample.*
*** - Sample ran twice with no improvement in surrogate recovery.*

Sample Comments

* *See Note for Parameter*
Below Detection Limit

Sample chain of custody number 13436.

Quality Assurance Officer: Deborah M B Tanner

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 2 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114021
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 12-MAR-92 09:00

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: B-4
LOG #: 9999
FIELD INFORMATION: TD NOT GIVEN, WL 1.18, PH 6.3, COND. 2350
FIELD COMMENTS: STRONG ODOR, TURBID BROWN, NO HEAVY OIL
NOTE: FIELD INFORMATION SHEET LISTS THIS SAMPLE AS B-3

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
IAL WEIGHT OR VOLUME	100		mL
AL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.190	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.13	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.031	0.025	mg/L

: Analysis performed by 3 point MSA.

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114021

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.21	0.05	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	350		mL
FINAL VOLUME	350		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114021

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 18-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	* 0.110	0.020	mg/L
M/P-XYLENE	* 0.090	0.020	mg/L
O-XYLENE	* 0.040	0.020	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

*Note: * - Sample was diluted 1:20 for Ethyl Benzene and Xylenes on 3/18/92.*
All other compounds were run straight on 3/17/92.

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 19-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	895		mL
FINAL VOLUME	1		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 24-MAR-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	* 3.0	0.01	mg/L
ANTHRACENE	* 0.94	0.01	mg/L
BENZ(A)ANTHRACENE	* 0.42	0.01	mg/L
BENZO(A)PYRENE	0.11	0.01	mg/L
BENZO(B)FLUORANTHENE	* 0.21	0.01	mg/L
BENZO(K)FLUORANTHENE	0.056	0.01	mg/L
CARBAZOLE	* 0.36	0.01	mg/L
CHRYSENE	* 0.34	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	0.011	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114021

Parameter	Result	Det. Limit	Units
FLUORANTHENE	* 2.7	0.01	mg/L
INO(1,2,3-CD)PYRENE	0.035	0.01	mg/L
HTHALENE	*** 14	0.01	mg/L
PHENANTHRENE	** 5.8	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	63		% Rec
PHENOL-D5	38		% Rec
NITROBENZENE-D5	255		% Rec
2-FLUOROBIPHENYL	71		% Rec
2,4,6-TRIBROMOPHENOL	0		% Rec
TERPHENYL-D14	98		% Rec

Note: Surrogates are outside of the recovery limits. Upon dilution, surrogate recoveries fell within acceptable limits. Matrix interference suspected.
** - Taken from 1:20 dilution, run on 3/25/92 (GB0816.C)*
*** - Taken from 1:50 dilution, run on 3/25/92 (GB0817.C)*
**** - Taken from 1:100 dilution, run on 3/25/92 (GB0818.C)*

Sample Comments

*	*See Note for Parameter*
**	*See Note for Parameter*
***	*See Note for Parameter*
BDL	*Below Detection Limit*

Sample chain of custody number 13437.

Quality Assurance Officer: Delmuth MB Jonsson

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114010
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 10:30

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: B-5
LOG #: 9990
FIELD INFORMATION: TD 15.05, WL 3.16, PH 6.2, COND. 2700

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.006	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.014	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

Noet: Analysis performed by 3 point MSA.

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114010

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.010	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	0.0064	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114010

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 16-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 18-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	980		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 19-MAR-92 Instrument: GC/MS SVOA Test: 0517.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114010

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
SURROGATE RECOVERY			
NITROBENZENE-D5	* 26		% Rec
2-FLUOROBIPHENYL	53		% Rec
TERPHENYL-D14	73		% Rec

*Note: * - Surrogates below EPA control limits.*

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 16-MAR-92 Test: P233.4.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	960		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (ACID FRACTION) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: 0518.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.1

Parameter	Result	Det. Limit	Units
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.05	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	50		% Rec
PHENOL-D5	35		% Rec
2,4,6-TRIBROMOPHENOL	78		% Rec

Sample Comments

** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 13438.

Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114009
	Complete	PO Number
	27-MAR-92	530-06-501
	Printed	Sampled
	01-APR-92	11-MAR-92 09:45

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: B-6
LOG #: 9989
FIELD INFORMATION: TD 13.0, WL 3.85, PH 6.1, COND. 790

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.066	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.056	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.051	0.025	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114009

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.100	0.050	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114009

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 16-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 18-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	978		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 19-MAR-92 Instrument: GC/MS SVOA Test: 0517.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.022	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114009

Parameter	Result	Det. Limit	Units
NAPHTHALENE	0.052	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
SURROGATE RECOVERY			
NITROBENZENE-D5	* 0		% Rec
2-FLUOROBIPHENYL	52		% Rec
TERPHENYL-D14	59		% Rec

*Note: * - Surrogates below EPA control limits.*

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 16-MAR-92 Test: P233.4.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	975		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (ACID FRACTION) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: O518.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.1

Parameter	Result	Det. Limit	Units
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.05	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	44		% Rec
PHENOL-D5	32		% Rec
2,4,6-TRIBROMOPHENOL	78		% Rec

Sample Comments

* *See Note for Parameter*
BDL *Below Detection Limit*

Sample chain of custody number 13438.

Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 32 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114024
	Complete	PO Number
	27-MAR-92	530-06-501
	Printed	Sampled
	30-MAR-92	12-MAR-92 13:15

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-6
LOG #: 10002
FIELD INFORMATION: TD 21.55, WL 2.51, PH 6.2, COND. 1590

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.012	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114024

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.0092	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114024

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 17-MAR-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 19-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	955		mL
FINAL VOLUME	1		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 23-MAR-92 Instrument: GC/MS SVOA Test: O505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114024

Parameter	Result	Det. Limit	Units
PHENANTHRENE	BDL	0.01	mg/L
CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	56		% Rec
PHENOL-D5	35		% Rec
NITROBENZENE-D5	68		% Rec
2-FLUOROBIPHENYL	56		% Rec
2,4,6-TRIBROMOPHENOL	93		% Rec
TERPHENYL-D14	71		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 13437.

Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114023
	Complete	PO Number
	27-MAR-92	530-06-501
	Printed	Sampled
	01-APR-92	12-MAR-92 12:35

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-7
LOG #: 10001
FIELD INFORMATION: TD 21.55, WL 4.16, PH 6.2, COND. 1150

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.031	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.012	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.0062	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114023

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.023	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114023

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 18-MAR-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 19-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	940		mL
FINAL VOLUME	1		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 23-MAR-92 Instrument: GC/MS SVOA Test: O505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114023

Parameter	Result	Det. Limit	Units
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	43		% Rec
PHENOL-D5	33		% Rec
NITROBENZENE-D5	53		% Rec
2-FLUOROBIPHENYL	50		% Rec
2,4,6-TRIBROMOPHENOL	88		% Rec
TERPHENYL-D14	82		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 13437.

Quality Assurance Officer: Helmuth M.B. Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 32 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114022
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 12-MAR-92 12:00

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-8
LOG #: 10000
FIELD INFORMATION: TD 21.55, WL 4.50, PH 6.3, COND. 625

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.015	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.012	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

Note: Analysis performed by 3 point MSA.

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114022

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.016	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	250		mL
FINAL VOLUME	250		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114022

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 16-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 19-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	925		mL
FINAL VOLUME	1		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 23-MAR-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114022

Parameter	Result	Det. Limit	Units
PHENANTHRENE	BDL	0.01	mg/L
CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	56		% Rec
PHENOL-D5	42		% Rec
NITROBENZENE-D5	62		% Rec
2-FLUOROBIPHENYL	57		% Rec
2,4,6-TRIBROMOPHENOL	93		% Rec
TERPHENYL-D14	73		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 13437.

Quality Assurance Officer: Deborah MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114012
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 11:45

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-9
LOG #: 9992
FIELD INFORMATION: TD 21.55, WL 3.79, PH 5.9, COND. 480

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.007	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

Note: Analysis performed by 3 point MSA.

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114012

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114012

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 17-MAR-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
BROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 18-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	990		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 19-MAR-92 Instrument: GC/MS SVOA Test: O517.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114012

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
SURROGATE RECOVERY			

NITROBENZENE-D5	63		% Rec
2-FLUOROBIPHENYL	47		% Rec
TERPHENYL-D14	60		% Rec

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 16-MAR-92 Test: P233.4.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	980		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (ACID FRACTION) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: O518.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.1

Parameter	Result	Det. Limit	Units
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.05	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			

2-FLUOROPHENOL	52		% Rec
PHENOL-D5	35		% Rec
2,4,6-TRIBROMOPHENOL	76		% Rec

Sample Comments

Note: Sample ID on Chain of Custody is "MW-9", Container is labeled "MW-5"

BDL Below Detection Limit

Sample chain of custody number 13438.

Quality Assurance Officer: [signature]

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 32 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114011
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 11:10

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-10
LOG #: 9991
FIELD INFORMATION: TD 14.05, WL 4.08, PH 7.0, COND. 400

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.059	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.091	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.077	0.05	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114011

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.084	0.050	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114011

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 16-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
BROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 18-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	965		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 19-MAR-92 Instrument: GC/MS SVOA Test: 0517.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114011

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
SURROGATE RECOVERY			
NITROBENZENE-D5	66		% Rec
2-FLUOROBIPHENYL	46		% Rec
TERPHENYL-D14	62		% Rec

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 16-MAR-92 Test: P233.4.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	925		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (ACID FRACTION) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: 0518.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.1

Parameter	Result	Det. Limit	Units
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.05	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	50		% Rec
PHENOL-D5	37		% Rec
2,4,6-TRIBROMOPHENOL	77		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 13438.

Quality Assurance Officer: Deborah MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 32 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114015
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 14:40

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-13
LOG #: 9995
FIELD INFORMATION: TD 13.85, WL 4.19, PH 6.3, COND. 1350
FIELD COMMENTS: SLIGHT ODOR DIESEL

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.059	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.080	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.050	0.025	mg/L

: Analysis performed by 3 point MSA.

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114015

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.14	0.050	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

ALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

st: B. RASH Analysis Date: 18-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
ICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	* 0.073	0.010	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	* 0.031	0.010	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
OMOCHLOROMETHANE	BDL	0.001	mg/L
OROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	* 0.041	0.010	mg/L
M/P-XYLENE	* 0.044	0.010	mg/L
O-XYLENE	* 0.025	0.010	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

*Note: * - Sample was diluted 1:10 for BTEX only on 3/18/92. All other compounds were run straight on 3/17/92.*

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 18-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	965		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 19-MAR-92 Instrument: GC/MS SVOA Test: 0517.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	* 1.1	0.01	mg/L
ANTHRACENE	0.13	0.01	mg/L
BENZ(A)ANTHRACENE	0.057	0.01	mg/L
BENZO(A)PYRENE	0.02	0.01	mg/L
O(B)FLUORANTHENE	0.037	0.01	mg/L
BENZO(K)FLUORANTHENE	0.01	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	0.087	0.01	mg/L
CHRYSENE	0.057	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114015

Parameter	Result	Det. Limit	Units
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	* 0.56	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	** 2.8	0.01	mg/L
PHENANTHRENE	* 1.2	0.01	mg/L
SURROGATE RECOVERY			
NITROBENZENE-D5	57		% Rec
2-FLUOROBIPHENYL	60		% Rec
TERPHENYL-D14	72		% Rec

*Note: * - Taken from 1:10 dilution (GB0805.c), run on 3/24/92.*
*** - Taken from 1:20 dilution (GB0815.c), run on 3/25/92.*

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510
Analyst: W. GROVES Analysis Date: 16-MAR-92 Test: P233.4.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	965		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (ACID FRACTION) SW846-8270
Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: 0518.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.1

Parameter	Result	Det. Limit	Units
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	0.063	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	48		% Rec
PHENOL-D5	32		% Rec
2,4,6-TRIBROMOPHENOL	79		% Rec

Sample Comments

** See Note for Parameter*
*** See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 13438.

Quality Assurance Officer: Deborah M.B. Jensen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 82 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114013
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 13:25

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-14
LOG #: 9993
FIELD INFORMATION: TD 19.50, WL 4.12, PH 6.4, COND. 1450
FIELD COMMENTS: ODOR

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.033	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.023	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.010	0.005	mg/L

Note: Analysis performed by 3 point MSA.

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114013

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.029	0.010	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114013

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 18-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	0.0011	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	* 0.030	0.010	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	* 0.046	0.010	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	* 0.067	0.010	mg/L
M/P-XYLENE	* 0.073	0.010	mg/L
O-XYLENE	* 0.036	0.010	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

*Note: * - Sample was diluted 1:10 for BTEX only on 3/18/92. All other compounds were run straight on 3/17/92.*

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 18-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	930		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 19-MAR-92 Instrument: GC/MS SVOA Test: 0517.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	* 0.74	0.01	mg/L
ANTHRACENE	0.11	0.01	mg/L
BENZ(A)ANTHRACENE	0.037	0.01	mg/L
BENZO(A)PYRENE	0.011	0.01	mg/L
BENZO(B)FLUORANTHENE	0.021	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	0.11	0.01	mg/L
CHRYSENE	0.036	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114013

Parameter	Result	Det. Limit	Units
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	* 0.38	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	** 3.1	0.01	mg/L
PHENANTHRENE	* 1.1	0.01	mg/L
SURROGATE RECOVERY			
NITROBENZENE-D5	50		% Rec
2-FLUOROBIPHENYL	48		% Rec
TERPHENYL-D14	68		% Rec

*Note: * - Taken from 1:10 dilution (GB0804.c), run on 3/24/92.*
*** - Taken from 1:20 dilution (GB0814.c), run on 3/25/92.*

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 16-MAR-92 Test: P233.4.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	930		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (ACID FRACTION) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: D518.3.0
Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.1

Parameter	Result	Det. Limit	Units
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	* 0.370	0.10	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.05	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	53		% Rec
PHENOL-D5	43		% Rec
2,4,6-TRIBROMOPHENOL	78		% Rec

*Note: * - Taken from 1:10 dilution (GB0784), run on 3/18/92.*

Sample Comments

*	*See Note for Parameter*
**	*See Note for Parameter*
BDL	*Below Detection Limit*

Sample chain of custody number 13438.

Quality Assurance Officer: Chelsmith MRB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 32 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114014
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 14:00

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-15
LOG #: 9994
FIELD INFORMATION: TD 13.30, WL 4.04, PH 6.5, COND. 700
FIELD COMMENTS: SLIGHT ODOR DIESEL

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.051	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.086	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.10	0.05	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114014

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.094	0.050	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	350		mL
FINAL VOLUME	350		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114014

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 17-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.025	mg/L
CHLOROMETHANE	BDL	0.025	mg/L
VINYL CHLORIDE	BDL	0.025	mg/L
BROMOMETHANE	BDL	0.025	mg/L
CHLOROETHANE	BDL	0.025	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.025	mg/L
1,1-DICHLOROETHENE	BDL	0.005	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.005	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.005	mg/L
1,1-DICHLOROETHANE	BDL	0.005	mg/L
CHLOROFORM	BDL	0.005	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.005	mg/L
CARBON TETRACHLORIDE	BDL	0.005	mg/L
BENZENE	BDL	0.005	mg/L
1,2-DICHLOROETHANE	BDL	0.005	mg/L
TRICHLOROETHENE	BDL	0.005	mg/L
1,2-DICHLOROPROPANE	BDL	0.005	mg/L
BROMODICHLOROMETHANE	BDL	0.005	mg/L
DIBROMOMETHANE	BDL	0.005	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.005	mg/L
TOLUENE	0.006	0.005	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.005	mg/L
TETRACHLOROETHENE	BDL	0.005	mg/L
1,3-DICHLOROPROPANE	BDL	0.005	mg/L
DIBROMOCHLOROMETHANE	BDL	0.005	mg/L
CHLOROBENZENE	BDL	0.005	mg/L
ETHYLBENZENE	0.008	0.005	mg/L
M/P-XYLENE	0.008	0.005	mg/L
O-XYLENE	BDL	0.005	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.005	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.025	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.005	mg/L

Note: Sample was diluted 1:5 on 3/17/92.

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 18-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	970		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 19-MAR-92 Instrument: GC/MS SVOA Test: 0517.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.15	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	0.021	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114014

Parameter	Result	Det. Limit	Units
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	0.11	0.01	mg/L
PHENANTHRENE	0.023	0.01	mg/L
SURROGATE RECOVERY			
NITROBENZENE-D5	67		% Rec
2-FLUOROBIPHENYL	63		% Rec
TERPHENYL-D14	70		% Rec

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 16-MAR-92 Test: P233.4.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	965		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (ACID FRACTION) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: O518.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.1

Parameter	Result	Det. Limit	Units
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	0.044	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
2,3,4,6-TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.05	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	55		% Rec
PHENOL-D5	39		% Rec
2,4,6-TRIBROMOPHENOL	81		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 13438.

Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114016
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 15:05

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-16
LOG #: 9996
FIELD INFORMATION: TD 13.97, WL 4.93, PH 6.2, COND. 1410
FIELD COMMENTS: SLIGHT ODOR DIESEL

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
TIAL WEIGHT OR VOLUME	100		mL
AL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.120	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.14	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.027	0.005	mg/L

e: Matrix interference suspected.

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114016

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.064	0.025	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114016

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 18-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	0.0027	0.001	mg/L
M/P-XYLENE	0.0037	0.001	mg/L
O-XYLENE	0.0032	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

Note: One sample vial was identified as MW-15 and one vial was not identified.

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 17-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	945		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114016

Parameter	Result	Det. Limit	Units
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.05	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	53		% Rec
PHENOL-D5	34		% Rec
NITROBENZENE-D5	* 24		% Rec
2-FLUOROBIPHENYL	58		% Rec
2,4,6-TRIBROMOPHENOL	107		% Rec
TERPHENYL-D14	55		% Rec

*Note: * - Surrogates below EPA control limits. Sample re-extracted for base neutral. Surrogates still below EPA control limits due to matrix.*

Sample Comments

See Note for Parameter
BDL Below Detection Limit

Sample chain of custody number 13438.

Quality Assurance Officer: Chelmuth MB Jansen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 132 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114017
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 15:45

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: MW-17
LOG #: 9997
FIELD INFORMATION: TD 14.43, WL 4.70, PH 6.2, COND. 1740
FIELD COMMENTS: SLIGHT ODOR DIESEL

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.18	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	0.40	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.14	0.05	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114017

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0

Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	0.39	0.25	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	300		mL
FINAL VOLUME	300		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1

Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M103.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1

Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0

Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114017

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 18-MAR-92 Instrument: GC/PID ELCD Test: 0461.1.0

Parameter	Result	Det. Limit	Units
CHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L
1,1-DICHLOROETHENE	BDL	0.001	mg/L
DICHLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
TRANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	0.0011	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	0.0039	0.001	mg/L
M/P-XYLENE	0.0088	0.001	mg/L
O-XYLENE	0.0046	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 17-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	975		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 17-MAR-92 Instrument: GC/MS SVOA Test: 0505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	0.024	0.01	mg/L
ANTHRACENE	0.023	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	0.065	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114017

Parameter	Result	Det. Limit	Units
PHENANTHRENE	0.060	0.01	mg/L
[illegible]LORO-3-METHYLPHENOL	BDL	0.01	mg/L
[illegible]HLOROPHENOL	BDL	0.01	mg/L
2,4-DIMETHYLPHENOL	BDL	0.01	mg/L
2,4-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	58		% Rec
PHENOL-D5	40		% Rec
NITROBENZENE-D5	* 17		% Rec
2-FLUOROBIPHENYL	65		% Rec
2,4,6-TRIBROMOPHENOL	104		% Rec
TERPHENYL-D14	65		% Rec

*Note: * - Surrogate recovery below EPA control limits.*

Sample Comments

* *See Note for Parameter*
BDL *Below Detection Limit*

[illegible]ple chain of custody number 13438.

Quality Assurance Officer: Delmarth MB Jonsson

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 32 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114020
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 01-APR-92	Sampled 11-MAR-92 09:00

Report To	Bill To
SANDRA WATSON SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304	SOUTHERN WOOD PIEDMONT P.O. BOX 5447 SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: FB

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 18-MAR-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114020

Parameter	Result	Det. Limit	Units
1,1-DICHLOROETHENE	BDL	0.001	mg/L
HLOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
ANS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 17-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	980		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 19-MAR-92 Instrument: GC/MS SVOA Test: O505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
-DIMETHYLPHENOL	BDL	0.01	mg/L
-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114020

Parameter	Result	Det. Limit	Units
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
BIS(2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
2,4,6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	53		% Rec
PHENOL-D5	35		% Rec
NITROBENZENE-D5	72		% Rec
2-FLUOROBIPHENYL	62		% Rec
2,4,6-TRIBROMOPHENOL	75		% Rec
TERPHENYL-D14	72		% Rec

Sample Comments

Note: Both Field Blank samples for metals were marked "Rinsed". Sample with pH 1 was analyzed for total metals. Sample with pH 6 was filtered and analyzed for dissolved metals.

BDL Below Detection Limit

Sample chain of custody number 13438.

Quality Assurance Officer: Helmuth MB Janssen

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
S HERITAGE LABORATORIES, INC. 32 POMPANO ST. CHARLOTTE, NC 28216 (704)393-1853	14-MAR-92	B114019
	Complete 27-MAR-92	PO Number 530-06-501
	Printed 30-MAR-92	Sampled 11-MAR-92 12:30

Report To

SANDRA WATSON
SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Bill To

SOUTHERN WOOD PIEDMONT
P.O. BOX 5447
SPARTANBURG, SC 29304

Sample Description

PROJECT: SWP WILMINGTON
SAMPLE ID: EQUIP BLANK

FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P130.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL WEIGHT OR VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.0
Prep: FAA OR ICP ACID DIGESTION OF AQUEOUS SAMPLES SW846-3005 P130.4.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 18-MAR-92 Test: P130.6.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 25-MAR-92 Instrument: GFAA Test: M116.2.0
Prep: GFAA ACID DIGESTION OF AQUEOUS SAMPLES SW846-3020 P130.6.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114019

0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A

Analyst: M. CASHION Analysis Date: 14-MAR-92 Test: P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	400		mL
FINAL VOLUME	400		mL

FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005

Analyst: M. CASHION Analysis Date: 16-MAR-92 Test: P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	20		mL

CHROMIUM FAA SW846-7190

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M110.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.006	mg/L

COPPER FAA SW846-7210

Analyst: L. SURRATT Analysis Date: 23-MAR-92 Instrument: FAA Test: M112.1.1
Prep: FAA OR ICP ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3005 P132.4.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.006	mg/L

GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020

Analyst: M. CASHION Analysis Date: 17-MAR-92 Test: P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL VOLUME	50		mL

ARSENIC GFAA SW846-7060

Analyst: L. SURRATT Analysis Date: 26-MAR-92 Instrument: GFAA Test: M103.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.005	mg/L

LEAD GFAA SW846-7421

Analyst: L. SURRATT Analysis Date: 24-MAR-92 Instrument: GFAA Test: M116.2.1
Prep: GFAA ACID DIGESTION (DISSOLVED METALS) AQUEOUS SAMPLES SW846-3020 P133.6.0
Prep: 0.45 MICRON PORE DIAMETER MEMBRANE FILTRATION SM 302A P110.5.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.005	mg/L

HALOGENATED AND AROMATIC VOLATILE ORGANICS BY GC/PID ELCD SW846-8021

Analyst: B. RASH Analysis Date: 16-MAR-92 Instrument: GC/PID ELCD Test: O461.1.0

Parameter	Result	Det. Limit	Units
DICHLORODIFLUOROMETHANE	BDL	0.005	mg/L
CHLOROMETHANE	BDL	0.005	mg/L
VINYL CHLORIDE	BDL	0.005	mg/L
BROMOMETHANE	BDL	0.005	mg/L
CHLOROETHANE	BDL	0.005	mg/L
TRICHLOROFLUOROMETHANE	BDL	0.005	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114019

Parameter	Result	Det. Limit	Units
1,1-DICHLOROETHENE	BDL	0.001	mg/L
LOROMETHANE (METHYLENE CHLORIDE)	BDL	0.001	mg/L
NS-1,2-DICHLOROETHENE	BDL	0.001	mg/L
1,1-DICHLOROETHANE	BDL	0.001	mg/L
CHLOROFORM	BDL	0.001	mg/L
1,1,1-TRICHLOROETHANE	BDL	0.001	mg/L
CARBON TETRACHLORIDE	BDL	0.001	mg/L
BENZENE	BDL	0.001	mg/L
1,2-DICHLOROETHANE	BDL	0.001	mg/L
TRICHLOROETHENE	BDL	0.001	mg/L
1,2-DICHLOROPROPANE	BDL	0.001	mg/L
BROMODICHLOROMETHANE	BDL	0.001	mg/L
DIBROMOMETHANE	BDL	0.001	mg/L
CIS-1,3-DICHLOROPROPENE	BDL	0.001	mg/L
TOLUENE	BDL	0.001	mg/L
1,1,2-TRICHLOROETHANE	BDL	0.001	mg/L
TETRACHLOROETHENE	BDL	0.001	mg/L
1,3-DICHLOROPROPANE	BDL	0.001	mg/L
DIBROMOCHLOROMETHANE	BDL	0.001	mg/L
CHLOROBENZENE	BDL	0.001	mg/L
ETHYLBENZENE	BDL	0.001	mg/L
M/P-XYLENE	BDL	0.001	mg/L
O-XYLENE	BDL	0.001	mg/L
2-CHLOROETHYLVINYLETHER	BDL	0.001	mg/L
METHYL-T-BUTYL ETHER (MTBE)	BDL	0.005	mg/L
1,1,2,2-TETRACHLOROETHANE	BDL	0.001	mg/L

S SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510

Analyst: W. GROVES Analysis Date: 17-MAR-92 Test: P233.4.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	980		mL
FINAL VOLUME	1.0		mL

SEMI-VOLATILE ORGANICS (BASE/NEUTRAL/ACID FRACTIONS) SW846-8270

Analyst: M. PIWOWAR Analysis Date: 19-MAR-92 Instrument: GC/MS SVOA Test: D505.3.0

Prep: GC/MS SEPARATORY FUNNEL LIQUID-LIQUID EXTRACTION SW846-3510 P233.4.0

Parameter	Result	Det. Limit	Units
ACENAPHTHENE	BDL	0.01	mg/L
ANTHRACENE	BDL	0.01	mg/L
BENZ(A)ANTHRACENE	BDL	0.01	mg/L
BENZO(A)PYRENE	BDL	0.01	mg/L
BENZO(B)FLUORANTHENE	BDL	0.01	mg/L
BENZO(K)FLUORANTHENE	BDL	0.01	mg/L
CARBAZOLE	BDL	0.01	mg/L
CHRYSENE	BDL	0.01	mg/L
DIBENZ(A,H)ANTHRACENE	BDL	0.01	mg/L
FLUORANTHENE	BDL	0.01	mg/L
INDENO(1,2,3-CD)PYRENE	BDL	0.01	mg/L
NAPHTHALENE	BDL	0.01	mg/L
PHENANTHRENE	BDL	0.01	mg/L
4-CHLORO-3-METHYLPHENOL	BDL	0.01	mg/L
2-CHLOROPHENOL	BDL	0.01	mg/L
DIMETHYLPHENOL	BDL	0.01	mg/L
-DINITROPHENOL	BDL	0.05	mg/L
PENTACHLOROPHENOL	BDL	0.05	mg/L
PHENOL	BDL	0.01	mg/L
TETRACHLOROPHENOL	BDL	0.01	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: B114019

Parameter	Result	Det. Limit	Units
2,4,5-TRICHLOROPHENOL	BDL	0.01	mg/L
[illegible]2-CHLOROETHYL)ETHER	BDL	0.01	mg/L
[illegible],6-TRICHLOROPHENOL	BDL	0.01	mg/L
SURROGATE RECOVERY			
2-FLUOROPHENOL	46		% Rec
PHENOL-D5	31		% Rec
NITROBENZENE-D5	64		% Rec
2-FLUOROBIPHENYL	53		% Rec
2,4,6-TRIBROMOPHENOL	81		% Rec
TERPHENYL-D14	69		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 13438.

Quality Assurance Officer: Deborah MB Janssen

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THE ENTIRE FORM

EMS HERITAGE LABORATORIES, INC.

4132 POMPANO ROAD
CHARLOTTE, N.C. 28216 (704) 393-1853

134

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Co. Name: ETS SWP
Project Name: SWP Wilmington
Quote No.: PO No. 530-06-501

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP_____ SLUDGE_____
RCRA MW_____ SW_____ DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER_____

Sampled by:

Analyses Requested: (Note special detection limits or methods)
Run SWP Wilmington Site Specific List

Report To:
Co: ETS
Add: 1445 Pisgah Ch. Rd. Lexington S.C. 29072
Attn: Greg Kuntz
Phone: 1-800-786-0654
Accelerated Turnaround Requested _____ (Subject to Additional Charge)
Result Request by: 1 / 1 (Mo Day Yr)
(Date must be Accepted and Approved by Lab.)

Sample ID:	Date:	Time:	Comp	Grab	~~Sample Description:~~ LOS #	Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other	No. of Containers	Remarks:	EMS Sample No.
B-4	3-12	0900		X	9999.	GW	7		B114021
MW-8	3-12	1200		X	10000	GW	7		B114022
MW-7	3-12	1235		X	10001	GW	7		B114023
MW-6	3-12	1315		X	10002	GW	7		B114024

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
[signature]	3-13-92 / 1200			/	
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date /Time	Received for Lab by: (Signature)	Remarks:		
	3/14/92 / 1000	[signature]			

Distribution: Original and yellow copies accompany sample shipment to laboratory; Yellow copy returned to client.

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THE ENTIRE FORM

EMS HERITAGE LABORATORIES, INC.

4132 POMPANO ROAD
CHARLOTTE, N.C. 28216 (704) 393-1853

13[illegible]6

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Co. Name: Environmental Tech. Eng.
Project Name: SWP- Wilmington
Quote No.:
PO No.: 530-06-501

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP_____ SLUDGE_____
RCRA MW_____ SW_____ DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER_____

Sampled by:

Analyses Requested: (Note special detection limits or methods)

Report To:
Co: Environmental Tech Eng
Add: 1445 Pisgah Church Rd
Tex
Attn: Greg Kuntz
Phone: 803-957-6270

Accelerated Turnaround Requested _____ (Subject to Additional Charge)

Result Request by: ___/___/___ Mo Day Yr
(Date must be Accepted and Approved by Lab.)

Sample ID:	Date:	Time:	Comp	Grab	Sample Description:	Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other	No. of Containers	Wilmington Site Specific	Remarks:	EMS Sample No.
B-3	3-13-92	16:15			B-3 SWP Loc#10003	GW	6		Standard Turnaround	B114025
									Field Measurements	
									Temperature 15°C	
									pH 5.76	
									cond. 145	

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Gregory B Kuntz	3/13/92 17:18	[illegible] SWPA Plant		/	
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date /Time	Received for Lab by: (Signature)	Remarks:		
	3/14/92 1000	[illegible]			

Distribution: Original and yellow copies accompany sample shipment to laboratory; Yellow copy returned to client.

PARAMETER SUMMARY REPORT

METALS

Heritage Laboratories, Inc -- Parameter Summary Report
List of Samples

		B-2 B114018 11-MAR-92			B-2 B114018 11-MAR-92			B-3 B114025 13-MAR-92			B-3 B114025 13-MAR-92			B-4 B114021 12-MAR-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	0.11	0.025	mg/L	BDL	0.005	mg/L	0.049	0.005	mg/L	BDL	0.005	mg/L	0.031	0.025	mg/L
Chromium	7440-47-32	0.10	0.006	mg/L	BDL	0.006	mg/L	0.095	0.006	mg/L	BDL	0.006	mg/L	0.190	0.006	mg/L
Copper	7440-50-8	0.05	0.006	mg/L	BDL	0.006	mg/L	0.085	0.006	mg/L	BDL	0.006	mg/L	0.13	0.006	mg/L
Lead	7439-92-1	0.35	0.25	mg/L	BDL	0.005	mg/L	0.12	0.025	mg/L	BDL	0.005	mg/L	0.21	0.05	mg/L

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

Heritage Laboratories, Inc -- Parameter Summary Report
List of Samples

		B-4 B114021 12-MAR-92			B-5 B114010 11-MAR-92			B-5 B114010 11-MAR-92			B-6 B114009 11-MAR-92			B-6 B114009 11-MAR-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	0.051	0.025	mg/L	BDL	0.005	mg/L
Chromium	7440-47-32	BDL	0.006	mg/L	0.006	0.006	mg/L	BDL	0.006	mg/L	0.066	0.006	mg/L	BDL	0.006	mg/L
Copper	7440-50-8	BDL	0.006	mg/L	0.014	0.006	mg/L	0.0064	0.006	mg/L	0.056	0.006	mg/L	BDL	0.006	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	0.010	0.005	mg/L	BDL	0.005	mg/L	0.100	0.050	mg/L	BDL	0.005	mg/L

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

Heritage Laboratories, Inc -- Parameter Summary Report
List of Samples

		MW-6 B114024 12-MAR-92			MW-6 B114024 12-MAR-92			MW-7 B114023 12-MAR-92			MW-7 B114023 12-MAR-92			MW-8 B114022 12-MAR-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	0.0062	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Chromium	7440-47-32	BDL	0.006	mg/L	BDL	0.006	mg/L	0.031	0.006	mg/L	BDL	0.006	mg/L	0.015	0.006	mg/L
Copper	7440-50-8	0.012	0.006	mg/L	BDL	0.006	mg/L	0.012	0.006	mg/L	BDL	0.006	mg/L	0.012	0.006	mg/L
Lead	7439-92-1	0.0092	0.005	mg/L	BDL	0.005	mg/L	0.023	0.005	mg/L	BDL	0.005	mg/L	0.016	0.005	mg/L

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

Heritage Laboratories, Inc -- Parameter Summary Report
List of Samples

		MW-8 B114022 12-MAR-92			MW-9 B114012 11-MAR-92			MW-9 B114012 11-MAR-92			MW-10 B114011 11-MAR-92			MW-10 B114011 11-MAR-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	0.077	0.05	mg/L	BDL	0.005	mg/L
Chromium	7440-47-32	BDL	0.006	mg/L	BDL	0.006	mg/L	BDL	0.006	mg/L	0.059	0.006	mg/L	BDL	0.006	mg/L
Copper	7440-50-8	BDL	0.006	mg/L	0.007	0.006	mg/L	BDL	0.006	mg/L	0.091	0.006	mg/L	BDL	0.006	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	0.084	0.050	mg/L	BDL	0.005	mg/L

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

Heritage Laboratories, Inc. -- Parameter Summary Report
List of Samples

		MW-13 B114015 11-MAR-92			MW-13 B114015 11-MAR-92			MW-14 B114013 11-MAR-92			MW-14 B114013 11-MAR-92			MW-15 B114014 11-MAR-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	0.050	0.025	mg/L	BDL	0.005	mg/L	0.010	0.005	mg/L	BDL	0.005	mg/L	0.10	0.05	mg/L
Chromium	7440-47-32	0.059	0.006	mg/L	BDL	0.006	mg/L	0.033	0.006	mg/L	BDL	0.006	mg/L	0.051	0.006	mg/L
Copper	7440-50-8	0.080	0.006	mg/L	BDL	0.006	mg/L	0.023	0.006	mg/L	BDL	0.006	mg/L	0.086	0.006	mg/L
Lead	7439-92-1	0.14	0.050	mg/L	BDL	0.005	mg/L	0.029	0.010	mg/L	BDL	0.005	mg/L	0.094	0.050	mg/L

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

Heritage Laboratories, Inc. -- Parameter Summary Report
List of Samples

		MW-15 B114014 11-MAR-92			MW-16 B114016 11-MAR-92			MW-16 B114016 11-MAR-92			MW-17 B114017 11-MAR-92			MW-17 B114017 11-MAR-92		
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	0.027	0.005	mg/L	BDL	0.005	mg/L	0.14	0.05	mg/L	BDL	0.005	mg/L
Chromium	7440-47-32	BDL	0.006	mg/L	0.120	0.006	mg/L	BDL	0.006	mg/L	0.18	0.006	mg/L	BDL	0.006	mg/L
Copper	7440-50-8	BDL	0.006	mg/L	0.14	0.006	mg/L	BDL	0.006	mg/L	0.40	0.006	mg/L	BDL	0.006	mg/L
Lead	7439-92-1	BDL	0.005	mg/L	0.064	0.025	mg/L	BDL	0.005	mg/L	0.39	0.25	mg/L	BDL	0.005	mg/L

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

Heritage Laboratories, Inc -- Parameter Summary Report
List of Samples

		EQUIP BLANK B114019 11-MAR-92			EQUIP BLANK B114019 11-MAR-92			FB16 B114020 11-MAR-92			FB17 B114020 11-MAR-92					
Metals	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Arsenic	7440-38-2	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L			
Chromium	7440-47-32	BDL	0.006	mg/L	BDL	0.006	mg/L	BDL	0.006	mg/L	BDL	0.006	mg/L			
Copper	7440-50-8	BDL	0.006	mg/L	BDL	0.006	mg/L	BDL	0.006	mg/L	BDL	0.006	mg/L			
Lead	7439-92-1	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L			

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

SEMI-VOLATILE ORGANICS

Heritage Laboratories, Inc -- Parameter Summary Report
List of Samples

		B-2 B114018 11-MAR-92			B-3 B114025 13-MAR-92			B-4 B114021 12-MAR-92			B-5 B114010 11-MAR-92			B-6 B114009 11-MAR-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	BDL	0.01	mg/L	BDL	0.01	mg/L	* 3.0	0.01	mg/L	BDL	0.01	mg/L	0.022	0.01	mg/L
Anthracene	120-12-7	BDL	0.01	mg/L	BDL	0.01	mg/L	* 0.94	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benz(A)Anthracene	56-55-3	BDL	0.01	mg/L	BDL	0.01	mg/L	* 0.42	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(A)Pyrene	50-32-8	BDL	0.01	mg/L	BDL	0.01	mg/L	0.11	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(B)Fluoranthene	205-99-2	BDL	0.01	mg/L	BDL	0.01	mg/L	* 0.21	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(K)Fluoranthene	207-08-9	BDL	0.01	mg/L	BDL	0.01	mg/L	0.056	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Carbazole	86-74-8	BDL	0.01	mg/L	BDL	0.01	mg/L	* 0.36	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Chrysene	218-01-9	BDL	0.01	mg/L	BDL	0.01	mg/L	* 0.34	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	BDL	0.01	mg/L	0.011	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dimethylphenol	105-67-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Fluoranthene	206-44-0	BDL	0.01	mg/L	BDL	0.01	mg/L	* 2.7	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.01	mg/L	BDL	0.01	mg/L	0.035	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Naphthalene	91-20-3	BDL	0.01	mg/L	BDL	0.01	mg/L	*** 14	0.01	mg/L	BDL	0.01	mg/L	0.052	0.01	mg/L
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Phenanthrene	85-01-8	BDL	0.01	mg/L	BDL	0.01	mg/L	** 5.8	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Phenol	108-95-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
		BDL			BDL			77.922 mg/L			BDL			0.074		

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		MW-6 B114024 12-MAR-92			MW-7 B114023 12-MAR-92			MW-8 B114022 12-MAR-92			MW-9 B114012 11-MAR-92			MW-10 B114011 11-MAR-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Anthracene	120-12-7	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benz(A)Anthracene	56-55-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(A)Pyrene	50-32-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(B)Fluoranthene	205-99-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(K)Fluoranthene	207-08-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Carbazole	86-74-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Chrysene	218-01-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dimethylphenol	105-67-9	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Fluoranthene	206-44-0	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Naphthalene	91-20-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Phenanthrene	85-01-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Phenol	108-95-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
		BDL			BDL			BDL			BDL			BDL		

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		MW-13 B114015 11-MAR-92			MW-14 B114013 11-MAR-92			MW-15 B114014 11-MAR-92			MW-16 B114016 11-MAR-92			MW-17 B114017 11-MAR-92		
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	* 1.1	0.01	mg/L	* 0.74	0.01	mg/L	0.15	0.01	mg/L	BDL	0.01	mg/L	0.024	0.01	mg/L
Anthracene	120-12-7	0.13	0.01	mg/L	0.11	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.023	0.01	mg/L
Benz(A)Anthracene	56-55-3	0.057	0.01	mg/L	0.037	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(A)Pyrene	50-32-8	0.02	0.01	mg/L	0.011	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(B)Fluoranthene	205-99-2	0.037	0.01	mg/L	0.021	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Benzo(K)Fluoranthene	207-08-9	0.01	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Carbazole	86-74-8	0.087	0.01	mg/L	0.11	0.01	mg/L	0.021	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Chrysene	218-01-9	0.057	0.01	mg/L	0.036	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dimethylphenol	105-67-9	0.063	0.01	mg/L	* 0.370	0.10	mg/L	0.044	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Fluoranthene	206-44-0	* 0.56	0.01	mg/L	* 0.38	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	0.065	0.01	mg/L
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Naphthalene	91-20-3	** 2.8	0.01	mg/L	** 3.1	0.01	mg/L	0.11	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L
Phenanthrene	85-01-8	* 1.2	0.01	mg/L	* 1.1	0.01	mg/L	0.023	0.01	mg/L	BDL	0.01	mg/L	0.060	0.01	mg/L
Phenol	108-95-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.05	mg/L	BDL	0.01	mg/L
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L	BDL	0.01	mg/L
		6.121			6.615			0.238			BDL			.172		

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		EQUIP BLANK B114019 11-MAR-92			FB14 B114020 11-MAR-92											
Semi-volatiles	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Acenaphthene	83-32-9	BDL	0.01	mg/L	BDL	0.01	mg/L									
Anthracene	120-12-7	BDL	0.01	mg/L	BDL	0.01	mg/L									
Benz(A)Anthracene	56-55-3	BDL	0.01	mg/L	BDL	0.01	mg/L									
Benzo(A)Pyrene	50-32-8	BDL	0.01	mg/L	BDL	0.01	mg/L									
Benzo(B)Fluoranthene	205-99-2	BDL	0.01	mg/L	BDL	0.01	mg/L									
Benzo(K)Fluoranthene	207-08-9	BDL	0.01	mg/L	BDL	0.01	mg/L									
Bis(2-Chloroethyl)Ether	111-44-4	BDL	0.01	mg/L	BDL	0.01	mg/L									
Carbazole	86-74-8	BDL	0.01	mg/L	BDL	0.01	mg/L									
4-Chloro-3-Methylphenol	59-50-7	BDL	0.01	mg/L	BDL	0.01	mg/L									
2-Chlorophenol	95-57-8	BDL	0.01	mg/L	BDL	0.01	mg/L									
Chrysene	218-01-9	BDL	0.01	mg/L	BDL	0.01	mg/L									
Dibenz(A,H)Anthracene	53-70-3	BDL	0.01	mg/L	BDL	0.01	mg/L									
2,4-Dimethylphenol	105-67-9	BDL	0.01	mg/L	BDL	0.01	mg/L									
2,4-Dinitrophenol	25550-58-7	BDL	0.05	mg/L	BDL	0.05	mg/L									
Fluoranthene	206-44-0	BDL	0.01	mg/L	BDL	0.01	mg/L									
Indeno(1,2,3-Cd)Pyrene	193-39-5	BDL	0.01	mg/L	BDL	0.01	mg/L									
Naphthalene	91-20-3	BDL	0.01	mg/L	BDL	0.01	mg/L									
Pentachlorophenol	87-86-5	BDL	0.05	mg/L	BDL	0.05	mg/L									
Phenanthrene	85-01-8	BDL	0.01	mg/L	BDL	0.01	mg/L									
Phenol	108-95-2	BDL	0.01	mg/L	BDL	0.01	mg/L									
Tetrachlorophenol	25167-83-3	BDL	0.01	mg/L	BDL	0.01	mg/L									
2,4,5-Trichlorophenol	95-95-4	BDL	0.01	mg/L	BDL	0.01	mg/L									
2,4,6-Trichlorophenol	88-06-2	BDL	0.01	mg/L	BDL	0.01	mg/L									
		DDL			BDL											

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

GENERAL ORGANICS

Heritage Laboratories, Inc -- Parameter Summary Report
List of Samples

		B-2 B114018 11-MAR-92			B-3 B114025 13-MAR-92			B-4 B114021 12-MAR-92			B-5 B114010 11-MAR-92			B-6 B114009 11-MAR-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromodichloromethane	75-27-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromomethane	74-83-9	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chlorobenzene	108-90-7	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroethane	75-00-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroform	67-66-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloromethane	74-87-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dibromochloromethane	124-48-1	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dibromomethane	74-95-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
X 1,3-Dichloropropane	142-28-9	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Ethyl Benzene	100-41-4	BDL	0.001	mg/L	BDL	0.001	mg/L	* 0.110	0.020	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
M/P-Xylene	NA	BDL	0.001	mg/L	BDL	0.001	mg/L	* 0.090	0.020	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
O-Xylene	95-47-6	BDL	0.001	mg/L	BDL	0.001	mg/L	* 0.040	0.020	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
X Tetrachloroethene	127-18-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Toluene	108-88-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trichloroethene	79-01-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Vinyl Chloride	75-01-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
					BDL			.24 - 1C			BDL			BDL		

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		MW-6 B114024 12-MAR-92			MW-7 B114023 12-MAR-92			MW-8 B114022 12-MAR-92			MW-9 B114012 11-MAR-92			MW-10 B114011 11-MAR-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromodichloromethane	75-27-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromomethane	74-83-9	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chlorobenzene	108-90-7	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroethane	75-00-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroform	67-66-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloromethane	74-87-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dibromochloromethane	124-48-1	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dibromomethane	74-95-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,3-Dichloropropane	142-28-9	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Ethyl Benzene	100-41-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
M/P-Xylene	NA	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
O-Xylene	95-47-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Tetrachloroethene	127-18-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Toluene	108-88-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trichloroethene	79-01-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Vinyl Chloride	75-01-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
		BDL			BDL			BDL			BDL			BDL		

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

		MW-13 B114015 11-MAR-92			MW-14 B114013 11-MAR-92			MW-15 B114014 11-MAR-92			MW-16 B114016 11-MAR-92			MW-17 B114017 11-MAR-92		
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	* 0.073	0.010	mg/L	* 0.030	0.010	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromodichloromethane	75-27-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Bromomethane	74-83-9	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.025	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chlorobenzene	108-90-7	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroethane	75-00-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.025	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloroform	67-66-3	BDL	0.001	mg/L	0.0011	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Chloromethane	74-87-3	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.025	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dibromochloromethane	124-48-1	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dibromomethane	74-95-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/L	BDL	.005	mg/L	BDL	0.025	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,3-Dichloropropane	142-28-9	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Ethyl Benzene	100-41-4	* 0.041	0.010	mg/L	* 0.067	0.010	mg/L	0.008	0.005	mg/L	0.0027	0.001	mg/L	0.0039	0.001	mg/L
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.025	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
M/P-Xylene	NA	* 0.044	0.010	mg/L	* 0.073	0.010	mg/L	0.008	0.005	mg/L	0.0037	0.001	mg/L	0.0088	0.001	mg/L
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.025	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
O-Xylene	95-47-6	* 0.025	0.010	mg/L	* 0.036	0.010	mg/L	BDL	0.005	mg/L	0.0032	0.001	mg/L	0.0046	0.001	mg/L
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Tetrachloroethene	127-18-4	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Toluene	108-88-3	* 0.031	0.010	mg/L	* 0.046	0.010	mg/L	0.006	0.005	mg/L	BDL	0.001	mg/L	0.0011	0.001	mg/L
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Trichloroethene	79-01-6	BDL	0.001	mg/L	BDL	0.001	mg/L	BDL	0.005	mg/L	BDL	0.001	mg/L	BDL	0.001	mg/L
Vinyl Chloride	75-01-4	BDL	0.005	mg/L	BDL	0.005	mg/L	BDL	0.025	mg/L	BDL	0.005	mg/L	BDL	0.005	mg/L
		.214 mg/L			.253 mg/L			.022 mg/L			.010 mg/L			.018 mg/L		

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

Heritage Laboratories, Inc -- Parameter Summary Report
List of Samples

		EQUIP BLANK B114019 11-MAR-92			FB14 B114020 11-MAR-92											
General Organics	CAS Number	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units	Result	DL	Units
Benzene	71-43-2	BDL	0.001	mg/L	BDL	0.001	mg/L									
Bromodichloromethane	75-27-4	BDL	0.001	mg/L	BDL	0.001	mg/L									
Bromomethane	74-83-9	BDL	0.005	mg/L	BDL	0.005	mg/L									
Carbon Tetrachloride	56-23-5	BDL	0.001	mg/L	BDL	0.001	mg/L									
Chlorobenzene	108-90-7	BDL	0.001	mg/L	BDL	0.001	mg/L									
Chloroethane	75-00-3	BDL	0.005	mg/L	BDL	0.005	mg/L									
2-Chloroethylvinylether	110-75-8	BDL	0.001	mg/L	BDL	0.001	mg/L									
Chloroform	67-66-3	BDL	0.001	mg/L	BDL	0.001	mg/L									
Chloromethane	74-87-3	BDL	0.005	mg/L	BDL	0.005	mg/L									
Cis-1,3-Dichloropropene	10061-01-5	BDL	0.001	mg/L	BDL	0.001	mg/L									
Dibromochloromethane	124-48-1	BDL	0.001	mg/L	BDL	0.001	mg/L									
Dibromomethane	74-95-3	BDL	0.001	mg/L	BDL	0.001	mg/L									
Dichlorodifluoromethane	75-71-8	BDL	0.005	mg/L	BDL	0.005	mg/L									
1,1-Dichloroethane	75-34-3	BDL	0.001	mg/L	BDL	0.001	mg/L									
1,2-Dichloroethane	107-06-2	BDL	0.001	mg/L	BDL	0.001	mg/L									
1,1-Dichloroethene	75-35-4	BDL	0.001	mg/L	BDL	0.001	mg/L									
1,2-Dichloropropane	78-87-5	BDL	0.001	mg/L	BDL	0.001	mg/L									
1,3-Dichloropropane	142-28-9	BDL	0.001	mg/L	BDL	0.001	mg/L									
Ethyl Benzene	100-41-4	BDL	0.001	mg/L	BDL	0.001	mg/L									
Fluorotrichloromethane	75-69-4	BDL	0.005	mg/L	BDL	0.005	mg/L									
M/P-Xylene	NA	BDL	0.001	mg/L	BDL	0.001	mg/L									
Methyl-T-Butyl Ether (Mtbe)	1634-04-4	BDL	0.005	mg/L	BDL	0.005	mg/L									
O-Xylene	95-47-6	BDL	0.001	mg/L	BDL	0.001	mg/L									
1,1,2,2-Tetrachloroethane	79-34-5	BDL	0.001	mg/L	BDL	0.001	mg/L									
Tetrachloroethene	127-18-4	BDL	0.001	mg/L	BDL	0.001	mg/L									
Toluene	108-88-3	BDL	0.001	mg/L	BDL	0.001	mg/L									
Trans-1,2-Dichloroethene	156-60-5	BDL	0.001	mg/L	BDL	0.001	mg/L									
1,1,1-Trichloroethane	78-92-2	BDL	0.001	mg/L	BDL	0.001	mg/L									
1,1,2-Trichloroethane	79-00-5	BDL	0.001	mg/L	BDL	0.001	mg/L									
Trichloroethene	79-01-6	BDL	0.001	mg/L	BDL	0.001	mg/L									
Vinyl Chloride	75-01-4	BDL	0.005	mg/L	BDL	0.005	mg/L									
		Rix			BDL											

* Note: This is a summary report. Please see the Certificate of Analysis for more information. DL = Detection Limit

ATTACHMENT D
12-HOUR WELL TEST DATA

WELL #	DATE	TIME	WATER LEVEL	ELEVATION
Ditch Staff Gauge	4-1-92	7:00	1.90	1.83
		9:00	2.40	2.33
		11:00	2.13	2.06
		13:00	0.20	0.13
		15:00	0.10	0.03
		17:00	0.26	0.19
		19:00	1.85	1.78
River Staff Gauge	4-1-92	7:00	4.70	2.68
		9:00	4.75	2.73
		11:00	3.20	1.18
		13:00	1.65	-0.37
		15:00	0.60	-1.42
		17:00	2.80	0.78
		19:00	4.80	2.78
B-2	4-1-92	7:00	5.45	1.51
		9:00	5.30	1.66
		11:00	5.45	1.51
		13:00	5.72	1.24
		15:00	5.87	1.09
		17:00	5.78	1.18
		19:00	5.40	1.56
B-3	4-1-92	7:00	3.00	2.13
		9:00	2.67	2.46
		11:00	3.12	2.01
		13:00	3.70	1.43
		15:00	3.96	1.17
		17:00	3.78	1.35
		19:00	2.98	2.15

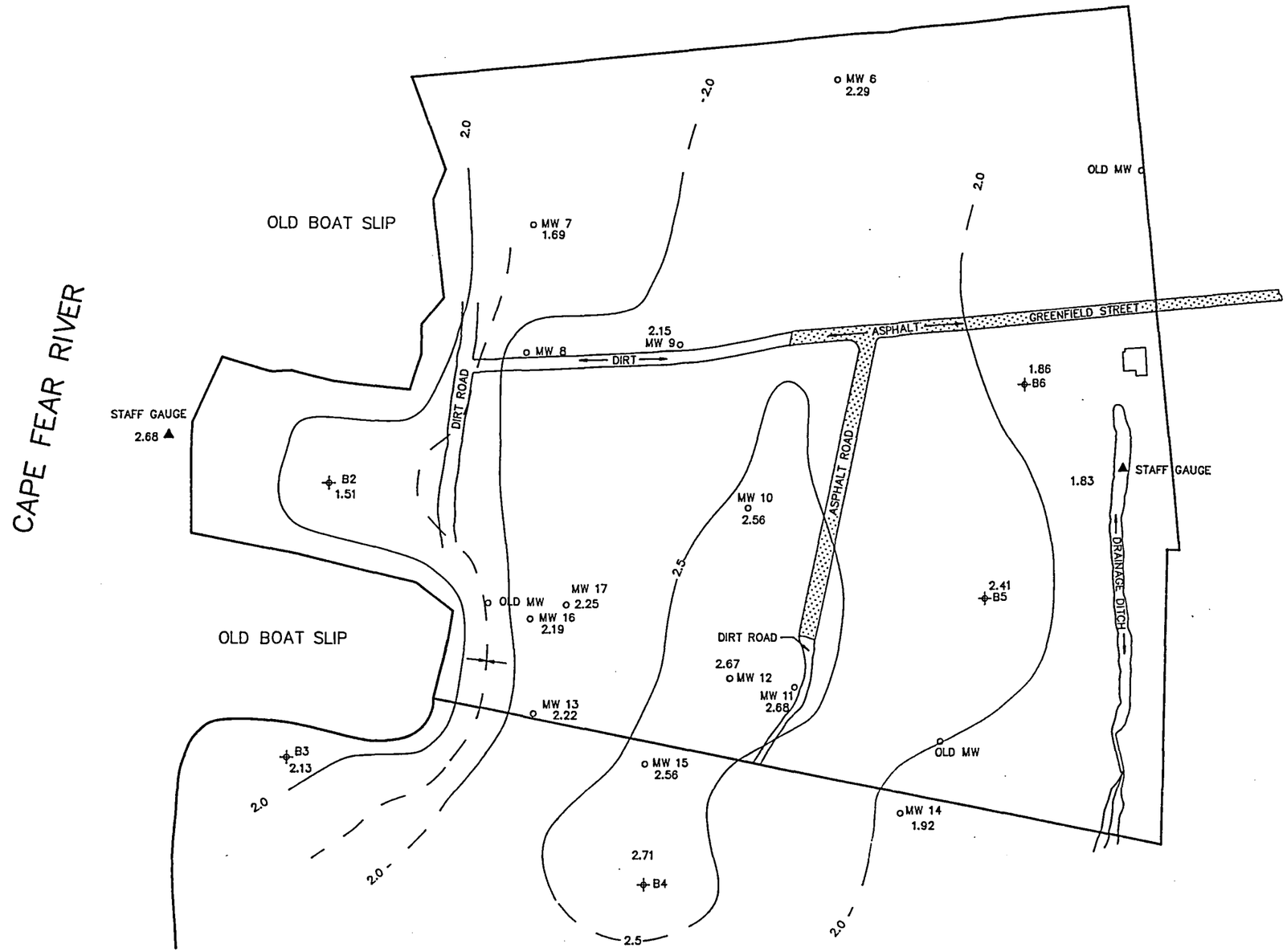
WELL #	DATE	TIME	WATER LEVEL	ELEVATION
B-4	4-1-92	7:00	1.47	2.71
		9:00	1.45	2.73
		11:00	1.43	2.75
		13:00	1.40	2.78
		15:00	1.38	2.80
		17:00	1.38	2.80
		19:00	1.41	2.77
B-5	4-1-92	7:00	3.38	2.41
		9:00	3.36	2.43
		11:00	3.41	2.38
		13:00	3.38	2.41
		15:00	3.36	2.43
		17:00	3.36	2.43
		19:00	3.38	2.41
B-6	4-1-92	7:00	4.20	1.86
		9:00	4.17	1.89
		11:00	4.13	1.93
		13:00	4.12	1.94
		15:00	4.14	1.92
		17:00	4.16	1.90
		19:00	4.19	1.87
MW-6	4-1-92	7:00	2.78	2.29
		9:00	2.76	2.31
		11:00	2.72	2.35
		13:00	2.72	2.35
		15:00	2.70	2.37
		17:00	2.73	2.34
		19:00	2.74	2.33

WELL #	DATE	TIME	WATER LEVEL	ELEVATION
MW-7	4-1-92	7:00	4.34	1.69
		9:00	4.22	1.81
		11:00	4.19	1.84
		13:00	4.30	1.73
		15:00	4.37	1.66
		17:00	4.40	1.63
		19:00	4.28	1.75
MW-8	4-1-92	7:00	4.68	2.12
		9:00	4.64	2.16
		11:00	4.62	2.18
		13:00	4.58	2.22
		15:00	4.55	2.25
		17:00	4.55	2.25
		19:00	4.52	2.28
MW-9	4-1-92	7:00	4.28	2.15
		9:00	4.26	2.17
		11:00	4.19	2.24
		13:00	4.16	2.27
		15:00	4.14	2.29
		17:00	4.16	2.27
		19:00	4.19	2.24
MW-10	4-1-92	7:00	4.85	2.56
		9:00	4.84	2.57
		11:00	4.82	2.59
		13:00	4.80	2.61
		15:00	4.78	2.63
		17:00	4.80	2.61
		19:00	4.83	2.58

WELL #	DATE	TIME	WATER LEVEL	ELEVATION
MW-11	4-1-92	7:00	5.34	2.68
		9:00	5.33	2.69
		11:00	5.31	2.71
		13:00	5.27	2.75
		15:00	5.22	2.80
		17:00	5.20	2.82
		19:00	5.26	2.76
MW-12	4-1-92	7:00	5.55	2.67
		9:00	5.55	2.67
		11:00	5.51	2.71
		13:00	5.49	2.73
		15:00	5.45	2.77
		17:00	5.45	2.77
		19:00	5.50	2.72
MW-13	4-1-92	7:00	4.75	2.22
		9:00	4.55	2.42
		11:00	4.55	2.42
		13:00	4.65	2.32
		15:00	4.68	2.29
		17:00	4.72	2.25
		19:00	4.65	2.32
MW-14	4-1-92	7:00	4.38	1.92
		9:00	4.28	2.02
		11:00	4.15	2.15
		13:00	4.12	2.18
		15:00	4.09	2.21
		17:00	4.12	2.18
		19:00	4.18	2.12

WELL #	DATE	TIME	WATER LEVEL	ELEVATION
MW-15	4-1-92	7:00	4.51	2.56
		9:00	4.47	2.60
		11:00	4.43	2.64
		13:00	4.41	2.66
		15:00	4.38	2.69
		17:00	4.38	2.69
		19:00	4.44	2.63
MW-16	4-1-92	7:00	5.50	2.19
		9:00	5.40	2.29
		11:00	5.42	2.27
		13:00	5.50	2.19
		15:00	5.53	2.16
		17:00	5.55	2.14
		19:00	5.50	2.19
MW-17	4-1-92	7:00	5.40	2.25
		9:00	5.35	2.30
		11:00	5.32	2.33
		13:00	5.35	2.30
		15:00	5.38	2.27
		17:00	5.40	2.25
		19:00	5.35	2.30

ATTACHMENT E
POTENTIOMETRIC SURFACE MAPS



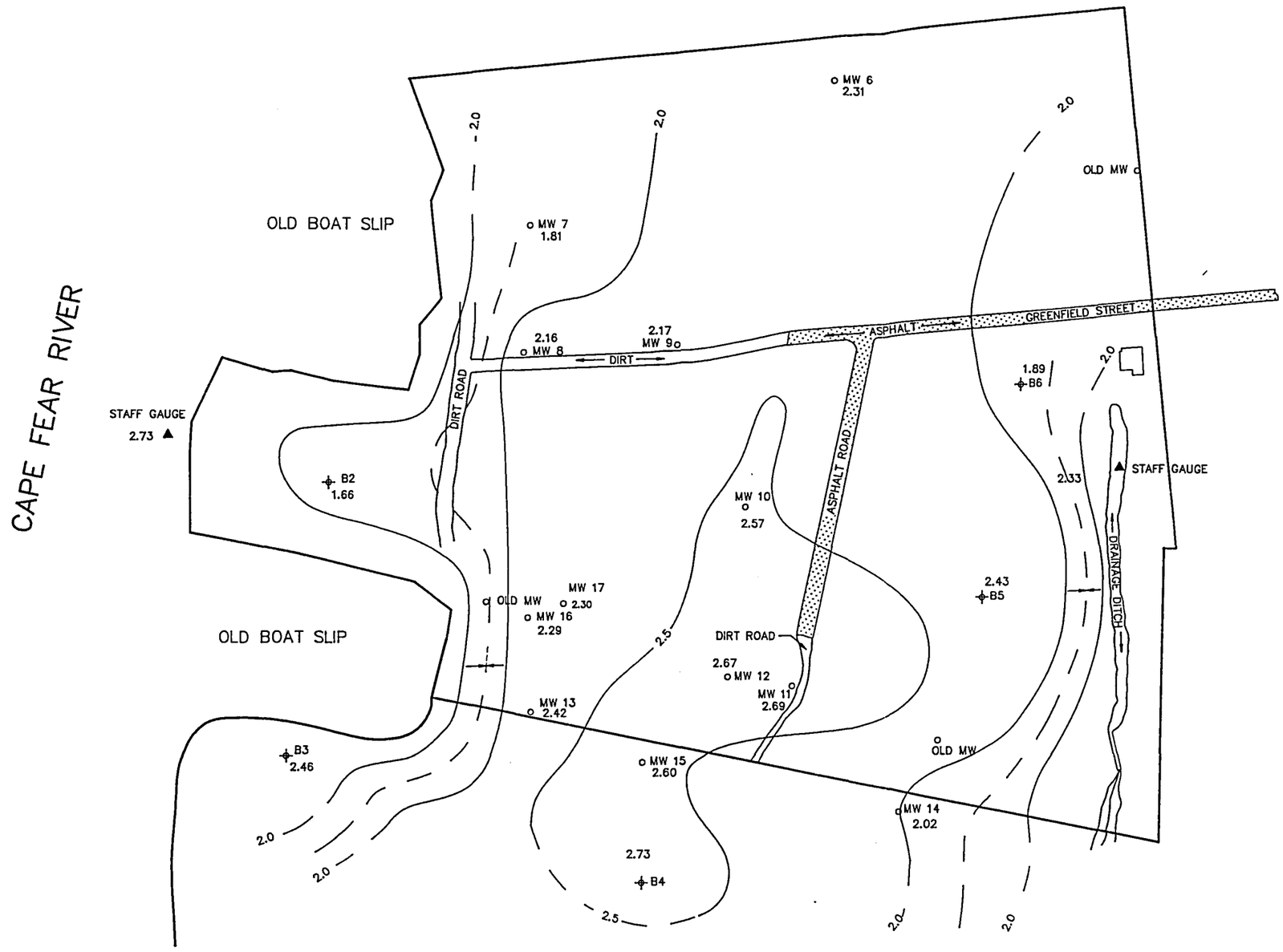
LEGEND

- PERMANENT MONITORING WELLS (12)
- TEMPORARY MONITORING WELLS (5)
- STAFF GAUGE
- STAGNATION POINT

GRAPHIC SCALE

0 100 200 400 600 800

Environmental Technology Engineering, Inc.	SCALE 1"=200' DRAWN BY CAB CHECKED BY CKA DATE 6/3/92	SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA	POTENTIOMETRIC SURFACE MAP TIME 1 4/1/92 CONTOUR INTERVAL = 0.5 ft.	SHEET OF CADD NO. 53050105 PROJECT NO. 530-06-501



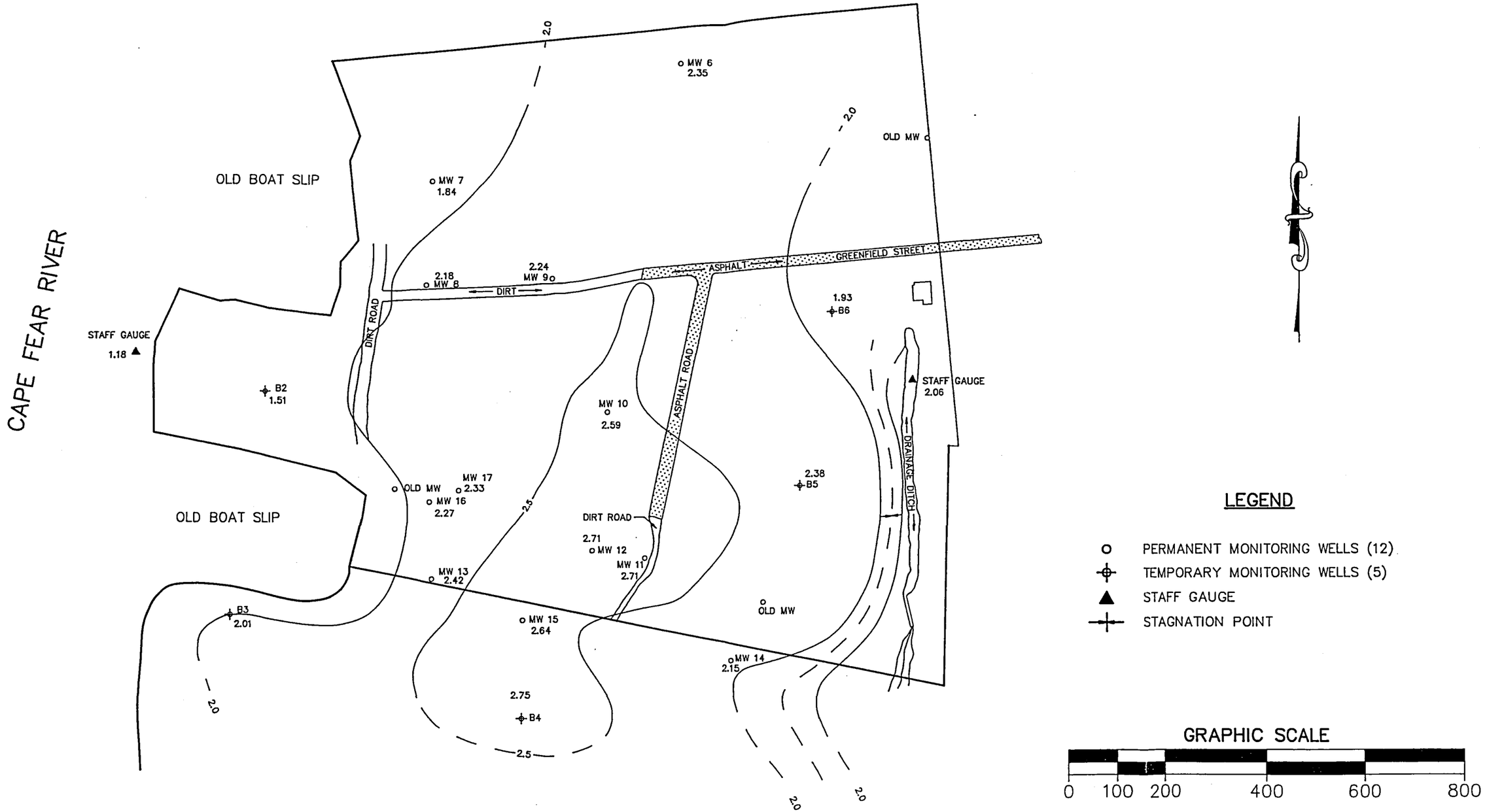
LEGEND

- PERMANENT MONITORING WELLS (12)
- TEMPORARY MONITORING WELLS (5)
- STAFF GAUGE
- STAGNATION POINT

GRAPHIC SCALE

0 100 200 400 600 800

Environmental Technology Engineering, Inc.	SCALE 1"=200' DRAWN BY CAB CHECKED BY CKA DATE 6/3/92	SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA	POTENTIOMETRIC SURFACE MAP TIME 2 4/1/92 CONTOUR INTERVAL = 0.5 ft.	SHEET OF CADD NO. 53050105 PROJECT NO. 530-06-501



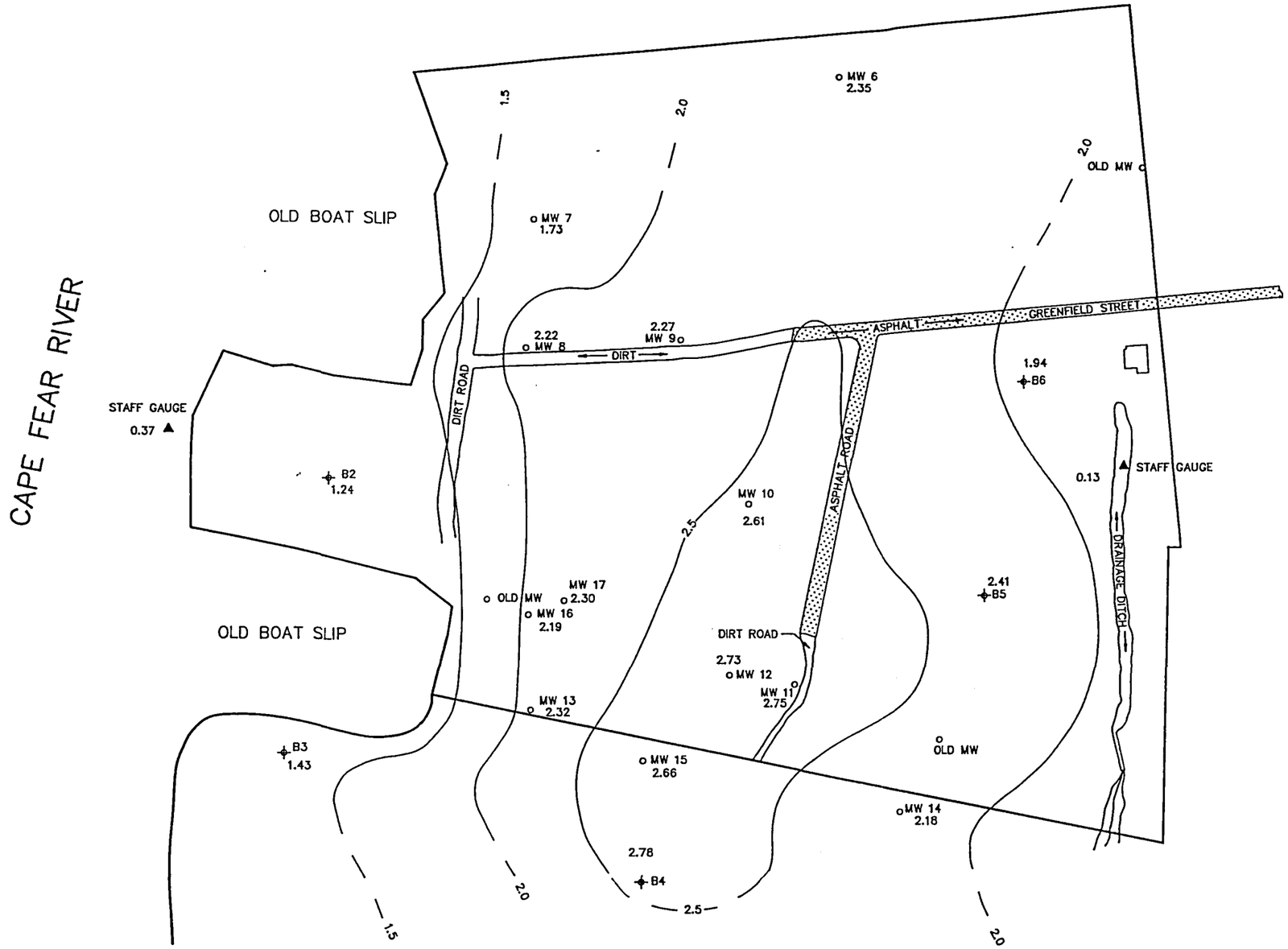
Environmental Technology Engineering, Inc.

SCALE	1"=200'
DRAWN BY	CAB
CHECKED BY	CKA
DATE	6/3/92

SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

POTENTIOMETRIC SURFACE MAP
TIME 3
4/1/92
CONTOUR INTERVAL = 0.5 ft.

SHEET	OF
CADD NO. 53050105	
PROJECT NO. 530-06-501	



LEGEND

- O PERMANENT MONITORING WELLS (12)
- ⊕ TEMPORARY MONITORING WELLS (5)
- ▲ STAFF GAUGE

GRAPHIC SCALE

0 100 200 400 600 800

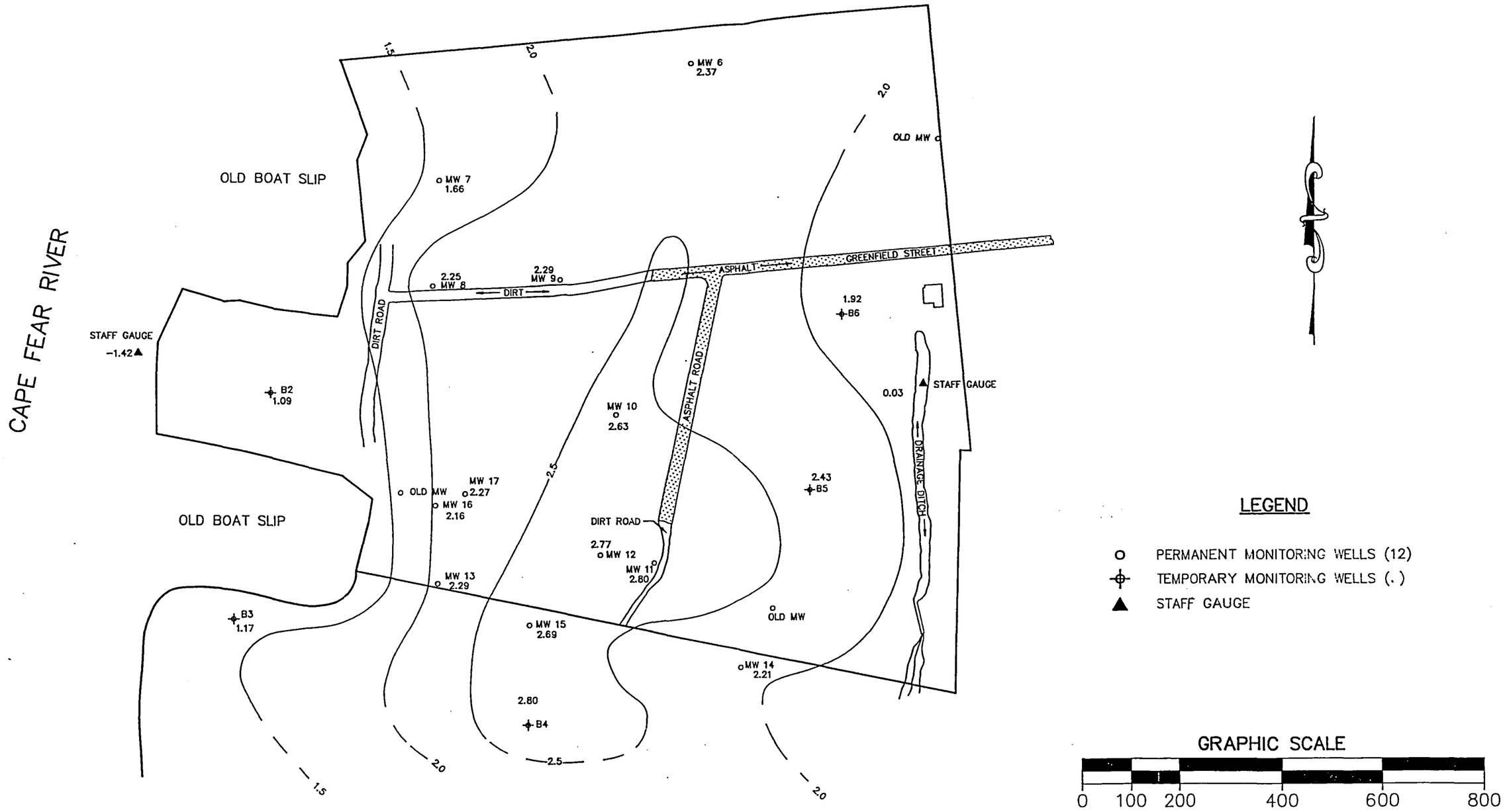
Environmental Technology Engineering, Inc.

SCALE	1"=200'
DRAWN BY	CAB
CHECKED BY	CKA
DATE	6/3/92

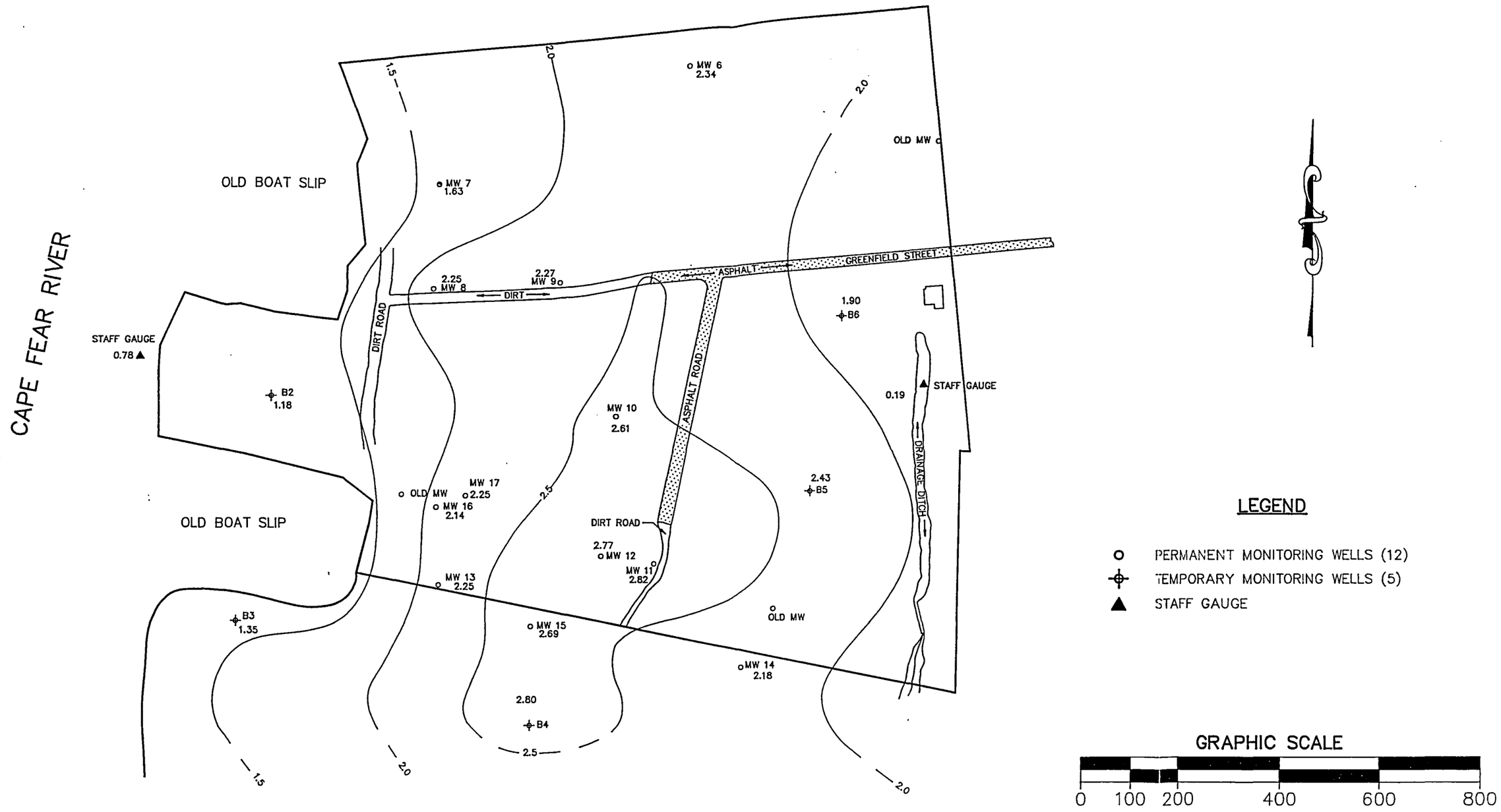
SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

POTENTIOMETRIC SURFACE MAP
TIME 4
4/1/92
CONTOUR INTERVAL = 0.5 ft.

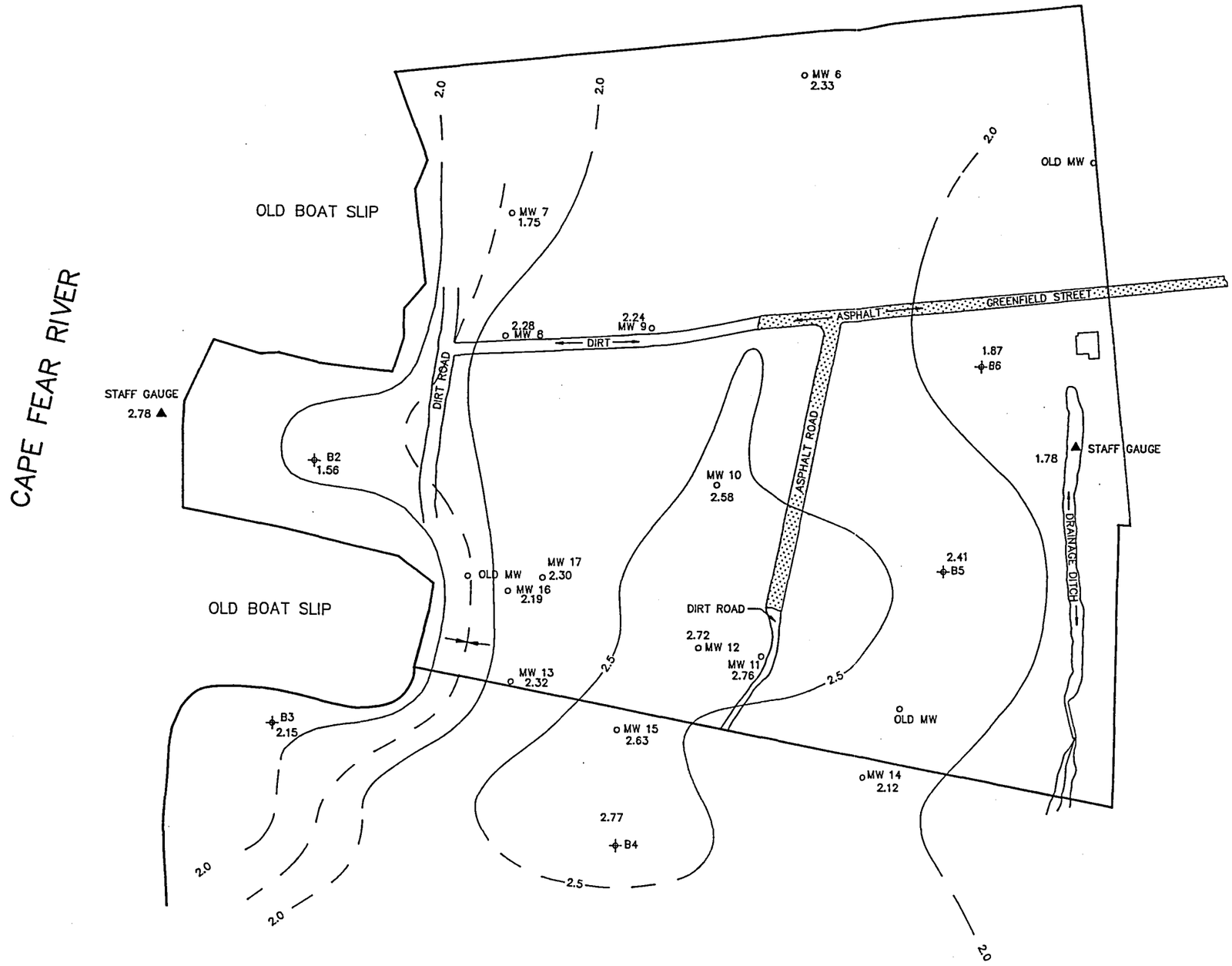
SHEET	OF
CADD NO.	53050105
PROJECT NO.	530-06-501



Environmental Technology Engineering, Inc.	SCALE 1"=200' DRAWN BY CAB CHECKED BY CKA DATE 6/3/92	SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA	POTENTIOMETRIC SURFACE MAP TIME 5 4/1/92 CONTOUR INTERVAL = 0.5 ft.	SHEET OF CADD NO. 53050105 PROJECT NO. 530-06-501



Environmental Technology Engineering, Inc.	SCALE 1"=200' DRAWN BY CAB CHECKED BY CKA DATE 6/3/92	SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA	POTENTIOMETRIC SURFACE MAP TIME 6 4/1/92 CONTOUR INTERVAL = 0.5 ft.	SHEET OF CADD NO. 53050105 PROJECT NO. 530-06-501



LEGEND

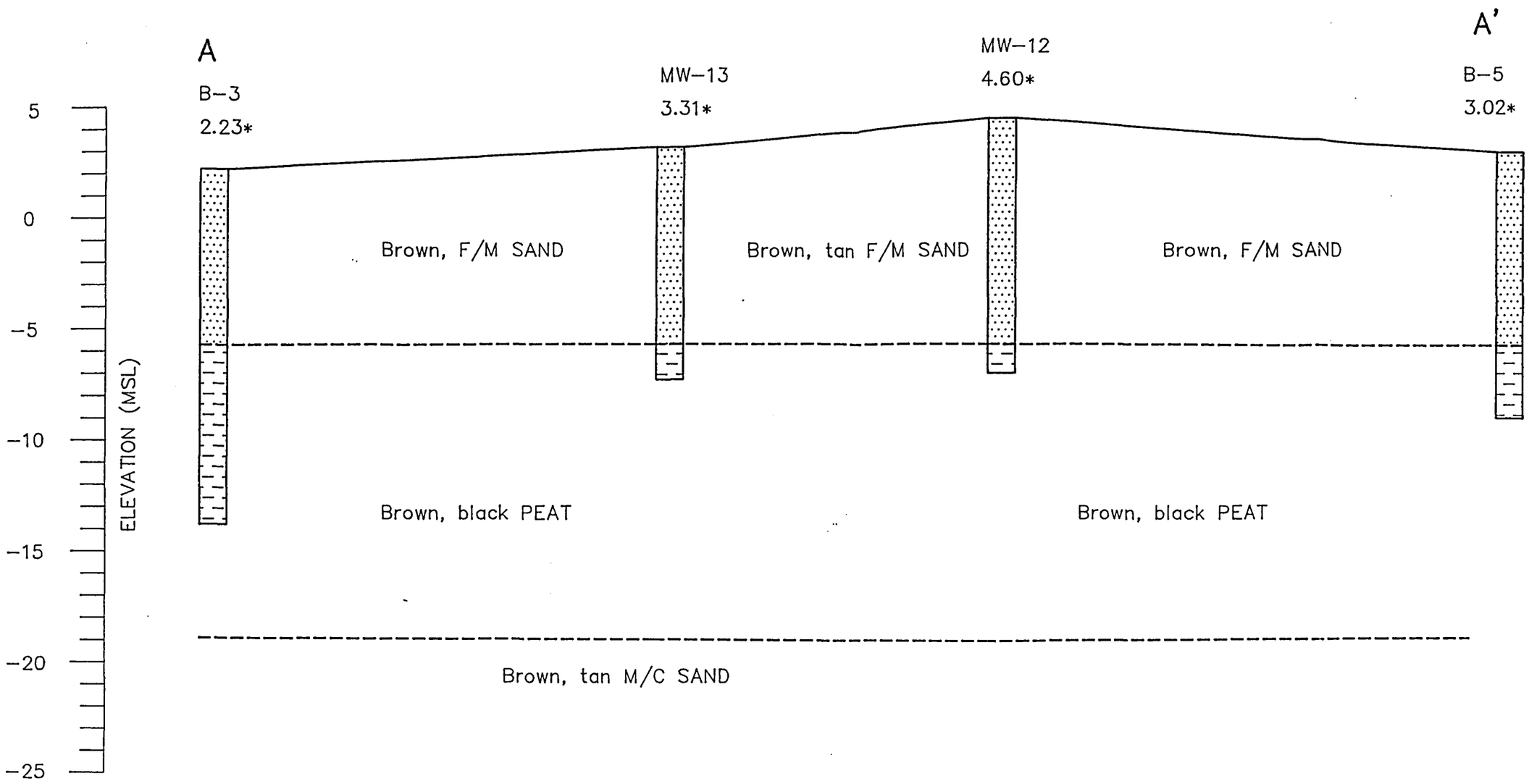
- PERMANENT MONITORING WELLS (12)
- TEMPORARY MONITORING WELLS (5)
- STAFF GAUGE
- STAGNATION POINT

GRAPHIC SCALE

0 100 200 400 600 800

ETE Environmental Technology Engineering, Inc.	SCALE 1"=200' DRAWN BY CAB CHECKED BY CKA DATE 6/3/92	SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA	POTENTIOMETRIC SURFACE MAP TIME 7 4/1/92 CONTOUR INTERVAL = 0.5 ft.	SHEET OF CADD NO. 53050105 PROJECT NO. 530-06-501

ATTACHMENT F
GEOLOGIC CROSS SECTIONS



SCALE

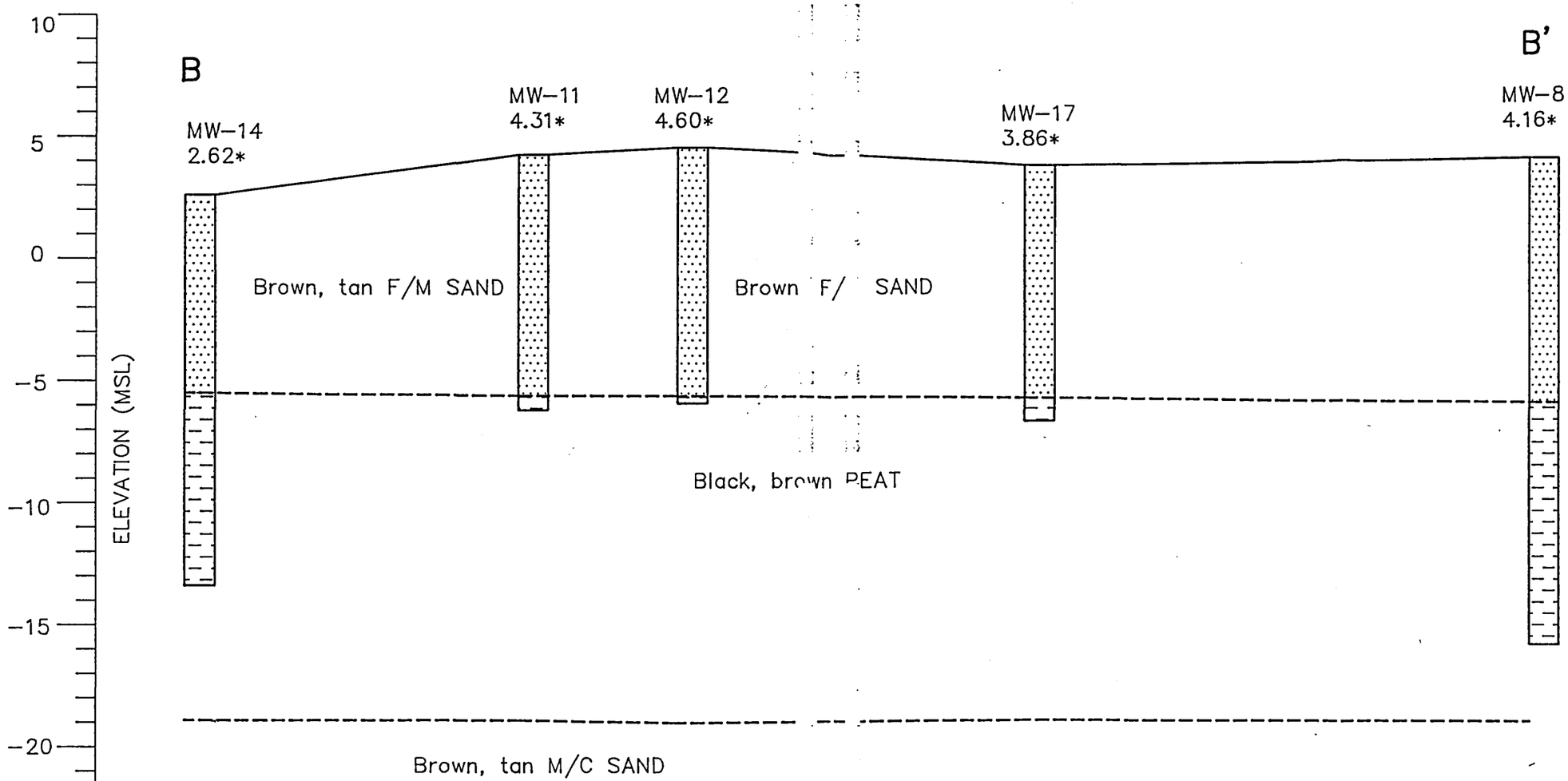
VERT. 1" = 5'

HORIZ. 1" = 100'

LEGEND

* Ground Surface Elevation

Environmental Technology Engineering, Inc.	SCALE 1"=100' DRAWN BY CKA CHECKED BY CKA DATE 6-1-92	SOUTHERN WOOD PIEDMONT WILMINGTON, NORTH CAROLINA	GEOLOGIC CROSS-SECTION A - A'	SHEET OF CADD NO. 53002CS PROJECT NO. 530-06-501



SCALE
VERT. 1" = 5'
HORIZ. 1" = 100'

LEGEND
* Ground Surface Elevation

Environmental Technology Engineering, Inc.	SCALE 1" = 100' DRAWN BY CKA CHECKED BY CKA DATE 6-1-92	SOUTHERN WOOD PIEDMONT WILMINGTON, NORTH CAROLINA	GEOLOGIC CROSS-SECTION B - B'	SHEET OF CADD NO. 53003CS PROJECT NO. 530-06-501

REFERENCE 67

Ref. 67

RISK ASSESSMENT REPORT FOR LANDFARM AREAS, SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA

December 1993

Prepared for:

SOUTHERN WOOD PIEDMONT COMPANY
281 Creosote Road
Inman, South Carolina 29349

Prepared by:

GERAGHTY & MILLER, INC.
Risk Evaluation Group
2840 Plaza Place - Suite 350
Raleigh, North Carolina 27612
(919) 571-1662

RISK ASSESSMENT REPORT
FOR LANDFARM AREAS,
SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

December 1993

Geraghty & Miller, Inc., is submitting this report to Southern Wood Piedmont Company for work performed at the landfarms in Wilmington, North Carolina. The report was prepared in conformance with Geraghty & Miller's strict quality assurance/quality control procedures to ensure that the report meets the highest standards in terms of the methods used and the information presented. If you have any questions or comments concerning this report, please contact one of the individuals listed below.

Respectfully submitted,

GERAGHTY & MILLER, INC.

Stanley T. Atwood

Stanley T. Atwood, DABT
Senior Scientist

Christopher W. Lovdahl
Project Scientist/Project Manager

William H. Doucette

William H. Doucette, Jr., Ph.D.
Project Director/Associate

EXECUTIVE SUMMARY

A risk assessment was conducted for the two landfarm areas at the former wood treating facility operated by Southern Wood Piedmont Company (SWP) in Wilmington, North Carolina. The land farms were operated and maintained by SWP between July 1984 and April 1990 to remediate soils containing pentachlorophenol (PCP) and creosote. The purpose of this risk assessment was to evaluate whether concentrations of PCP and components of creosote (primarily polycyclic aromatic hydrocarbons [PAHs]) remaining in the landfarms posed a potential risk to public health and the environment pursuant to the terms of the Administrative Order on Consent (AOC) Agreement (May 22, 1985) between SWP and the State of North Carolina. Once the terms of the AOC have been met, the property will be returned to the City of Wilmington for development. It was assumed that the site would be used for low intensity industrial purposes such as a loading dock and storage area. Therefore, this risk assessment examined potential risk associated with future industrial development of the site.

Soil samples within the landfarms were collected periodically throughout the active maintenance and operational period (September 1985 to April 1990). Samples were analyzed for soil nutrients, PCP, PAHs, phenol, and microbial counts throughout this period. These samples indicated that the landfarms were effective and that constituents of concern (COCs) were not leaching into the substrate soils or ground water beneath the landfarms. Geraghty & Miller, Inc. subsequently collected soil samples from the landfarms in October 1990 and October 1991. This risk assessment is based on the results of the samples collected by Geraghty & Miller, Inc.

COCs included in the risk assessment were PAHs, phenol, dimethylphenol, trichlorophenol, tetrachlorophenol, PCP, arsenic, chromium, and copper. Fifty samples were analyzed for PAHs and PCP; 20 samples were analyzed for phenol, dimethylphenol, trichlorophenol, pentachlorophenol, arsenic, chromium, and copper.

Because toxicity values (reference doses [RfD] and cancer slope factors [CSFs]) were not available for many of the PAHs, surrogate toxicity values were used. For example, the RfD for pyrene was used to represent non-carcinogenic PAHs which did not have an RfD and a toxicity

equivalency factor (TEF) scheme developed by U.S. Environmental Protection Agency (USEPA) Region IV was used to evaluate carcinogenic PAHs. The TEF approach allows for all carcinogenic PAHs to be expressed in terms of benzo(a)pyrene equivalent concentrations.

It is assumed that several feet of fill and/or concrete pavement will cover the landfarm area following development; therefore, exposure to constituents remaining in the landfarm soils would be eliminated. During the construction period, or subsequent excavation projects to install foundations or utility lines, site workers could contact landfarm soils. Off-site transport of soils via windblown dust could result in some exposure to downwind residents; however, such exposure would be minimal compared to a site construction worker. Therefore, this risk assessment evaluated potential exposures of a site construction worker. Professional judgment and standard USEPA exposure assumptions were used to calculate constituent intakes via incidental soil ingestion, dermal contact, and inhalation of dust. An exposure period of 13 weeks, 6 days per week, and 8 hours per day was assumed. Thirteen weeks was selected as a reasonable maximum period required for grading, filling, and paving the site.

Risk estimates for the site construction worker were compared to USEPA target risk criteria to determine if the terms of the AOC had been met. The USEPA currently uses a target excess lifetime cancer risk (ELCR) range of 1×10^{-4} to 1×10^{-6} and a hazard index (HI) of 1 to indicate if remediation is required. The total ELCR for the construction worker is 6×10^{-6} and is within the target risk range; the HI is 0.5 and is below the target value of 1. Benzo(a)pyrene was responsible for more than half of the ELCR. Ecological impacts from the site were judged to be limited because of the small size of the site, limited migration of the COCs, and planned use of the site as industrial property. These results indicate, that the proposed development of the site could proceed without posing a significant risk to human health and the environment.

CONTENTS

Page

1.0 INTRODUCTION 1-1

2.0 SITE CHARACTERIZATION 2-1
- 2.1 Site Location and Demographics 2-1
- 2.2 Site History 2-2
- 2.3 Regional and Site Geology and Hydrology 2-3
- 2.4 Landfarm Activities 2-4

3.0 CONSTITUENT CHARACTERIZATION 3-1
- 3.1 Data Reduction 3-1
- 3.2 Soil 3-1
- 3.3 Ground Water 3-2
- 3.4 Physical and Chemical Properties 3-3
- 3.5 Constituents of Concern (COCs) 3-4

4.0 ENVIRONMENTAL FATE AND TRANSPORT 4-1
- 4.1 Landfarming Environment 4-1
- 4.2 Creosote 4-2
- 4.3 Polycyclic Aromatic Hydrocarbons (PAHS) 4-2
- 4.4 Phenolic Compounds 4-4

5.0 HAZARD CHARACTERIZATION 5-1
- 5.1 Carcinogenic Effects 5-1
- 5.2 Non-Carcinogenic Effects 5-1
- 5.3 Toxicity Values 5-2

6.0 EXPOSURE CHARACTERIZATION 6-1
- 6.1 Release Source Analysis 6-1
- 6.2 Exposure Pathways and Receptors 6-1
- 6.3 Exposure Point Concentrations (EPCs) 6-2
- 6.4 Exposure Dose Calculations 6-3

7.0 RISK CHARACTERIZATION 7-1
- 7.1 Site Worker 7-2
- 7.2 Ecological Assessment 7-2
  - 7.2.1 General Concepts 7-3
  - 7.2.2 Community Description 7-5
  - 7.2.3 Community Effects 7-7
  - 7.2.4 Ecological Summary 7-11

8.0 UNCERTAINTIES 8-1

9.0 FINDINGS AND CONCLUSIONS 9-1

10.0 REFERENCES 10-1

TABLES

3-1. Polychlorinated Dibenzodioxin and Dibenzofuran Data For Composite Soil Samples Collected from Landfarms 1 and 2, October 1990, Southern Wood Piedmont, Wilmington, North Carolina.

3-2. Data Summary for Soil Samples, Southern Wood Piedmont, Wilmington, North Carolina.

3-3. Physical and Chemical Properties of Organic Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

5-1. Reference Doses, Target Sites, and Confidence Levels for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

5-2. Cancer Slope Factors, Tumor Sites, and USEPA Cancer Classifications for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

5-4. Dermal and Oral Absorption Efficiencies for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

5-5. Adjusted Toxicity Values Used to Assess Dermal Exposure for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

5-6. Calculated Benzo(a)pyrene Equivalents for Carcinogenic Polycyclic Aromatic Hydrocarbons, Southern Wood Piedmont, Wilmington, North Carolina.

6-1. Exposure Parameters Used to Assess Risk to Receptors, Southern Wood Piedmont, Wilmington, North Carolina.

6-2. Equations and Sample Calculations for Incidental Ingestion of Soil, Southern Wood Piedmont, Wilmington, North Carolina.

6-3. Equations and Sample Calculations for Dermal Contact with Soil, Southern Wood Piedmont, Wilmington, North Carolina.

6-4. Equations and Sample Calculations for Inhalation of Fugitive Dust, Southern Wood Piedmont, Wilmington, North Carolina.

6-5. Site Construction Worker Exposure and Risk Estimates, Incidental Ingestion of Soil Based on Current Concentrations, Southern Wood Piedmont, Wilmington, North Carolina.

6-6. Site Construction Worker Exposure and Risk Estimates, Dermal Contact with Soil Based on Current Concentrations, Southern Wood Piedmont, Wilmington, North Carolina.

6-7. Site Construction Worker Exposure and Risk Estimates, Inhalation of Dust Based on Current Concentrations, Southern Wood Piedmont, Wilmington, North Carolina.

7-1. Total Site Risks, Future Construction Worker, Southern Wood Piedmont, Wilmington, North Carolina.

FIGURES

2-1. Regional Map of Southern Wood Piedmont Site, Wilmington, North Carolina.

2-2. Generalized Site Map, Southern Wood Piedmont, Wilmington, North Carolina.

2-3. Soil Sampling Locations within the Landfarm Areas at Southern Piedmont's Former Wood Treatment Facility - Wilmington, North Carolina.

APPENDICES

A. Particulate Emission Factor Calculations.

B. Threatened and Endangered Species, Wilmington, North Carolina.

DRAFT
RISK ASSESSMENT REPORT FOR LANDFARM AREAS, SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA

1.0 INTRODUCTION

Geraghty & Miller, Inc., (Geraghty & Miller) was retained by the Southern Wood Piedmont Company (SWP) to prepare a post-remediation residual risk assessment for the Wilmington, North Carolina, landfarm areas. The purpose of the landfarms was to remediate soils which contained wood-treating chemicals, particularly creosote and pentachlorophenol (PCP). This risk assessment was performed to evaluate whether a "concentration of residual PCP and major constituents of creosote is reached which will protect public-health and the environment," according to the terms of the Administrative Order on Consent (AOC) Agreement (May 22, 1985), paragraph 10. Once remediation is in agreement with the AOC, use of the property will be returned to the City of Wilmington. The future site use proposed by the City of Wilmington and the North Carolina Ports Authority is for low intensity industrial use. The report evaluates potential exposure and risk for future construction activities within the landfarm areas. Chronic exposure to landfarm soils following development is not evaluated because it is assumed that several feet of fill and concrete will be placed over the landfarm area during development.

This risk assessment follows U.S. Environmental Protection Agency (USEPA) guidance for risk assessments (USEPA, 1991a; 1989a,b,c) and is further based on the firm's professional judgment developed from preparing several hundred site-specific risk assessments. This risk assessment is a companion document to two other reports: "Data Summary Report for the 1990 Landfarm Area Sampling" (Geraghty & Miller, 1993a) and "Comparison of 1990 and 1991 Soil and Ground-Water Data" (Geraghty & Miller, 1993b). The report is organized according to the following outline:

- Site Characterization,
- Constituent Characterization,
- Environmental Fate and Transport,
- Hazard Characterization,
- Exposure Characterization,
- Risk Characterization,
- Uncertainties, and
- Findings and Conclusions.

The Site Characterization section (Section 2.0) refers to the site location and demographics, site history, regional and site geology and hydrology, and landfarm activities associated with the site. This information is utilized in other sections of the risk assessment.

The Constituent Characterization section (Section 3.0) discusses the data summary of samples collected at the site. Soil and ground-water data results and sampling procedures are discussed in detail.

The Environmental Fate and Transport section (Section 4.0) discusses the chemical and physical properties and the mobility and persistence of the constituents detected at the site. The landfarm bioremediation environment and biodegradation and half-life of organic constituents also are mentioned in this section.

The Hazard Characterization section (Section 5.0) discusses the potential carcinogenic and non-carcinogenic effects associated with constituents detected at the site. Toxicity values used for calculating risks are identified in this section.

The Exposure Characterization section (Section 6.0) addresses release sources, exposure pathways, exposure point concentrations, and exposure dose calculations. Assumptions used in the exposure calculations are presented.

The Risk Characterization section (Section 7.0) utilizes information provided in the previous sections to provide qualitative and quantitative risk estimates. Risks to both humans and ecological receptors are evaluated.

The Uncertainties section (Section 8.0) recognizes and explains the uncertainties associated with a risk assessment, and key Findings and Conclusions are provided in Section 9.0.

2.0 SITE CHARACTERIZATION

This section provides an overview of the site setting. Included are discussions of the site location and demographics, site history, geology and hydrology, and landfarm activities. Analytical data used in this report are summarized in Section 3.0 and discussed in detail in two companion reports (Geraghty & Miller, 1993a,b).

2.1 SITE LOCATION AND DEMOGRAPHICS

The former SWP facility measured approximately 1,000 feet (east to west) by 1,600 feet (north to south) and occupied an industrialized area along the Cape Fear River in Wilmington, North Carolina (Figures 2-1 and 2-2). Industry in the vicinity includes the Hess Fuel Tank Farms separated from the site by a ditch on the north side and the Poctank, Inc., plant separated by an undeveloped lot on the south side of the site. The North Carolina Ports Authority owns and operates property along the Cape Fear River south of the site. The major roads in the vicinity of the SWP facility are Greenfield and Surry Streets. Greenfield Street runs in an east-west direction and dead ends into the center of the facility. Surry Street runs in a north-south direction and is east of the property. The Cape Fear River borders the property on the west.

Residential areas, separated by a buffer zone of trees and commercial property (Figure 2-1), are east of the site. The residential areas include Dry Pond, a residential area which consists of multi-family housing units on the east side of Surry Street. According to the 1980 census (1990 census data are not yet available), approximately 1,600 people live in the area and approximately 12.5 percent were 0 to 5 years old; 12.5 percent were 5 to 15 years old; 61 percent were 15 to 65; and 14 percent were over 65 years old. Of the individuals 5 years old and older, approximately 54 percent lived in a different geographical location 5 years earlier. The 1980 census showed that of the 663 housing units in Dry Pond occupied year-round, 31.2 percent were occupied by owners and 68.2 percent were occupied by renters. There were 106 vacant housing units in this neighborhood, with a rental vacancy ratio of 6.2 percent and a homeowner vacancy rate of 7.6 percent (Wilmington Housing Authority, 1980). The statistics

for this neighborhood indicate that 22.5 percent of all homeowners in Dry Pond had lived in their housing units 10 years or more. Census data also indicated that 11.9 percent of the owners and 23.3 percent of the renters had moved into their units in the 15 months preceding the census. Dry Pond households are connected to City water. No evidence of active private water wells was observed in the immediate area during site visits in 1990 and 1991.

Geographically, the more distant residential areas to the east are North Lakeside and Southside. The combined 1980 population in those areas accounted for approximately 5,200 people. These areas also are connected to city water. Use of private water wells was not evident. School zones and day care centers were not observed in the vicinity of the site. Recreational facilities identified in the immediate area included Greenfield Lake and baseball fields directly adjacent to the southeast facility boundary.

2.2 SITE HISTORY

SWP and its predecessors leased and operated a wood-treatment facility in Wilmington, North Carolina, from approximately 1932 to 1983. In 1932, the North State Company leased the property previously operated by Liberty Shipyards. The North State Company purchased and sold non-treated wood from 1932 to 1935. In 1935, the Taylor Colquitt Company purchased the property to establish a wood-preserving facility to treat piling and poles with creosote. In 1964, the company name was changed to Taylor Piedmont, and the site remained a wood-treatment facility. When International Telephone & Telegraph (ITT) purchased Taylor Piedmont in 1968-1969, the company name and processes were maintained. On January 1, 1971, the company name was changed to SWP. SWP added chromated copper arsenate (CCA) to the wood-treatment process in the early 1970s. Until the facility was closed, raw and dressed lumber was delivered, debarked, kiln dried, and treated at the site. Wood-preserving chemicals were stored on-site in aboveground storage tanks. Additional creosote storage was in the southwestern property corner. In June 1983, the SWP facility ceased its wood-treatment operations and began closure procedures.

2.3 REGIONAL AND SITE GEOLOGY AND HYDROLOGY

The site is in the Coastal Plain Physiographic Province of North Carolina, a region underlain by Cretaceous and Cenozoic marine and non-marine sedimentary sequences. Approximately 1,500 feet of Coastal Plain sediments overlie pre-Mesozoic crystalline basement rock in the Wilmington area (North Carolina Geological Survey [NCGS], 1985). The site is underlain directly by the Cretaceous-age Pee Dee Formation (NCGS, 1985), which consists predominantly of unconsolidated, dark green to gray, clay-rich, marine sand and which may contain calcareous sandstone ledges (Sohl and Owens, 1991).

Five soil borings were advanced at the site to a maximum depth of approximately 50 feet by Soil and Material Engineers, Inc., (SME) during 1981, and an additional four borings (to a maximum depth of 20 feet) were drilled by Law Environmental (Law) in 1985. Lithologic logs (presented in SME [1981] and Law [1985]) indicate that a surficial layer of sandy fill material or sand, which varies from less than 1 foot to 18 feet in thickness, is present at the site. This layer, which appears to be thickest in the northern part of the site, is described as consisting of fine to medium sand, with wood, roots, or other material occasionally found. Below this sandy material is a layer consisting of dark brown, organic-rich silt or peat, which may contain traces of fine sand, roots, and wood fragments. This layer ranges in thickness from 5 to 19 feet in the soil boring locations and apparently increases in thickness toward the Cape Fear River to the west. Fine to medium sands extend from below the organic-rich layers to a depth of 42 to 45.5 feet, below which a gray marl is encountered (SME, 1981).

Based on their observations, SME (1981) concluded that the dominant direction of shallow ground-water flow at the site was to the south, parallel to the Cape Fear River. Water-table maps prepared by Law (1985) indicate westward to southwestward flow (toward the river) near the landfarm areas and generally southward flow at the eastern part of the site. Tidal influences may cause temporary alterations or reversals in these flow directions. Hydraulic conductivities ranging from 3×10^{-5} centimeters per second (cm/sec) to 10^{-6} cm/sec were

determined based on in-situ monitor-well tests; an average ground-water flow velocity of 0.10 feet/year was calculated (Law, 1985).

2.4 LANDFARM ACTIVITIES

At the northwest boundary of the site, a 5-acre area was bermed and ditched following the removal of existing rails and crossties and divided into two landfarm areas: Landfarm 1 (LF1) is closest to the river, and Landfarm (LF2) is closest to the SWP office (Figure 2-2). This area formerly was used as the wood-treatment storage area.

During the period July 1984 through April 1990, soil material originating from the spoil pile area was applied at regular intervals. Over this period, approximately 17 different soil amendments occurred for LF1 and 20 for LF2. Each amendment consisted of a 2-inch-thick layer of spoil pile material being added to the surface of the landfarm. During the landfarm operation, irrigation water, 10-10-10 fertilizer, and chicken and turkey manure were added to promote and enhance microbial growth and polycyclic aromatic hydrocarbon (PAH) degradation. The two landfarm areas were tilled to a depth of 6 inches weekly, promoting biological and photochemical degradation of residual chemicals.

Two composite sets of soil samples were collected periodically by a SWP representative. A composite sample was taken for each of the following depths: 0 to 3 inches, 9 to 12 inches, and 21 to 24 inches. Soil from the four corners of each landfarm was mixed to make up the two composite samples for each depth. Each landfarm was sampled separately. The initial sampling began in September 1985 for LF2 and in November 1985 for LF1. Over the period of operation, 59 sets of soil samples were collected from LF2 and 37 from LF1.

The samples were analyzed for total nitrogen, total phosphorus, chloride, total organic carbon, soil pH, PAHs, PCP, phenol, and microbial counts by the Mississippi State University Forest Products Research Division (MSUFPRD) Laboratory in State College, Mississippi.

The quality of the ground water in the two landfarmed areas was monitored during the landfarm operations. Four monitor wells were installed by Law between September 5 and 10, 1985, on the perimeter of the landfarm area. Ground-water samples from the upgradient (MW-6) and three downgradient (MW-7, MW-8, and MW-9) monitor wells were collected by Environmental Technology Engineering (ETE) and analyzed by Savannah Laboratories. Composite soil samples also were taken by SWP's site manager directly from the spoil pile and were analyzed for PAH constituents by MSUFPRD.

3.0 CONSTITUENT CHARACTERIZATION

The soil and ground-water sampling programs used as the basis of this risk assessment are described in detail in the two data summary reports (Geraghty & Miller, 1993a,b). This section discusses how the data were reduced for the risk assessment, summarizes the sampling results, discusses the physical and chemical properties of the constituents, and identifies constituents of potential concern (COCs).

3.1 DATA REDUCTION

The data were reduced according to guidelines provided by the USEPA (1989a) to identify COCs and exposure point concentrations (EPCs) for use in the exposure assessment (Section 4.0). The data summary tables list the frequency and range of detected values, the arithmetic mean, and the 95 percent upper confidence limit (UCL) on the mean. Constituents that were not detected in a specific medium were not included in the data summary tables. However, if a constituent was detected in at least one sample, the mean concentration was based on one-half the reported sample quantitation (SQL) for the non-detects, unless half the SQL exceeded the maximum detected value. When this occurred, the maximum detected value was used instead of half the SQL.

3.2 SOIL

Soil samples were collected from five locations within each landfarm (Figure 2-3) in October 1990 and October 1991 and were analyzed for constituents associated with wood-preserving chemicals used at the site: creosote, PCP, and CCA.

Thirty soil samples collected from LF1 and LF2 were analyzed for PAHs and PCP in 1990. Three samples were collected at each sampling point to represent the upper, middle, and lower portions of the landfarm soil (Figure 2-3). An additional 10 soil samples were collected from the substrate beneath LF1 and LF2 and demonstrated minimal migration of COCs from the

landfarm soils (Geraghty & Miller, 1993a). Two composite soil samples (one from each landfarm) also were analyzed in 1990 for polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). In October 1991, 20 soil samples were collected from LF1 and LF2 and were analyzed for PAHs, phenols (including PCP) and cresols, and three inorganics (arsenic, chromium, and copper). Only two samples were collected at each sampling point (upper and lower portions of the landfarm soil).

PAHs detected at the highest concentrations were anthracene (900 milligrams per kilogram [mg/kg]), fluoranthene (520 mg/kg), and pyrene (980 mg/kg). Five phenols (2,4-dimethylphenol, PCP, phenol, tetrachlorophenol, and trichlorophenol) were detected. PCP was detected at a maximum concentration of 150 mg/kg. The other phenols were detected at lower concentrations ranging from less than 1 to 3.5 mg/kg. Two cresols (o-cresol and m,p-cresol) were detected in 1991 in 6 and 5 out of 20 samples, respectively. The highest concentration for cresol was m,p-cresol at 0.10 mg/kg. Arsenic, chromium, and copper were detected in each sample collected in 1991. The maximum detected concentrations for arsenic, chromium, and copper were 84 mg/kg, 100 mg/kg, and 150 mg/kg, respectively. Soil data are summarized in Table 3-1.

PCDD and PCDF data were reduced using a toxicity equivalency factor (TEF) scheme developed by the USEPA (1989d). The end result is a concentration expressed as a 2,3,7,8-tetrachlorodibenzodioxin (TCDD) equivalent concentration. Using this scheme, TCDD equivalent concentrations of about 0.002 mg/kg and 0.003 mg/kg were detected in LF1 and LF2, respectively (Table 3-2).

3.3 GROUND WATER

Each of the four existing monitoring wells (MW-6, MW-7, MW-8, and MW-9) surrounding the landfarms were sampled in October 1990 (Figure 2-2). None of the wood-preserving COCs identified in soil were detected in ground-water samples from these monitoring wells. Therefore, ground water is not considered further in this risk assessment.

3.4 PHYSICAL AND CHEMICAL PROPERTIES

Physical and chemical properties affect the fate and transport of constituents. Table 3-3 summarizes several important properties of the organic COCs identified at the site. The physical and chemical properties considered in this report include water solubility, specific gravity, vapor pressure, Henry's Law Constant, organic carbon distribution coefficient (K_{oc}), octanol-water partition coefficient (K_{ow}), fish bioconcentration factor (BCF), and half-life.

These physical and chemical properties generally are not available for inorganic constituents because they are highly variable, depending on the particular form of the inorganic molecule. The chemical variables which are primarily responsible for controlling metal speciation (the form of the molecule or ion in solution) are the electrode potential (Eh) and pH (Stumm and Morgan, 1981). Eh is a measure of the electrochemical potential of ions present in soil or water and determines the oxidation state of the metal; pH is a measure of acidity or alkalinity of the medium and also influences the form of the metal and its mobility and bioavailability.

Water solubility is the maximum or saturated concentration of a chemical in pure water at a specific temperature. Specific gravity is the ratio of the density of a chemical to the density of water at a specific temperature. Vapor pressure is a property of a chemical in its pure state and indicates the volatility of a chemical. Henry's Law Constant is the air-water partition coefficient which relates a chemical's concentration in the gas phase to its concentration in the water phase and indicates the rate of evaporation of a chemical from water. K_{oc} is a measure of the tendency for organic chemicals to be adsorbed by soil and sediment; K_{ow} is an indicator of water solubility, mobility, adsorption, and bioconcentration. Generally, a high K_{ow} indicates that a chemical has low water solubility and mobility and a high potential to adsorb to soil or bioaccummulate. BCF is a measure of the tendency for a chemical in water to concentrate in fish tissue. The half-life ($T_{1/2}$) is the time required for the constituent concentration to be reduced by a factor of two.

3.5 CONSTITUENTS OF CONCERN (COCs)

All constituents detected at the site were selected as COCs; however, the PCDD and PCDF data are not included in the quantitative risk assessment. The USEPA currently is reviewing PCDD and PCDF toxicity and likely will have new recommendations regarding sensitive toxic endpoints and toxicity values. Nevertheless, the total TCDD equivalent concentrations detected (0.002 to 0.003 mg/kg) are only slightly above the 0.001 mg/kg recommendation for residential soil by the Centers for Disease Control (USEPA, 1989e). Cleanup values for industrial soil typically have been higher than those detected at the site. Furthermore, PCDDs and PCDFs are not mobile in soil, and bioconcentration is limited. Therefore, the concentrations of PCDDs and PCDFs detected at the site were considered to be acceptable. Pending outcome of USEPA's reassessment, these data can be reevaluated.

4.0 ENVIRONMENTAL FATE AND TRANSPORT

Environmental fate and transport processes for the COCs at the SWP Wilmington site are dependent on the physical and chemical properties of the constituents and the characteristics of the surrounding environment. Soils at the site underwent active bioremediation up to 1990. This section will describe the landfarm environment and the primary environmental fate and transport processes for the organic constituents.

4.1 LANDFARMING ENVIRONMENT

The basic principle of landfarming bioremediation is to exploit the ability of microorganisms to catabolize a wide range of organic compounds. When successful, landfarming bioremediation results in detoxification (the conversion of a toxic chemical to nontoxic materials).

As might be expected, there are potential limitations which must be addressed if in-situ bioremediation is to be successful. The chemical compound in question must be in a chemical state conducive to microbial utilization. A chemical compound must be in an aqueous phase to enter a microbial cell and to be biologically degraded (although some compounds may be transformed by extracellular enzymes). Typically, many persistent compounds are only slightly soluble in water. Insoluble compounds tend to persist in nature adsorbed to inert matrices.

The addition of large amounts of organic carbon may result in the rapid consumption of oxygen and essential inorganic nutrients (nitrogen, phosphorus, sulfur, and potassium), thereby resulting in an anoxic and nutrient-limiting environment. Although a microbial population may exist with the potential to degrade the chemical compound, the newly developed environment restricts its activity. Hence, on-going aeration and nutrient supplementation are essential elements of the landfarm operation. The environmental fate and transport of wood-treating chemicals and constituents associated with wood-treating chemicals are discussed in the following sections.

4.2 CREOSOTE

Creosote is a complex mixture of chemical constituents encompassing diverse chemical structures. Coal tar creosote is composed of approximately 85 percent PAHs, 10 percent phenolic compounds, and 5 percent nitrogen (N), sulfur (S), and oxygen (O)-heterocyclics. Of the approximately 150 to 200 chemicals in creosote, only a few are present in amounts of 1 percent or more (Mueller et al., 1989).

Although coal tar creosote generally is considered to be environmentally persistent, losses of creosote constituents occur with time. Losses may occur through biological processes and a variety of chemical-physical processes such as volatilization, leaching, and photodegradation (USEPA, 1988). Because biodegradation represents the primary route through which creosote is removed from the environment, exploitation of this naturally-occurring process could yield an efficient means of remediating such sites.

For creosote to be degraded biologically under field conditions, basic criteria must be met. First, an appropriate microbial community must be present. The ability to degrade unique carbon sources often is associated with prior exposure of microbial communities to the chemical or to similar chemicals (Mueller et al., 1989). Second, bioavailability of the potential substrate must be considered along with the requirement for organism-substrate interaction. Finally, environmental parameters such as temperature, redox potential, oxygen and nutrient availability, and moisture must be conducive to growth of the requisite organisms.

4.3 POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)

PAHs, the major constituents of creosote, generally tend to sorb strongly to soil particles and have low aqueous solubilities and mobility (Hickock et al., 1982). However, nitrogenous bases present in creosote (e.g., xylidines, aniline, and toluidines) are relatively soluble and mobile (Pereira et al., 1983).

In general, as molecular weight of a PAH increases, its water solubility tends to decrease. For example, phenanthrene is more soluble in water than pyrene (Table 3-3). PAHs dissolved in ground water would remain relatively intact due to slow degradation rates and limited volatilization. Upon release to surface water, PAHs will undergo rapid photolysis. Biodegradation and biotransformation are the ultimate fate processes for PAHs in soils and sediment.

Mueller et al. (1989) reviewed the available literature that outline enzymatic processes and describe microbial oxidation of PAHs and concluded the following:

1. In the presence of appropriate organisms, biodegradation of lower molecular weight PAHs, such as naphthalene, is relatively rapid.

2. Biological transformation of 3-ring PAHs, such as acenaphthene, anthracene, and phenanthrene, usually is slower than 2-ring PAHs.

3. Organisms are capable of transforming higher molecular weight PAHs, such as benzo(a)anthracene, benzo(a)pyrene, fluoranthene, and pyrene. In general, degradation of these compounds usually requires populations of several microbial species (co-metabolism). Pure microbial cultures have not been identified which are capable of mineralizing these compounds.

A variety of microorganisms have been found to possess the ability to degrade PAHs: bacteria from the genera *Aeromonas, Alcaligenes, Beijerinkia, Cyanobacter, Flavobacterium, Micrococcus, Mycobacterium, Nocardia, Pseudomonas, Vibrio*, and the fungus *Phanerochaete chrysosporium*. In addition to pure-culture studies, biodegradation of creosote PAHs by mixed microbial communities has been demonstrated by many researchers (Mueller et al., 1989).

Park et al. (1990) studied the fate of 14 PAHs in two soils and found volatilization to account for 30 and 20 percent loss of naphthalene and 1-methylnaphthalene; for the remaining

12 PAHs, volatilization was negligible. They also found that chemical reactions alone reduced concentrations of 2- and 3-ring PAHs by 2 to 20 percent; no reduction was observed for PAHs containing greater than 3 aromatic rings. Half-life values in the two soils increased from 2 to 60 days for 2-, 3-, and 4-ring PAHs, and to more than 300 days for 5-ring PAHs. Biodegradation rates can vary widely depending on such soil conditions as oxygen availability (aerobic vs. anaerobic), pH, nutrient level, moisture content, temperature, and the resident microbial community.

PAHs are readily bioconcentrated; however, they also are rapidly metabolized and excreted (Niimi and Palazzo, 1986), such that bioaccumulation is not a long-term situation. The available evidence indicates that clearance rates for most PAHs are rapid, with half-lives of 9 days or less (Niimi and Dookhran, 1989). The dominant transport process for PAHs is associated with sorption to soil particles, suspended particulates, and sediments; once sorbed to soil particles and sediments, transport of PAHs would be limited.

4.4 PHENOLIC COMPOUNDS

Bacteria capable of degrading phenolic compounds have been isolated from soil and water, and a variety of microorganisms--bacteria, yeast, and fungi--have been isolated for their ability to degrade phenol and substituted phenols. The primary phenol at the site is PCP.

PCP is quite stable; it does not decompose when heated at temperatures up to its boiling point for extended periods. Pure PCP is considered to be chemically inert (Bevenue and Beckman, 1967). The chlorinated ring structure tends to impart stability, but the polar hydroxyl group facilitates biological degradation (Renberg, 1974). PCP is not subject to the easy oxidative coupling or electrophilic substitution reactions common to most phenols. Monovalent alkali metal salts of PCP are very soluble in water, but the protonated (phenolic) form is virtually insoluble. Hence, transport of PCP in water depends largely on the pH of the environment.

PCP is volatile enough to be steam distilled. Relative to other chlorinated organic compounds with low vapor pressures, volatility may cause significant losses of PCP from soils (Briggs, 1975). Even though PCP's vapor pressure is low, a finite amount will vaporize.

In the aquatic environment, PCP may be present in a dissolved form, associated with suspended matter or bottom sediments, or absorbed by organisms. Metal salts of the compound have a much greater water solubility and therefore would exist primarily in the dissolved form. The tendency of PCP to ionize depends on the pH of the system. It is nonionized in aqueous solutions with a pH less than 5. There is limited evidence of microbiological degradation of PCP in aquatic environments. Photodecomposition and volatilization from water also may occur.

In the soil, PCP is affected by many complex factors; many details of its behavior are unknown or have not been verified (Bevenue and Beckman, 1967). Hilton and Yuen (1963) reported relatively high adsorption of PCP in agricultural soils of Hawaii. Choi and Aomine (1974) studied adsorption of PCP in 13 soil samples which had various clay mineral species, organic matter content, and pH. Seven different concentrations of PCP, ranging from 12.5 to 500 milligrams per liter (mg/L), were studied. They concluded that adsorption behavior depends primarily on the pH of the system; the more acidic the soil is, the more complete the adsorption of PCP. Organic matter content of the soil is important to adsorption of PCP at all pH values. At different pH values, comparisons of untreated soil and soil oxidized with hydrogen peroxide (H_20_2) to remove organic matter showed that humus-containing soil always adsorbed more PCP than H_2O_2-treated soil. Adsorption of PCP by humus is important when the concentration of PCP is low. At higher concentrations of PCP, the inorganic fractions become more important.

5.0 HAZARD CHARACTERIZATION

The risk associated with exposure to any constituent is a function of the inherent toxicity (hazard) and the exposure dose. Two general categories of toxic effects (carcinogenic and non-carcinogenic) and toxicity values (reference doses [RfDs] and cancer slope factors [CSFs]) used to calculate risk estimates are discussed in this section.

5.1 CARCINOGENIC EFFECTS

Identification of constituents which are regulated as carcinogens is based on a USEPA classification scheme in which chemicals are systematically evaluated for their ability to cause cancer in mammalian species. This classification scheme contains six categories based on the weight of available evidence: A (human carcinogen), B1 (probably human carcinogen -- limited evidence in humans), B2 (probable human carcinogen -- sufficient evidence in animals and inadequate data in humans), C (possible human carcinogen -- limited evidence in animals), D (inadequate evidence to classify), and E (no evidence of carcinogenicity). Categories A, B1, B2, and C are included in this assessment as potential human carcinogens. The USEPA uses a linearized multistage model to derive a 95 percent upperbound estimate of cancer incidence at a given dose. The slope of the extrapolated dose-response curve, called the CSF, is used to calculate the probability of cancer associated with the exposure dose.

5.2 NON-CARCINOGENIC EFFECTS

A finite dose (threshold), below which adverse effects will not occur, is believed to exist for non-carcinogenic chemicals. A single compound might elicit several adverse effects depending on the dose, the route, and the duration of exposure. For a given chemical, the dose which elicits no effect when evaluating the most sensitive response (the no observed effect level [NOEL]) in the most sensitive species is used to establish a reference dose (RfD) for non-carcinogenic effects. The RfD is defined as "an estimate" (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including

sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a "lifetime" (USEPA, 1989a). Typically the NOEL is divided by uncertainty factors of 10 to 10,000, depending on the type and quality of the study, to derive the RfD. RfDs are established by USEPA for subchronic exposure (2 weeks to 7 years) and chronic exposure (>7 years) and route of exposure (ingestion and inhalation) and are reported in milligrams per kilogram per day (mg/kg/day). Reference concentrations (RfCs), reported in milligrams per cubic meter (mg/m^3), also may be used to assess inhalation exposure.

5.3 TOXICITY VALUES

In general, CSFs, cancer classifications, and RFDs for oral and inhalation exposures are taken from USEPA's Integrated Risk Information System (IRIS, 1993) or the Health Effects Assessment Summary Tables (HEAST) (USEPA, 1992a). RfDs and CSFs used in this report are listed in Tables 5-1 and 5-2, respectively. Brief toxicity summaries are provided in Table 5-3.

Whenever possible, route-specific toxicity values are used to assess risk. However, RfDs and CSFs have not been developed for dermal exposure. Therefore, oral RfDs are adjusted, as recommended by the USEPA (1989a), by multiplying by the oral absorption efficiency to assess dermal exposure. CSFs are adjusted by dividing by the oral absorption efficiency. The rationale for these adjustments is as follows: most toxicity values are based on administered doses and dermal exposures are calculated as absorbed doses. Therefore, the toxicity value is adjusted to an absorbed dose value prior to evaluating dermal exposures. Constituent-specific dermal and oral absorption efficiencies are shown in Table 5-4. The adjusted toxicity values used to assess dermal exposure are shown in Table 5-5. It is noted that oral CSFs for carcinogenic PAHs were not adjusted for dermal exposure. Carcinogenic PAHs have been associated with skin cancer through a local effect. Therefore, it is inappropriate to use the oral CSF for constituents that cause skin cancer through a local rather than a systemic effect (USEPA, 1989a).

Toxicity values are not available for several PAHs. The RfD for pyrene was used as a surrogate for non-carcinogenic PAHs not having RfDs (acenaphthylene, benzo[g,h,i]perylene, carbazole, 1-methylnaphthalene, 2-methylnaphthalene, and phenanthrene) and dibenzofuran. Benzo(a)pyrene is the only carcinogenic PAH (cPAH) with CSFs. USEPA Region IV has developed a toxicity equivalency factor (TEF) scheme based on structure activity relationships and the toxicity literature to convert all cPAHs to benzo(a)pyrene equivalents (USEPA, 1992b). This TEF approach is used in this report, and benzo(a)pyrene equivalents are shown in Table 5-6.

Isomers of tetrachlorophenols and trichlorophenol were not specified in the data summary. Therefore, 2,3,4,6-tetrachlorophenol was used to represent tetrachlorophenols, and two isomers of trichlorophenol (2,4,5-trichlorophenol and 2,4,6-trichlorophenol) were chosen to represent trichlorophenols. An RfD is available for 2,4,5-trichlorophenol, and CSFs are available for 2,4,6-trichlorophenol.

6.0 EXPOSURE CHARACTERIZATION

This section addresses the potential for on-site exposure to constituents released from the landfarm area during construction activities. Exposure occurs only when a potential receptor comes in contact with constituents released to the environment. In the absence of exposure, there is no risk or hazard; therefore, exposure assessment is one of the key components of risk assessment.

6.1 RELEASE SOURCE ANALYSIS

As a result of past operations as a wood-treating facility, PCP, PAHs, and CCAs were released to site soils. In accordance with an Administrative Order on Consent with the State of North Carolina, signed on May 20, 1985, SWP constructed and operated a landfarm to remediate soils containing PCP and various PAHs associated with creosote. Details of the landfarm operation are provided in Section 4.1. The available data indicate that biodegradation of PCP and PAHs has occurred; however, residual levels of PAHs and PCP remain in the landfarm soil. Leaching from the landfarm area has not occurred, as evidenced by ground-water and subsurface soil analyses. Soil berms control run-on and runoff; therefore, release of constituents from the landfarm to surface water is not known or believed to have occurred. Past fugitive dust emissions during tilling and landfarm maintenance activities may have resulted in minimal off-site transport of COCs. Vegetation currently limits dust emissions. Future dust emissions will be eliminated completely by fill and pavement.

6.2 EXPOSURE PATHWAYS AND RECEPTORS

Potential exposure pathways considered in this report include incidental soil ingestion, dermal (skin) contact with soil, and inhalation of dust on site during future construction activities.

It is assumed that future land use will remain industrial/commercial. A potential use for the site is as a loading dock and storage area for containerized cargo by the State Ports Authority. It is assumed that the site will be covered with fill and/or paved with concrete. Construction of buildings over the landfarm, paving, or additional soil cover should eliminate exposure. However, exposure could occur during a short-term construction period required to develop the property or from future excavations through the fill into the landfarm soils to install utility lines or building foundations. Therefore, this report evaluates exposure of a future site worker during construction and/or excavation within the landfarm area.

6.3 EXPOSURE POINT CONCENTRATIONS (EPCs)

Soil EPCs were selected as the lower of the UCL or maximum concentration from Table 3-2. EPCs for cPAHS (benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-c,d]pyrene) were multiplied by TEFs to derive benzo(a)pyrene-equivalent EPCs (Table 5-6). Current PAH concentrations were assumed to be representative of future concentrations.

Inhalation exposure was based on fugitive dust emissions from the site, and assumed constituent concentrations in airborne dusts were equal to concentrations in the landfarm soils. Dust emissions were calculated using a model developed by Cowherd et al. (1985). This model assumes that the soil is characterized by bare surfaces of finely divided material with an unlimited reservoir of erodible particles. This model was selected by USEPA (1991b) to calculate risk-based preliminary soil remediation goals (Appendix A). Default parameters (as listed in USEPA, 1991b) were used with the following exceptions: the width of the contaminated area perpendicular to the prevailing wind direction (northeast) was estimated at about 220 meters (m), and the total landfarm area was estimated at about 22,300 m^2. A particulate emission factor of 2.0×10^9 m^3/kg was calculated (Appendix A, Table A-1).

6.4 EXPOSURE DOSE CALCULATIONS

Average daily intakes (ADIs) for non-carcinogenic effects and lifetime average daily intakes (LADIs) for carcinogenic effects were calculated using standard assumptions, risk assessment guidance, site data, and professional judgment. The primary receptor identified was a future site construction worker. Standard USEPA exposure assumptions (USEPA, 1991a; 1989a) considered for use in this report are listed in Table 6-1 and are discussed below. The exposure dose equations and sample calculations for oral, dermal, and inhalation exposures are shown in Tables 6-2, 6-3, and 6-4, respectively.

Future site workers involved with site construction/excavation were selected to represent the reasonably maximally exposed individuals. During construction, workers may be exposed to soil via ingestion, inhalation of dust generated from affected soil, and dermal contact. It was assumed that the construction period would last for 13 weeks (approximately 3 months) and that workers would be on the job 6 days per week and 8 hours per day. Standard USEPA factors for soil ingestion, dermal contact, and inhalation rates for construction workers were used (USEPA, 1991a). The ADIs and LADIs (assuming constant COC concentrations) from ingestion, dermal contact, and inhalation of dust are shown in Tables 6-5, 6-6, and 6-7, respectively.

7.0 RISK CHARACTERIZATION

This section discusses potential risk to future site workers involved in construction/excavation activities at the landfarms. A distinction is made between carcinogenic and non-carcinogenic effects, and two general criteria are used to describe risk: excess lifetime cancer risk (ELCR) (for Class A, B, or C carcinogens) and the hazard quotient (HQ) for non-carcinogenic effects. This section presents the results of the quantitative human risk estimates and provides a qualitative discussion of potential risk to the environment.

The ELCR is an estimate of the increased risk, or probability, of developing cancer, and is an indication of the increased risk which may result from site worker exposure to constituents in landfarm soil. The ELCR is an upperbound estimate; therefore, it is likely that the true risk is less than that predicted by the model. Current regulatory methodology assumes that ELCRs can be summed across routes and media of exposure and COCs to derive a "Total Site Risk" (USEPA, 1989a). ELCRs in the target range of 10^{-4} to 10^{-6} generally do not require remediation (USEPA, 1991c).

The HQ is the ratio of the estimated exposure dose and the RfD. If the HQ exceeds 1, there may be concern for potential non-carcinogenic effects. However, the HQ does not provide the probability of an adverse effect as does the ELCR. An HQ greater than 1 indicates that the estimated exposure dose for that constituent exceeds the RfD, but it does not necessarily imply that adverse health effects will occur because RfDs typically are set an order of magnitude or more below the NOEL as discussed in Section 5. Furthermore, the level of concern does not increase linearly with increasing HQs because RfDs have different levels of confidence, are based on different toxic effects, and do not consider the slope of the dose-response curve. HQs are summed to derive the hazard index (HI). Current regulatory methodology (USEPA, 1989a) advises summing HIs across exposure routes for all media to derive a "Total Site HI." However, if the HI exceeds 1, constituents may be grouped according to critical toxic effects, and HIs may be calculated separately for each effect.

7.1 SITE WORKER

Risks estimates for a future site construction worker are provided in Tables 6-5, 6-6, and 6-7 for ingestion, dermal contact, and inhalation exposures, respectively. ELCRs were calculated to be 6×10^{-6} (ingestion), 2×10^{-7} (dermal contact), and 1×10^{-9} (inhalation). Benzo(a)pyrene was responsible for more than half of the ELCR. Benzo(a)anthracene, benzo(b)- and benzo(k)fluoranthene, dibenzo(a,h)anthracene, and arsenic accounted for about a third of the ELCR. HIs were calculated to be 0.4 (ingestion) and 0.1 (dermal). An HI could not be calculated for the inhalation pathway because appropriate toxicity values were not available; however, the HI from the inhalation pathway is expected to be insignificant compared to the other exposure routes based on the low ADIs. All risk values were within or below the regulatory target values.

Total site risks are shown in Table 7-1. The total ELCR and HI for a hypothetical future site worker (obtained by adding risk from each exposure route) are 6×10^{-6} and 0.5. Ingestion was the predominant exposure route.

These estimates are conservative because of the assumed high frequency of contact with affected soil. Actual exposures may be controlled by site safety plans during construction and deed restrictions following initial construction. Nevertheless, the risk calculations indicate that risks to construction workers are within acceptable regulatory ranges.

7.2 ECOLOGICAL ASSESSMENT

The objective of this ecological assessment is to determine if constituents detected at the site have the potential to adversely affect the ecosystems at and/or surrounding the site. Currently, the USEPA has no guidance for quantifying potential impacts to ecological receptors but has developed a qualitative approach generally used for ecological evaluation (USEPA, 1989b). The qualitative approach recommends the comparison of ambient environmental media concentrations to relevant criteria (e.g., water-quality criteria) to determine if any of the

constituents that ecological receptors may potentially contact exceed these criteria. COCs were detected only in soil samples at the site. Currently, there are no established state or federal soil quality criteria for the protection of terrestrial organisms. Therefore, this section discusses some general concepts of environmental toxicology, provides a brief description of the ecological community, and assesses potential impacts from available toxicity data and likelihood of exposure. This discussion is applicable for current conditions at the site. Future development of the property also will prevent exposure of environmental receptors to constituents in the landfarm soil.

7.2.1 General Concepts

Environmental toxicology or ecotoxicology combines the sciences of ecology and toxicology to study the ecological effects of environmental pollutants. Pollutants are defined as environmental contaminants that occur at high enough concentrations to cause deleterious biological effects (Moriarty, 1988). Toxicology has focused largely on studying the effects of single compounds on individual organisms. In ecotoxicology, this must be extended to include effects of multiple contaminants on the ecosystem. An ecosystem is composed of both abiotic and biological components. The organization of biological components are species, populations, and communities. The abiotic component is called the habitat. A population is composed of individuals of a species that occur within a defined area, and a community is a collection of all populations (plant, animal, bacteria, and fungi) that live in a defined area and interact with one another. In practice, it is not always easy to set the boundaries for populations and communities. The community plus its habitat is an ecosystem (Moriarty, 1988).

The prediction of ecotoxicological effects from chemical constituents released to the environment is complicated. To begin with, ecosystems are not static; the biological components experience constant fluctuations both in population numbers and relative composition. Abiotic factors (temperature, precipitation, nutrient availability, etc.) also are changing constantly. The stability of an ecosystem therefore is determined to a great extent by the ability to respond to "normal" stresses. Unfortunately, the normal or baseline conditions are not well understood or

defined for any ecosystem. Therefore, it is difficult to determine whether changes in ecological parameters are associated with pollutants or merely reflect normal fluctuations.

It is possible that effects on individual organisms or even populations may not affect the ecosystem at all. If a prey species is affected, predators may be able to shift to feeding on other species; losses of predators may be compensated for by other predators or by immigration of another predator population. Recognizing when an adverse effect has occurred, or is occurring, is difficult. Unless there is a mass killing within a population or community, effects may go unnoticed. Sublethal effects such as behavioral changes, reduced reproductive success, enzyme level changes, effects on microorganisms, etc., likely will have more of an ecological impact than lethal effects. When effects are measured, it may be difficult to determine the cause.

Predictive abilities also are limited by the amount of available data relevant to environmental conditions. Most of the toxicological database is derived from carefully controlled studies of single compounds on inbred populations of laboratory animals. This is in sharp contrast to environmental exposures, which generally involve multiple contaminants interacting within a complex ecosystem. Furthermore, metabolites and degradation products of contaminants may be of more toxicological significance than the parent compounds. The distribution of environmental contaminants is not uniform, and although there are numerous data on occurrence of contaminants in biological tissues, there are few data on rates of absorption, metabolism, and excretion; therefore, dose estimations are difficult.

To summarize, although the effects of contaminants on populations of organisms are a concern (some perhaps more than others), it is difficult to predict if observed effects on individual populations will result in any real damage to the ecosystem. The science of ecotoxicology is in its infancy and the ability to predict ecological effects is rudimentary at best. Populations are dynamic; therefore, baseline knowledge of the normal range of variability needs to be improved. Sublethal effects, which may be very important to overall ecosystem health, are very difficult to detect. Contaminants at low concentrations may not kill organisms directly but may greatly diminish their ability to survive and reproduce. Finally, it is important to

remember that chemical contamination is not the only way humans impact ecosystems. Habitat destruction from development, agriculture, recreation, forestry, etc., is likely the major way humans exert ecological impacts (Moriarty, 1988).

It is extremely difficult to predict ecological effects of a single chemical released to the environment, let alone multiple chemicals such as detected at the SWP landfarm site. The following discussion will present and evaluate the results obtained from sampling of the ground water and soil at the landfarm site and evaluate the potential for environmental effects.

7.2.2 Community Description

The former SWP site was an active industrial facility for more than 60 years. Prior to initial development, during World War I, the site was a coastal forest. Forest and a small swamp currently border the site to the south. Drainage canals along the northern and western borders also indicate that the property was at least partially a wetland prior to development. Loblolly pine (*Pinus taeda*), oaks (*Quercus* sp.), sycamore (*Platanus occidentalis*), hickory (*Carya* sp.), maple (*Acer* sp.), sweet gum (*Liquidambar styraciflua*), and bald cypress (*Taxodium distichum*) were the primary canopy species; red bay (*Persea borbonia*), wax myrtle (*Murica cerifera*), and holly (*Ilex* sp.) were the primary understory species observed.

The Cape Fear River borders the site to the west. A petroleum tank farm is immediately north, and residential/commercial/recreational areas are east of the site. The landfarm areas cover approximately 5 acres in the northwestern corner of the facility. After the facility was closed, native grasses, shrubs, and herbaceous plants have grown on much of the land which was previously used as a log/lumber stockpile. While landfarms were active, vegetation was limited to the bermed sections between the tilled areas of the landfarm. Vegetation has now grown over the landfill areas.

Wildlife have free access to the site. Herons (*Ardeidae*), sea gulls (*Laridae*), doves (*Columbidae*), fish crows (*Corvus ossifraquis*), warblers (*Parulidae*), sparrows (*Fringillidae*),

and finches (*Fringillidae*) were observed during a brief site visit. Evidence of small mammals such as marsh rabbits (*Sylvilaque palustris*), field mice (*Peromyscus* sp.), and moles (*Talpidae*) also were observed. The adjacent Cape Fear River supports a diverse aquatic community; however, berms surrounding the landfarm areas restrict runoff from the site and hence exposure. No critical habitats of endangered species have been identified in the area.

The North Carolina Heritage Program was requested to search its database for the occurrence of rare species and communities in the vicinity of the site (Appendix B). The Heritage Program identified one priority natural area, Brunswick River-Cape Fear Marshes, northwest of the site. This area is significant for its extensive tidal freshwater marshes and for the habitat it provides to fish and other species. The Brunswick River-Cape Fear Marshes area is approximately 0.6 mile from the site. The Cape Fear River lies between the site and this area.

The Heritage Program also identified records of several rare species within approximately 1 mile of the site. These species include: the state significantly rare cypress knee sedge (*Carex decomposita*); the state threatened Carolina grasswort (*Liliaeopsis carolinensis*); the state candidate Carolina bishopweed (*Ptiliumnium* sp.); the state and federal threatened American alligator (*Alligator mississippiensis*); the state and federal endangered shortnose sturgeon (*Acipenser brevirostrum*); the state special concern species least killfish (*Heterandria formosa*); the state endangered barrel floater (*Anodonta couperiana*); the state endanged magnificent ramshorn (*Planorbella magnifica*); and the extirpated Greenfield ramshorn snail (*Helisoma eucosmium*). The Heritage Program indicated that some of these species have not been seen in the area in recent years; however, they did not indicate which species.

An expanded list of rare species potentially occurring within the Wilmington area was included by the Heritage Program (Appendix B). These species include: the state and federal endangered shortnose sturgeon and red cockaded woodpecker (*Picoides borealis*); the state endangered barrel floater and magnificent ramshorn; the state threatened American alligator, Carolina grasswort, and snowy orchid (*Platanthera nivea*); the extirpated greenfield ramshorn

snail; significantly rare and/or candidate species least killfish, black-necked stilt (*Himantopus mexicanus*), Eastern coral snake (*micrurus fulvius*), mimic glass lizard (*Ophisaurus mimicus*), Carolina gopher frog (*Rana capito capito*), Brazillian free-tailed bat (*Tadarida brasiliensis*), rare skipper (*Problema bulenta*), cypress knee sedge, swamp lily (*Crinum americanum*), Leconte's flatsedge (*Cyperus lecontei*), venus flytrap (*Dionaea muscipula*), blackfruit spikerush (*Eleocharis melanocarpa*), pondspice (*Litsea aestivalis*), ribbed bishop's-weed (*Ptilimnium costatum*), Carolina bishopweed, feather-bristle beakrush (*Rhynchospora oligantha*), and coastal beakrush (*Rhynchospora pleiantha*).

Based on the habitat preferences of these species, none of these species is expected to inhabit the industrial landfarm site. It is not known whether these species existed in this area prior to industrialization of the property.

7.2.3 Community Effects

Constituent concentrations detected in soil samples collected during the 1990 and 1991 sampling are presented in Table 3-2. PAHs were detected in both sampling rounds. PAHs, phenolics, arsenic, chromium, and copper were identified. PAHs detected at the highest concentrations were anthracene (900 mg/kg), fluoranthene (520 mg/kg), and pyrene (980 mg/kg). PCP, arsenic, chromium, and copper were detected at maximum concentrations of 150 mg/kg, 84 mg/kg, 100 mg/kg, and 150 mg/kg, respectively.

PAHs occur in the terrestrial environment both (1) naturally from forest fires, volcanoes, and synthesis by plants and micro-organisms, and (2) from anthropogenic sources such as the burning of fossil fuels, fuel exhausts, and waste products from industry in localized areas, as in this case. Endogenous soil concentrations range from 1 to 10 micrograms per kilogram (μg/kg) and in plants from 10 to 20 μg/kg (Edwards, 1983), and reported background concentrations of total PAHs in urban soils range from 100 mg/kg to 175 mg/kg (USEPA, 1980).

Eventually, much of the PAHs in the environment reaches the soil either by direct accumulation or following deposition on vegetation. Plants are capable of uptake, translocation, metabolism, and degradation. However, in areas with high concentrations of PAHs, assimilation can exceed metabolism and degradation. This can result in accumulation within plant tissues. PAHs accumulate highest in plant peels and oils. Wang and Meresz (1982) compared the levels of 17 PAHs measured in cultivated soil with levels in tomatoes, beets, and onions. The site soil concentration in their study was 1.1 mg/kg PAHs, of which up to 18 percent of this (0.2 mg/kg dry weight) was measured in plant tissues. Phytotoxic effects of PAHs on germination, growth, and development of plants are not well known; however, the presence of plants along the landfarm berms and within the landfarms indicate that some if not all species can adapt to the current site concentrations.

Microorganisms and animals can metabolize PAHs (Edwards, 1983). In fact, high PAH concentrations in soil can lead to increased populations of microorganisms capable of degrading the PAHs (Edwards, 1983).

PAHs may accumulate in terrestrial animals through the food chain or by ingestion of soil; however, they show little tendency to biomagnify in food chains (Eisler, 1987). Although PAHs may accumulate in plants and animals, most are metabolized rapidly or their levels are regulated by homeostatic mechanisms in higher organisms. Invertebrates, small mammals, or birds living in or foraging at the landfarm areas would be exposed to PAHs. Gile et al. (1982) studied the environmental fate of creosote tar distillate (9 percent acenaphthene and 21 percent phenanthrene and dieldrin) in a terrestrial microcosm. The environment contained soil, rye grass, insects, snails, and earthworms. Two voles were added 54 days after the experiment began for ±20 days. Daily average surficial soil concentrations were 1.19 mg/kg acenaphthene and 0.6 mg/kg phenanthrene; various levels of these compounds were detected in all parts of the system. Levels measured in voles exceeded average soil concentrations, but toxic effects were not reported. However, exposure to creosote apparently reduced cricket predation by voles. The concentrations of PAHs in this study are much lower than those detected at the SWP site.

In soils, phenol and trichlorophenols are expected to biodegrade rapidly; however, this process may be hindered or precluded by the presence of excessively high concentrations of these constituents or lack of nutrients or microorganisms capable of degrading the constituents (Agency for Toxic Substances and Disease Registry [ATSDR], 1988; 1989a). There is evidence that cresols biodegrade in soils; however, information on the biodegradation rate is not available (Howard, 1989). Plants can metabolize phenol rapidly; therefore, exposure to phenol by consumption of plant foods is minimal (ATSDR 1988). Based on bioconcentration factors (BCFs) for cresols (approximately 20 Liters per kilogram [L/kg], phenol (approximately 200 L/kg), and trichlorophenols (approximately 300 L/kg) (Howard, 1989), these compounds are not expected to significantly bioconcentrate in organisms. There is no good information in the literature on the bioconcentration of the COCs by terrestrial life. Although BCFs are determined using aquatic species, they can serve as a general indication of a constituent's potential for bioconcentration in other species.

It is not known if the arsenic, chromium, and copper detected at the site are in forms that are bioavailable to potential receptors. The bioavailability of metals to animals at higher trophic levels generally is determined by transfer from water and food organisms rather than soils (Connell and Miller, 1984).

Arsenic can be relatively toxic to plants; however, its toxicity depends on the concentration of soluble, rather than total, arsenic in soils. Above 2 milligrams of soluble arsenic per kilogram of soil, marked damage to plants is known to occur (Vandecaveye et al., 1936). Arsenic poisoning has been reported in some cattle in pastures contaminated by very high levels of arsenic in soil; however, Eisler (1988) reports that episodes of terrestrial wildlife poisoning by arsenic are infrequent. Concentrations causing death in 50 percent of test animals (LD_{50}s) of 40.4 mg/kg body weight have been reported in wild rabbits and hares following acute oral exposure (National Research Council of Canada [NRCC], 1978). Although arsenic can bioaccumulate in terrestrial species, the available data indicate that biomagnification does not occur (Andren et al., 1988; National Academy of Science [NAS], 1977).

Chromium is moderately to severely toxic to plants depending on its form. Chromates have been found to be the most toxic to plants. It is likely that soluble, hexavalent chromium may be responsible for the toxic effects reported for soil-based plants. Symptoms of chromium toxicity in plants generally appears as chlorosis in young leaves, brownish-red coloration of leaves, wilting of tops, and root injury (Kabata-Pendias and Pendias, 1984) at levels as low as 1.37 mg/kg (Mertz, 1967).

Chromium is considered to be an essential trace element for animals. It is biologically non-toxic to animals as chromium III. Chromium VI may be up to 100 times more toxic to animals. Chromium VI causes toxicity to experimental animals at concentrations of 5 mg/kg in feed; chromium III is toxic at 260 mg/kg in feed (Sax and Lewis, 1989).

Copper tolerance in animals varies widely partly because of differences in dietary levels of other trace elements such as iron, molybdenum, selenium, sulfur, and zinc (NAS, 1980). NAS suggested the following tolerable levels for dietary copper: 25 mg/kg for sheep, 100 mg/kg for cattle, 200 mg/kg for rabbits, 250 mg/kg for swine, 300 mg/kg for turkeys and chickens, and 800 mg/kg for horses (NAS, 1980). Furr et al. (1976) and Dowdy and Larson (1975) conducted studies on plant growth in soils amended with sludge. They reported that soil/sludge copper concentrations of 395 mg/kg and 245 mg/kg had no effect on plant growth and physiology, respectively. However, Kabata-Pendias and Pendias (1992) reported that copper levels in soil as low as 60 mg/kg can be phytotoxic to some plants.

Bioaccumulation of the COCs would be most significant for those COCs which have a moderate to high potential for uptake by plants and animals serving as food sources at the site. Arsenic and copper have a moderate potential for uptake into plants (Kabata-Pendias and Pendias, 1992); however, they are not a biomagnification concern and will not be passed on to higher foodchain organisms.

7.2.4 Ecological Summary

Insects, small mammals, birds, and plants potentially have been exposed to PAHs, phenols, creosols, and inorganics at the site; however, it is not known if toxicity has occurred. Toxic effects, if any, would be limited in scope because of the small size of the site and past maintenance activities. In addition, COCs at the site are unlikely to pose a biomagnification hazard to potential receptors. Therefore, the potential for adverse environmental effects (beyond the impact from past and future development and industrial use) are believed to be minimal.

8.0 UNCERTAINTIES

The risk assessment represents conservative estimates of the potential risks associated with constituents at the wood-treatment plant operated by SWP. However, it is important to recognize that considerable uncertainty is inherent in the risk assessment process. There are three basic components of a risk assessment, each of which contributes uncertainties: monitoring data, exposure scenarios, and toxicity values. These components are discussed below.

This risk assessment is founded on the assumption that the monitoring data adequately describe constituent concentrations at the site. It was assumed that the landfill environment would be relatively homogeneous; therefore, a systematic sampling design (points at each corner and one in the middle) was used. The data indicate that the concentrations were relatively evenly distributed. All PAHs and inorganics were detected in each sample, and maximum concentrations were generally less than an order of magnitude greater than the mean.

Uncertainty associated with analysis of samples can be minimized by using appropriate analytical methods and equipment, documenting chain of custody of samples, and implementing strict laboratory data validation and quality assurance procedures. It is also critical that sample detection limits be lower than the standards or other criteria used to evaluate health risk. The sample quantitation limits were adequate for the risk assessment.

Exposure scenarios also are characterized by uncertainty. Because the specific nature and extent of actual exposures are often unknown, it is necessary to use standard assumptions and professional judgment to construct possible scenarios. The scenario presented in this report represents a conservative approach based on the available information concerning probable future site use and was intended to overestimate actual exposure.

The toxicity values and other toxicologic (health effects) information used in this report are associated with uncertainty but are based on the most recent information available. In some cases, particularly for inhalation exposures, toxicity values were not available. The impact of

missing toxicity values on the risk assessment is probably low because inhalation appears to be the least important exposure route.

The use of surrogate toxicity values to evaluate risk also adds to uncertainty. Benzo(a)pyrene TEFs (USEPA, 1992b) were used to calculate ELCRs for cPAHs, and the RfD for pyrene was used to represent PAHs which did not have an RfD. Potential carcinogenic effects of dermal exposure to PAHs could not be evaluated. However, local skin tumors resulting from PAH exposure require high doses over a long exposure period. Normal hygiene practices should eliminate the risk of skin tumors from exposure to PAHs at the site.

It generally is acknowledged that there also is considerable uncertainty associated with the toxicity of mixtures. For the most part, data about the toxicity of chemical mixtures are unavailable. Rather, toxicity studies generally are performed using a single chemical. Chemicals present in a mixture can interact to yield a new compound, or one of the compounds could interfere with absorption, distribution, metabolism, or excretion of another. Chemicals also may act by the same target organ or can act completely independently. This risk assessment assumes that toxicity is additive; the HIs were summed across constituents. This procedure assumes that the mixture of constituents present at the site have neither synergistic nor antagonistic interactions.

Because of the inherent uncertainty associated with risk assessment, current methods are designed to compensate by using conservative toxicity and exposure estimates. Therefore, the risk estimates in this report likely do not underestimate actual risks for the COCs evaluated but may overestimate risks by an order of magnitude or more.

9.0 FINDINGS AND CONCLUSIONS

A risk assessment was conducted for potential exposure during future site construction and development to landfarm soils at the former SWP site in Wilmington, North Carolina. Potential risks were evaluated by considering direct contact with affected soils (ingestion and dermal contact) and inhalation of fugitive dusts by a site construction worker. Actual future exposure likely will be limited to a short construction period (assumed to be 3 months), following which the landfarm areas will likely be covered by fill and pavement. Total risks were compared to the USEPA (1991c) guidelines of 10^{-4} to 10^{-6} for ELCRs and an HI of 1.0 for non-carcinogenic effects. Findings and conclusions are summarized below:

- Based on data from the available monitoring wells, release of constituents from the landfarmed soils to ground water has not occurred. Run-on/runoff controls at the landfarm presumably prevent release to nearby surface water and sediments. Thus, current or foreseeable future exposure to these media were not identified as pathways of concern associated with landfarming operation.

- The potential exists for exposure (ingestion, dermal contact, and inhalation of fugitive dust) to surficial soils at the site during future construction activities.

- The total ELCR calculated for a future site construction worker was 6×10^{-6} and is within the target risk range of 10^{-4} to 10^{-6}. Potential ingestion of benzo(a)pyrene in soil accounted for most of the risk.

- The total HI was 0.5 and is below the target value of 1.0.

- Ecological impacts of the landfarms are limited by their relatively small size and surrounding development. Invertebrates, small mammals, and birds would have the greatest potential to be exposed to COCs at the site. The potential for

threatened or endangered species to be impacted by the site appears to be remote. Future development will prevent exposure to ecological receptors.

10.0 REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR), 1992. Toxicological Profile for Pentachlorophenol. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Agency for Toxic Substances and Disease Registry (ATSDR), 1991a. Draft Toxicological Profile for Arsenic. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Agency for Toxic Substances and Disease Registry (ATSDR), 1991b. Toxicological Profile for Chromium. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Agency for Toxic Substances and Disease Registry (ATSDR), 1990a. Draft Toxicological Profile for Polycyclic Aromatic Hydrocarbons (PAHs). Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Agency for Toxic Substances and Disease Registry (ATSDR), 1990b. Draft Toxicological Profile for Cresols. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Agency for Toxic Substances and Disease Registry (ATSDR), 1989a. Draft Toxicological Profile for 2,4,6-Trichlorophenol. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Agency for Toxic Substances and Disease Registry (ATSDR), 1989b. Draft Toxicological Profile for Copper. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Agency for Toxic Substances and Disease Registry (ATSDR), 1988. Draft Toxicological Profile for Phenol. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Andren, P., A. Schutz, M. Vahter, et al., 1988. Environmental Exposure to Lead and Arsenic Among Children Living Near a Glassworks. Sci. Total Environ., 77:25-34.

Bevenue, A., and H. Beckman, 1967. Pentachlorophenol: A Discussion of Its Properties and Its Occurrence as a Residue in Human and Animal Tissues. Residue Rev., 19:83-134.

Blackman, G.E., M.H. Parke, and C. Gartin, 1955. Arch. Biochem. Biophys., 54:55-71.

Briggs, G.G., 1975. The Behavior of the Nitrification Inhibitor "N-Serve" in Broadcase and Incorporated Applications to Soil. J. Sci. Food Agric., 26:1083-1092.

Choi, J., and S. Aomine, 1974. Adsorption of Pentachlorophenol by Soils. Soil Sci. Plant Nutr. (Tokyo), 20(2);135-144.

Connell, D.W., and G.J. Miller, 1984. Chemistry and Ecotoxicology of Pollution. John Wiley and Sons, Inc., New York, NY.

Cowherd, C., P. Englehart, G. Muleski, and D. Gillete, 1985. Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination. U.S. Environmental Protection Agency Office of Health and Environmental Assessment, Washington, DC.

Dowdy, R.H., and W.E. Larson, 1975. The Availability of Sludge-Borne Metals to Various Vegetable Crops. J. Envron. Qual., 4(2):278-282.

Dragun, J., 1988. The Soil Chemistry of Hazardous Materials. Hazardous Materials Control Research Institute, Silver Spring, MD.

Edwards, N.T., 1983. Polycyclic Aromatic Hydrocarbons in the Terrestrial Environment - A Review. J. Environ. Qual., 12:427-441.

Eisler, R., 1988. Arsenic Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review. U.S. Fish and Wildlife Service, Biol. Rep. 85(1.12). 92 pp.

Eisler, R., 1987. Polycyclic Aromatic Hydrocarbon Hazards to Fish, Wildlife and Invertebrates: A Synoptic Review. U.S. Fish and Wildlife Service, Biol. Rep. 85(1.11). 81 pp.

Furr, A.K., G.S. Stoewsand, C.A. Bache, and D.J. Lisk, 1976. Study of Guinea Pigs Fed Swiss Chard Grown in Municipal Sludge-Amended Soil. Arch. Environ. Health, 3/4:87.

Genetic Activity Program (GAP), 1991. U.S. Environmental Protection Agency, Health Effects Research Laboratory, Genetic Toxicology Division, Research Triangle Park, NC.

Geraghty & Miller, Inc., 1993a. Data Summary Report for the 1990 Landfarm Area Sampling, Southern Wood Piedmont, Wilmington, North Carolina.

Geraghty & Miller, Inc., 1993b. Comparison of 1990 and 1991 Soil and Ground-Water Data, Southern Wood Piedmont, Wilmington, North Carolina.

Gile, J.D., J.C. Collins, and J.W. Gillet, 1982. Fate and Transport of Wood Preservatives in a Terrestrial Microcosm. J. Agric. Fodd Chem., 30:295-301.

Gossel, T.A., and J.D. Bricker, 1990. Principles of Clinical Toxicology. Second Edition. Raven Press, New York, NY, pp. 168-169.

Goyer, R.A., 1991. Toxic Effects of Metals. In: Casarett and Doull's Toxicology. The Basic Science of Poisons, Fourth Ed. Klaasen, C.D., M.O. Amdur, and J. Doull (Eds.), Pergamon Press, New York, NY. pp. 623-680.

Hickok, E.A., J.B. Erdmann, and M.J. Simonett, 1982. Groundwater Contamination With Creosote Wastes. In: W.K. Johnson and D.R. Martenson (Eds). National Conference on Environmental Engineering, American Society of Civil Engineers, Minneapolis, MN. pp. 430-37.

Hilton, H.W., and Q.H. Yuen, 1963. Adsorption of Several Preemergence Herbicides by Hawaiian Sugar Cane Soils. J. Agric. Food Chem., 11(3):230-234.

Howard, P.H., R.S. Boethling, W.F. Jarvis, W.M. Meylan, and E.M. Michalenko, 1991. Handbook of Environmental Degradation Rates. Lewis Publishers, Inc., Chelsea, MI. 725 pp.

Howard, P.H., 1990. Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume II, Solvents. Lewis Publishers, Inc., Chelsea, MI. 546 pp.

Howard, P.H., 1989. Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume I, Large Production and Priority Contaminants. Lewis Publishers, Inc., Chelsea, MI. 574 pp.

Integrated Risk Information System (IRIS), 1993. U.S. Environmental Protection Agency, Office of Health and Environmental Assessment, Cincinnati, OH.

Josephson, J., 1983. Chlorinated Dioxins and Furans in the Environment. Environ. Sci. and Tech., 17:124A-128A.

Kabata-Pendias, A., and H. Pendias, 1992. Trace Elements in Soil and Plants. CRC Press, Boca Raton, FL. 365 pp.

Law Environmental (Law), 1985. Monitoring Well Installation and Hydrogeologic Report, Wilmington, North Carolina Plant.

Lyman, W.J., W.F. Rheel, and D.H. Rosenblatt, 1982. Handbook of Chemical Property Estimation Methods. McGraw-Hill, Inc., New York, NY.

MacKay, D., W.Y. Shiu, J. Billington, and G.L. Huang, 1983. Physical Chemical Properties of Polychlorinated Biphenyls. In: Physical Behavior of PCBs in the Great Lakes. Ann Arbor Science, Ann Arbor, MI.

Mertz, W., 1967. Chromium. In: Geochemistry and the Environment, Vol. 1. National Academy of Sciences, Washington, DC, pp. 29-35.

Montgomery, J.H., and L.M. Welkom, 1990. Groundwater Chemicals Desk Reference. Lewis Publishers, Inc., Chelsea, MI. 640 pp.

Moriarty, F., 1988. Ecotoxicology: The Study of Pollutants in Ecosystems. Second Edition. Academic Press, New York, NY.

Mueller, J.G., P.J. Chapman, P.J. Pritchard, 1989. Creosote Contaminated Sites. Environ. Sci. Technol., 23:1197-1201.

National Academy of Sciences (NAS), 1980. Copper. National Academy Press, Washington, DC. 525 pp.

National Academy of Sciences (NAS), 1977. Arsenic. National Academy Press, Washington, DC. 332 pp.

National Research Council of Canada (NRCC), 1978. Effects of Arsenic in the Canadian Environment. Publ. No. NRCC 15391. 349 pp.

North Carolina Geological Survey (NCGS), 1985. Geologic Map of North Carolina. Raleigh, NC.

Niimi, A.J., and G.P. Dookhran, 1989. Dietary Absorption Efficiencies and Elimination Rates of Polycyclic Aromatic Hydrocarbons (PAHs) in Rainbow Trout (*Salmo gairdneri*). Environ. Toxicol. Chem., 8:7198-722.

Niimi, A.J., and V. Palazzo, 1986. Biological Half-Lives of Eight Polycyclic Aromatic Hydrocarbons (PAHs) in Rainbow Trout (*Salmo gairdneri*). Water Res., 20:503-507.

Park, K.S., R.C. Sims, R.R. Dupont, W.J. Doucette, and J.E. Matthews, 1990. Fate of PAH Compounds in Two Soil Types: Influence of Volatilization, Abiotic Loss and Biological Activity. Environmental Toxicology and Chemistry, 9:187-195.

Pereira, W.E., C.E. Rostad, and J.R. Garbarino, 1983. Groundwater Contamination by Organic Bases Derived From Coal Tar Wastes. Environ. Toxicol. Chem., 2:283-294.

Rappe, C., S. Gara, and H.R. Buser, 1978. Identification of PCDFs in Commercial Chlorophenol Formulations. Landform, 7:981.

Renberg, L., 1974. Ion Exchange Technique for the Determination of Chlorinated Phenols and Phenoxy Acids in Organic Tissue, Soil, and Water. Anal. Chem., 46(3):459-461.

Rosenblatt, D.H, 1986. Contaminated Soil Cleanup Objectives for Cornhusker Army Ammunition Plant. Prepared for U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Ground, Frederick, MD.

Ryan, E.A., E.T. Hawkins, B. Magee, and S.L. Santos, 1987. Assessing Risk from Dermal Exposure at Hazardous Waste Sites. Superfund Procedures of the Eighth National Conference, Washington, DC. November 16-18.

Sax, N.I., and R.J. Lewis, Sr., 1989. Dangerous Properties of Industrial Materials. Seventh Editor. Van Nostrand Reinhold, New York, NY.

Sohl, N.F., and J.P. Owens, 1991, Cretaceous Stratigraphy of the Carolina Coastal Plain. In: The Geology of the Carolinas. The University of Tennessee Press, Knoxville, TN.

Soil and Material Engineers, Inc. (SME), 1981. Geotechnical Investigation Report, City of Wilmington Property Leased by Southern Wood Piedmont Company, Wilmington, North Carolina.

Stumm, W., and J.J. Morgan, 1981. Aquatic Chemistry: An Introduction Emphasizing Chemical Equilibria in Natural Waters. John Wiley & Sons, New York, NY. 780 pp.

Suntio, L.R., W.Y. Shiu, and D. Mackay, 1988. A Review of the Mature and Properties of Chemical Present in Pulp Mill Effluents. Chemosphere, 17:1249-1290.

U.S. Environmental Protection Agency (USEPA), 1992a. Health Effects Assessment Summary Tables, Annual FY-1992. Office of Solid Waste and Emergency Response, Washington, DC. PB92-921199. March.

U.S. Environmental Protection Agency (USEPA), 1992b. Interim Region IV Guidance. Atlanta, Ga. February 11.

U.S. Environmental Protection Agency (USEPA), 1992c. Dermal Exposure Assessment: Principles and Applications, Interim Report, Office of Research and Development, Washington, DC. EPA/600/8-91/011B.

U.S. Environmental Protection Agency (USEPA), 1991a. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, "Standard Default Exposure Factors," Interim Final. Office of Emergency and Remedial Response, Washington, DC. OSWER Directive 9285.6-03. March 25.

U.S. Environmental Protection Agency (USEPA), 1991b. Risk Assessment Guidance for Superfund: Volume I: Human Health Evaluation Manual (Part B Development of Risk-Based Preliminary Remediation Goals). Office of Emergency and Remedial Response, Washington, DC.

U.S. Environmental Protection Agency (USEPA), 1991c. Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions. Office of Solid Waste and Emergency and Remedial Response, Washington, DC. OSWER 9355.0-30. April 22.

U.S. Environmental Protection Agency (USEPA), 1991d. Toxic Substance Spreadsheet. Water Quality Standards Unit, Region IV. February 25.

U.S. Environmental Protection Agency (USEPA), 1989a. Risk Assessment Guidance for Superfund, Human Health Evaluation Manual, Volume 1, Part A. Interim Final. Office of Emergency and Remedial Response, Washington, DC. EPA/540/1-89/002. December.

U.S. Environmental Protection Agency (USEPA), 1989b. Risk Assessment Guidance for Superfund. Volume II. Environmental Evaluation Manual, Interim Final. Office of Emergency and Remedial Response, Washington, DC.

U.S. Environmental Protection Agency (USEPA), 1989c. Exposure Factors Handbook. Exposure Assessment Group, Office of Health and Environmental Assessment, Washington, DC. EPA 600/8-89-043. August.

U.S. Environmental Protection Agency (USEPA), 1989d. Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs) and 1989 Update. Risk Assessment Forum, Washington, DC. EPA/625/3-89/016.

U.S. Environmental Protection Agency (USEPA), 1989e. Soil Sampling Quality Assurance User's Guide, Second Edition. Environmental Monitoring Systems Laboratory, Office of Research and Development, Las Vegas, NV. EPA/600/8-89/046.

U.S. Environmental Protection Agency, 1988. Characterization and Laboratory Soil Treatability Studies for Creosote and Pentachlorophenol Sludges and Contaminated Soil. Office of Research and Development, Washington, DC. EPA 600/52-88/055.

U.S. Environmental Protection Agency (USEPA), 1980. POM Source and Ambient Concentration Data: Review and Analysis. Office of Industrial and Environmental Research, Research Triangle Park, NC. EPA 600/7-80-044.

Vandecaveye, S.C., G.M. Horner, and C.M. Keaton, 1936. Unproductiveness of Certain Orchard Soils as Related to Lead Arsenate Spray Accumulations. Soil Sci., 42:203-213.

Verschueren, K., 1983. Handbook of Environmental Data on Organic Chemicals. Second Edition. Van Nostrand Reinhold Co., New York, NY. 1,310 pp.

Veith, G.D., and P. Kosian, 1982. Estimating Bioconcentration Potential from Octanol-Water Partition Coefficients. In: Physical Behavior of PCBs in the Great Lakes. Ann Arbor Science, Ann Arbor, MI.

Wang, D.T., and O. Meresz, 1982. Occurrence and Potential Uptake of Polynuclear Aromatic Hydrocarbons of Highway Traffic Origin by Proximally Grown Food Crops. In: Polynuclear Aromatic Hydrocarbons: Physical and Biological Chemistry. Cooke, M., A.J. Dennis, and G.L. Fisher, Editors. Battelle Press, Columbus, OH.

Wilmington Housing Authority, 1980. Census of Population and Housing Neighborhood Statistics Program. Wilmington Planning Department, Wilmington, NC. 175 pp.

TABLES

NC09006/1421swp/09Dec93

Table 3-1. Data Summary for Soil Samples, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Frequency Detects / Total	Range of Detects Min - Max	Mean	UCL	EPC
PAHs					
Acenaphthene	50 / 50	0.070 - 92	6.5	10	10
Acenaphthylene	50 / 50	0.13 - 5.4	3.4	3.7	3.7
Anthracene	50 / 50	1.0 - 900	100	140	140
Benzo(a)anthracene	50 / 50	2.0 - 130	23	29	29
Benzo(a)pyrene	50 / 50	1.5 - 65	19	22	22
Benzo(b,k)fluoranthene*	50 / 50	3.4 - 190	42	50	50
Benzo(g,h,i)perylene	/ 50	0.60 - 34	7.6	8.9	8.9
1,1-Biphenyl	50 / 50	0.022 - 4.7	2.5	2.9	2.9
Carbazole	50 / 50	0.97 - 270	38	51	51
Chrysene	50 / 50	2.9 - 150	30	37	37
Dibenzo(a,h)anthracene	50 / 50	0.175 - 15	3.7	4.3	4.3
Dibenzofuran	50 / 50	0.14 - 26	6.2	7.7	7.7
Fluoranthene	50 / 50	3.7 - 520	72	98	98
Fluorene	50 / 50	0.18 - 91	15	19	19
Indeno(1,2,3-c,d)pyrene	50 / 50	0.195 - 23	8.8	10	10
1-Methylnaphthalene	50 / 50	0.063 - 20	2.8	3.5	3.5
2-Methylnaphthalene	50 / 50	0.067 - 41	4.9	6.4	6.4
Naphthalene	50 / 50	0.088 - 30	4.3	5.4	5.4
Phenanthrene	50 / 50	0.98 - 200	32	42	42
Pyrene	50 / 50	4.2 - 980	76	110	110
Phenols and Cresols					
o-Cresol	6 / 20	0.022 - 0.040	0.036	0.039	0.039
m,p-Cresol	5 / 20	0.044 - 0.10	0.092	0.099	0.099
2,4-Dimethylphenol	12 / 20	0.028 - 0.86	0.35	0.48	0.48
Pentachlorophenol	17 / 50	0.70 - 150	18	23	23
Phenol	1 / 20	2.2 - 2.2	1.6	1.9	1.9
Tetrachlorophenols	12 / 20	0.045 - 3.5	1.2	1.8	1.8
Trichlorophenols	1 / 20	0.048 - 0.048	0.048	0.048	0.048
Inorganics					
Arsenic	20 / 20	2.5 - 84	14	21	21
Chromium	20 / 20	1.9 - 100	14	22	22
Copper	20 / 20	12 - 150	53	68	68

Concentrations are reported in milligrams per kilogram (mg/kg).

*	Total benzo(b)fluoranthene and benzo(k)fluoranthene.
EPC	Exposure point concentration for constituents of concern.
Mean	Arithmetic average of the total number of samples, using proxy concentrations for non-detects.
PAHs	Polycyclic aromatic hydrocarbons.
UCL	95 percent upper confidence limit (one-tailed) on the mean, assuming a normal distribution.

Table 3-2. Polychlorinated Dibenzodioxin and Dibenzofuran Data for Composite Soil Samples Collected from Landfarms 1 and 2, October 1990, Southern Wood Piedmont, Wilmington, North Carolina..

Parameters	Landfarm 1	TEF	TCDD Equivalent	Landfarm 2	TEF	TCDD Equivalent
Polychlorinated Dibenzofurans						
Tetrachlorodibenzofurans (total)	0.09	0	0	0.10	0	0
2,3,7,8-Tetrachlorodibenzofuran	0.02	0.1	0.002	0.02	0.1	0.002
Pentachlorodibenzofurans (total)	0.92	0	0	0.87	0	0
1,2,3,7,8-Pentachlorodibenzofuran	0.06	0.05	0.003	0.06	0.05	0.003
2,3,4,7,8-Pentachlorodibenzofuran		0.5	0.03	0.06	0.5	0.03
Hexachlorodibenzofurans (total)	31.4	0	0	34.4	0	0
1,2,3,4,7,8-Hexachlorodibenzofuran	0.71	0.1	0.071	0.76	0.1	0.076
1,2,3,6,7,8-Hexachlorodibenzofuran	0.24	0.1	0.024	0.21	0.1	0.021
2,3,4,6,7,8-Hexachlorodibenzofuran	0.16	0.1	0.016	0.14	0.1	0.014
1,2,3,7,8,9-Hexachlorodibenzofuran	0.04	0.1	0.004	0.05	0.1	0.005
Heptachlorodibenzofurans (total)	147.0	0.0	0	164.0	0.0	0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	59.5	0.01	0.595	66.0	0.01	0.66
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.77	0.01	0.0077	0.96	0.01	0.0096
Octachlorodibenzofurans (total)	63.2	0.001	0.0632	83.3	0.001	0.0833
Polychlorinated Dibenzodioxins						
Tetrachlorodibenzodioxins (total)	0.14	0	0	0.17	0	0
2,3,7,8-Tetrachlorodibenzodioxin	0.004	1	0.004	0.008	1	0.008
Pentachlorodibenzodioxins (total)	0.48	0	0	0.65	0	0
1,2,3,7,8-Pentachlorodibenzodioxin	0.03	0.5	0.015	0.05	0.5	0.025
Hexachlorodibenzodioxins (total)	16.4	0	0	22.5	0	0
1,2,3,4,7,8-Hexachlorodibenzodioxin	0.10	0.1	0.01	0.18	0.1	0.018
1,2,3,6,7,8-Hexachlorodibenzodioxin	1.3	0.1	0.13	1.8	0.1	0.18
1,2,3,7,8,9-Hexachlorodibenzodioxin	0.22	0.1	0.022	0.89	0.1	0.089
Heptachlorodibenzodioxins (total)	461	0	0	573	0	0
1,2,3,4,6,7,8-Heptachlorodibenzodioxi	65.5	0.01	0.655	98.7	0.01	0.987
Octachlorodibenzodioxins (total)	621	0.001	0.621	932	0.001	0.932
		Total	2.27		Total	3.14

All data are reported in micrograms per kilogram (µg/kg).

TCDD 2,3,7,8-Tetrachlorodibenzodioxin.
TEF Toxicity equivalency factor (USEPA, 1989d).

Table 3-3. Physical and Chemical Properties of Organic Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Molecular Weight (g/mol)	Water Solubility (mg/L 25 °C)	Specific Gravity	Vapor Pressure (mm Hg 25 °C)	Henry's Law Constant (atm-m³/mol) (25 °C)	Koc (mL/g)	Log Kow	Fish BCF (L/kg)	Soil T ½ Low (days)	Soil T ½ High (days)
PAHs										
Acenaphthene	154	3.47 - 3.93	ND	1.6E-03	7.9E-05	4,600	3.92 - 4.33	242	12.3	102
Acenaphthylene	152	3.93	0.898	2.9E-02 (20 °C)	1.1E-04	4790	4.1	30	42.5	60
Anthracene	178	0.030 - 0.1125	1.24	1.7E-05 - 1.95E-04	6.5E-05	16,000 - 26,000	4.34 - 4.54	30	50	459.9
Benzo(a)anthracene	228	0.0094 - 0.014	1.274	1.1E-07	8.0E-06	1,400,000	5.61 - 5.91	30	102	678.9
Benzo(b)fluoranthene	252	0.0012	ND	5.0E-07	1.2E-05	550,000	6.57	30	360	609.6
Benzo(k)fluoranthene	252	0.00055	ND	9.6E-11	1.0E-03	4,400,000	6.85	30	909	2,139
Benzo(g,h,i)perylene	276	0.00026	ND	1.0E-10	1.4E-07	7,800,000	7.1	30	590	650
Benzo(a)pyrene	252	0.0038 - 0.004	1.35	5.5E-09	2.4E-06	398,000 - 1,900,000	5.81 - 6.50	30	57	529.3
1,1-Biphenyl	154	7.5	1.18	ND	ND	ND	3.16 - 4.09	ND	1.5	7
Carbazole	167	ND	1.1	ND	ND	ND	3.29	ND	4	81
Chrysene	228	0.0018 - 0.006	1.27	6.3E-09	3.2E-07	240,000	5.60 - 5.91	30	372.3	992.8
Dibenzo(a,h)anthracene	278	0.00249 - 0.005	1.28	10E-10 (20 °C)	7.3E-09	1,700,000	5.97 - 6.50	30	361	941.7
Dibenzofuran	168	10	ND	3.4E-05	7.4E-07	8,100 - 13,000	4.12 - 4.31	ND	7	28
Fluoranthene	202	0.206 - 0.373	1.25	5.0E-06	1.7E-02	42,000	5.22	1,150	140	440
Fluorene	166	1.66 - 1.98	1.2	1.0E-03 - 1.0E-02	2.1E-04	5,000	4.12 - 4.38	30	32	60
Indeno(1,2,3-c,d)pyrene	276	0.062	ND	1.0E-09	3.0E-20	31,000,000	5.91 - 7.70	30	598.6	730
1-Methylnaphthalene	142	28	1.025	ND	ND	ND	ND	129	ND	
2-Methylnaphthalene	142	25	1.001	4.5E-02	3.4E-04	7,400 - 8,500	3.86 - 4.11	190	ND	
Naphthalene	128	30 - 34	1.16	2.3E-01 - 8.7E-01	4.6E-04	550 - 3,160	3.2 - 4.7	10.5	16.6	48
Phenanthrene	178	0.71 - 1.29	1.18	6.8E-04	2.6E-05	5,250 - 38,900	4.2 - 4.6	30	16	200
Pyrene	202	0.013 - 0.171	1.27	6.85E-07 - 2.5E-06	1.1E-05	46,000 - 135,000	4.88 - 5.32	30	210	1,898
Phenols and Cresols										
o-Cresol	108	26,000	1.03	2.4E-01	1.2E-06	20	1.9	18	1	7
m-Cresol	108	23,000	1.034	1.4E-01	8.8E-07	18 - 35	1.96	20	1	7
p-Cresol	108	18,000 - 23,000	1.02	8.0E-02 - 1.3E-01	7.9E-07	49	1.67 - 3.01	18	0.042	0.667
2,4-Dimethylphenol	122	7,900	0.96	9.8E-02	6.5E-06	126	2.4	15	1	7
Pentachlorophenol	266	20 - 25	1.98	1.7E-05	3.4E-06	891	5.01 - 5.86	11	23	178
Phenol	94	67,000 - 93,000	1.06	3.4E-01	4.0E-07	17 - 27	1.46 - 1.48	1.4	1	10
2,3,4,6-Tetrachlorophenol	232	183	1.6	2.1E-03	3.6E-06	11,000	4.25	ND	28	180
2,4,6-Trichlorophenol	197	800	1.49	8.4E-03 - 1.7E-02	9.1E-08	1,071	2.80 - 3.69	150	7	70

References: Blackman et al., 1955; Howard et al., 1991; Howard, 1990 and 1989; Lyman et al., 1982; Mackay et al., 1983; Montgomery and Welkom, 1990; Rosenblatt, 1986; Suntio et al., 1988 USEPA, 1991d; Veith and Kosian, 1982; and Verschueren, 1983.

atm-m³/mol	Atmospheres-cubic meters per mole.	L/kg	Liters per kilogram.
BCF	Bioconcentration factor.	mL/g	Milliliters per gram.
°C	Degrees Celsius.	mm Hg	Millimeters of mercury.
g/mol	Grams per mole.	ND	No data.
Koc	Organic carbon partition coefficient.	PAHs	Polycyclic aromatic hydrocarbons.
Kow	Octanol-water partition coefficient.	T ½	Half-life.
mg/L	Milligrams per liter.		

Table 5-1. Reference Doses, Target Sites, and Confidence Levels for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	RfD (mg/kg/day)			Target Sites		Confidence Level/ Uncertainty Factor
	Oral		Inhalation	Oral	Inhalation	
	Subchronic	Chronic				
PAHs						
Acenaphthene	6.0E-01	6.0E-02	NA	liver	NA	low/3000
Acenanphthylene	3.0E-01	3.0E-02	NA	kidney	NA	low/3000
Anthracene	3.0E+00	3.0E-01	NA	none	NA	low/3000
Benzo(g,h,i)perylene	3.0E-01	3.0E-02	NA	kidney	NA	low/3000
1,1-Biphenyl	5.0E-02	5.0E-02	NA	kidney	NA	medium/100
Dibenzofuran	3.0E-01	3.0E-02	NA	kidney	NA	low/3000
Fluoranthene	4.0E-01	4.0E-02	NA	liver, kidney	NA	low/3000
Fluorene	4.0E-01	4.0E-02	NA	anemia	NA	low/3000
1-Methylnaphthalene	3.0E-01	3.0E-02	NA	kidney	NA	low/3000
2-Methylnaphthalene	3.0E-01	3.0E-02	NA	kidney	NA	low/3000
Naphthalene	4.0E-02	4.0E-02	NA	decreased weight gain	NA	low/1000
Phenanthrene	3.0E-01	3.0E-02	NA	kidney	NA	low/3000
Pyrene	3.0E-01	3.0E-02	NA	kidney	NA	low/3000
Phenols and Cresols						
m-Cresol	5.0E-01	5.0E-02	NA	CNS	NA	1000
o-Cresol	5.0E-01	5.0E-02	NA	CNS	NA	medium/1000
p-Cresol	5.0E-01	5.0E-02	NA	CNS	NA	low/1000
2,4-Dimethylphenol	2.0E-01	2.0E-02	NA	CNS	NA	low/3000
Pentachlorophenol	3.0E-02	3.0E-02	NA	liver, kidney	NA	medium/100
Phenol	6.0E-01	6.0E-01	NA	fetotoxicity	NA	low/100
2,3,4,6-Tetrachlorophenol	3.0E-01	3.0E-02	NA	liver	NA	medium/1000
2,4,5-Trichlorophenol	1.0E+00	1.0E-01	NA	liver, kidney	NA	low/1000
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA
Inorganics						
Arsenic	3.0E-04	3.0E-04	NA	skin	NA	medium/3
Chromium VI	2.0E-02	5.0E-03	NA	NA	NA	low/500
Copper*	3.7E-02	3.7E-02	NA	gastrointestinal tract	NA	NA

Footnotes appear on page 2.

Table 5-1. Reference Doses, Target Sites, and Confidence Levels for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

References:	IRIS, 1993; USEPA, 1992a.
*	Based on current drinking-water standard.
CNS	Central nervous system.
mg/kg/day	Milligrams per kilogram per day.
NA	Not available.
RfDi	Inhalation reference dose.
RfDo	Oral reference dose.

Table 5-2. Cancer Slope Factors, Tumor Sites, and USEPA Cancer Classifications for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	CSF (kg-day/mg)		Tumor site		USEPA Classification
	Oral	Inhalation	Oral	Inhalation	
PAHs					
Benzo(a)anthracene	NA	NA	NA	NA	B2
Benzo(b)fluoranthene	NA	NA	NA	NA	B2
Benzo(k)fluoranthene	NA	NA	NA	NA	B2
Benzo(a)pyrene	7.3E+00	6.1E+00	stomach	respiratory tract	B2
Carbazole	2.0E-02	NA	liver	NA	B2
Chrysene	NA	NA	NA	NA	B2
Dibenzo(a,h)anthracene	NA	NA	NA	NA	B2
Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	B2
Phenol and Cresols					
m-Cresol	NA	NA	NA	NA	C
o-Cresol	NA	NA	NA	NA	C
p-Cresol	NA	NA	NA	NA	C
Pentachlorophenol	1.2E-01	NA	liver, adrenal gland	NA	B2
2,4,6-Trichlorophenol	1.1E-02	1.1E-02	liver	liver	B2
Inorganics					
Arsenic	1.75E+00	5.0E+01	skin	respiratory tract	A
Chromium VI	NAP	4.1E+01	NA	lung	A

References: ATSDR, 1991a; IRIS, 1993; USEPA,1992a.
CSF Cancer slope factor.
kg-day/mg Kilograms-day/milligram.
NA Not available.
NAP Not applicable, since it is carcinogenic by inhalation.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
PAHs				
Acenaphthene	Critical Effects: No data available.	Critical Effects: Dose-dependent increases in liver weights were observed in mice. Data Summary: The oral RfD is based on a subchronic mouse study in which a LOAEL of 350 mg/kg/day caused hepatotoxicity.	Class D; inadequate evidence of carcinogenicity.	Developmental: No data available. Reproductive: No data available. Mutagenicity: No data available.
Anthracene	Critical Effects: No data available.	Critical Effects: Humans consuming anthracene-containing laxatives developed melanosis of the colon and rectum. Data Summary: The oral RfD is based on a subchronic study in mice in which a NOAEL of 1,000 mg/kg/day was established.	Class D; inadequate evidence of carcinogenicity.	Developmental: No data available. Reproductive: No data available. Mutagenicity: Negative results were seen in various prokaryote assays.

Footnotes appear on page 10.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
Benzo(a)anthracene	**Critical Effects:** Enzyme alterations have been observed in animal studies.	**Critical Effects:** No data available.	Class B2; probable human carcinogen.	**Developmental:** No data available. **Reproductive:** No data available. **Genotoxicity:** Negative results were seen in *Drosophila melanogaster* studies.
Benzo(b)fluoranthene	**Critical Effects:** No data available.	**Critical Effects:** No data available.	Class B2; probable human carcinogen.	**Developmental:** No data available. **Reproductive:** No data available. **Mutagenicity:** Positive results were seen in *Salmonella* studies. It is also a weak inducer of sister chromatid exchange.
Benzo(k)fluoranthene	**Critical Effects:** No data available.	**Critical Effects:** No data available.	Class B2; probable human carcinogen.	**Developmental:** No data available. **Reproductive:** No data available. **Mutagenicity:** It has been reported to bind to DNA in CD-1 mouse skin following dermal exposure.

Footnotes appear on page 10.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
Benzo(a)pyrene	Critical Effects: No data available. Comments: Used as a surrogate for carcinogenic PAHs.	Critical Effects: Aplastic anemia. Data Summary: No data available.	Class B2; probable human carcinogen. The oral cancer slope is based on mice developing stomach tumors. Respiratory tract tumors resulted in hamsters upon inhalation.	Developmental: No data available. Reproductive: Decreased fertility in both male and female mice. Mutagenicity: Tested positive in both animal and bacterial assays.
Carbazole	Critical Effects: No data available.	Critical Effects: No data available.	Class B2; probable human carcinogen. It causes liver tumors in mice.	Developmental: No data available. Reproductive: No data available. Mutagenicity: No data available.
Dibenzo(a,h)anthracene	Critical Effects: No data available.	Critical Effects: In mice, subaceous glands were suppressed after dermal application.	Class B2; probable human carcinogen.	Developmental: Increases in fetal resorptions were seen in rats. Reproductive: No data available. Mutagenicity: Positive results were seen in various gene mutation studies.

Footnotes appear on page 10.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
Fluoranthene	**Critical Effects:** No data available; mildly toxic.	**Critical Effects:** No data available. **Data Summary:** The oral RfD is based on a study in mice in which a NOAEL of 125 mg/kg/day was determined. Kidney and liver toxicity resulted at a LOAEL of 250 mg/kg/day. **Comments:** There is limited bioaccumulation due to rapid metabolism and excretion.	Class D; inadequate evidence of carcinogenicity.	**Developmental:** No data available. **Reproductive:** No data available. **Mutagenicity:** Negative results were detected in bacteria tests.
Fluorene	**Critical Effects:** No data available.	**Critical Effects:** Decreased erythrocytes. **Data Summary:** The oral RfD is based on a NOAEL of 1.25 mg/kg/day in mice.	Class D; inadequate evidence of carcinogenicity.	**Developmental:** No data available. **Reproductive:** No data available. **Mutagenicity:** Negative results in various prokaryote assays.

Footnotes appear on page 10.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
Naphthalene	**Critical Effects:** Eye and skin irritation, nausea, headache, vomiting; mildly toxic.	**Critical Effects:** Hemolytic anemia. **Data Summary:** The RfD is based on a rat study in which the NOAEL was 50 mg/kg/day.	Class D; inadequate evidence of carcinogenicity.	**Developmental:** Crosses the placenta barrier causing hemolytic anemia in the fetus. **Reproductive:** No data available. **Mutagenicity:** Negative results were seen *in vitro*.
Phenanthrene	**Critical Effects:** Increased liver enzyme activity; slightly toxic.	**Critical Effects:** No data available.	Class D; inadequate evidence of carcinogenicity.	**Developmental:** No data available. **Reproductive:** No data available. **Mutagenicity:** Positive results in bacteria tests.
Pyrene	**Critical Effects:** No data available; slightly toxic. **Comments:** Pyrene is used as a surrogate for non-carcinogenic PAHs.	**Critical Effects:** Fatty and enlarged liver. **Data Summary:** The RfD is based on a mouse study in which a NOAEL of 75 mg/kg/day was developed.	Class D; inadequate evidence of carcinogenicity.	**Developmental:** No data available. **Reproductive:** No data available. **Mutagenicity:** Negative results were seen in bacteria tests.

Footnotes appear on page 10.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
Phenols and Cresols				
2-Methylphenol	**Critical Effects:** Respiratory irritation, methemoglobin.	**Critical Effects:** Fatty liver degeneration, renal failure. **Data Summary:** The oral RfD is based on a LOAEL of 150 mg/kg/day in which rats had a decrease in body weight and neurotoxicity.	Class C; possible human carcinogen.	**Developmental:** Slight fetal malformations were seen in mice at 100 mg/kg/day. **Reproductive:** No data available. **Mutagenicity:** Chromosomal aberrations were seen in Chinese hamster ovary cells.
3-Methylphenol	**Critical Effects:** Respiratory irritation, mouth and throat burns after ingestion, methemoglobin.	**Critical Effects:** Fatty liver degeneration, renal tubular degeneration. **Data Summary:** The oral RfD is a result of a 90-day neurotoxicity study in rats. A LOAEL of 150 mg/kg/day was established.	Class C; possible human carcinogen. This is based on an increase in skin papillomas in mice.	**Developmental:** Minor skeletal variations were seen with mice. **Reproductive:** No reproductive effects were seen in animals. **Mutagenicity:** Sister chromatid exchange and chromosomal aberrations were seen in mice.

Footnotes appear on page 10.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
4-Methylphenol	**Critical Effects:** Skin, eye irritation, abdominal pain, vomiting, methemoglobin, unconsciousness, incoordination, tremors.	**Critical Effects:** Fatty liver degeneration, renal tubular degeneration. **Data Summary:** The RfD is based on a rat study in which a NOAEL of 50 mg/kg/day was determined.	Class C; possible human carcinogen.	**Developmental:** At maternal toxic dose levels fetotoxicity was seen in rats. **Reproductive:** No data available. **Mutagenicity:** Chromosomal aberrations were seen in Chinese hamster ovary cells.
Pentachlorophenol	**Critical Effects:** Tachycardia, toxic myocarditis, jaundice, tremors.	**Critical Effects:** Bronchitis, nausea, vomiting, hemolytic anemia, renal dysfunction. **Data Summary:** The oral RfD is based on a NOAEL of 3 mg/kg/day in rats.	Class B2; probable human carcinogen. Tumors in the liver, hemangiosarcomas, and pheochromocytomas were seen in mice.	**Developmental:** Delayed ossification of skulls were seen in rats. **Reproductive:** No data available. **Mutagenicity:** Chromosomal aberrations were seen in Chinese hamster ovary cells.

Footnotes appear on page 10.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
Phenol	**Critical Effects:** Diarrhea, mouth sores.	**Critical Effects:** Cardiac arrhythmias, dermal necrosis. **Data Summary:** The oral RfD is based on a NOAEL of 60 mg/kg/day in a rat study.	Class D; inadequate evidence of carcinogenicity.	**Developmental:** Various skeletal anomalies were seen in mice pups. **Reproductive:** No data available. **Mutagenicity:** Chromosomal aberrations were seen in the spermatozoa of mice.
2,4,5-Trichlorophenol	**Critical Effects:** No data available.	**Critical Effects:** Hepatoxicity and kidney effects. **Data Summary:** The RfD is based on a rat study in which a NOAEL of 100 mg/kg/day was reported.	Class D; inadequate evidence of carcinogenicity.	**Developmental:** No data available. **Reproductive:** No data available. **Mutagenicity:** Negative results in various *Salmonella* tests.

Footnotes appear on page 10.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
Inorganics				
Arsenic	**Critical Effects:** Gastro-intestinal disturbances (nausea, diarrhea, abdominal pain), cardiac arrhythmias, vomiting, and vertigo; moderately toxic. **Comments:** When arsenic is heated or comes in contact with acids, it emits highly toxic fumes. Toxicity varies depending on the form.	**Critical Effects:** Polyneuropathies (both motor and sensory in the extremities), anorexia, hyperpigmentation, hepatitis, anemia. **Data Summary:** The oral RfD is based on a human epidemiological study in which a NOAEL of 1 μg/kg/day was determined. **Comments:** Arsenic accumulates in hair and nails. This can be a useful indicator of chronic toxicity.	Class A; human carcinogen via inhalation. This is based on human epidemiological data from smelter workers. It is also a known carcinogen by the oral route.	**Developmental:** Increases in spontaneous abortions were seen in women living near smelter plants. **Reproductive:** No evidence suggesting toxicity. **Mutagenicity:** Chromosomal aberrations in humans and laboratory animals.
Chromium	**Critical Effects:** Dermatitis, respiratory irritation, renal tubular necrosis. **Comments:** Toxicity depends on valence form, with Chromium VI exerting more toxicity.	**Critical Effects:** Ulceration of the nasal cavity, eczema. **Data Summary:** The RfD was based on a 1-year study in rats. This was based on a NOAEL of 2.4 mg/kg/day.	Class A; human carcinogen for inhalation exposure. The cancer slope factor is a result of human epidemiological data showing an increase in lung cancer.	**Developmental:** None observed. **Reproductive:** None observed. **Mutagenicity:** Positive results in human red blood cells, Chinese hamster cells, and bacteria tests for Chromium VI.

Footnotes appear on page 10.

Table 5-3. Toxicity Summaries for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	Acute Toxicity Summary	Chronic Toxicity Summary	Cancer Potential	Other
Copper	**Critical Effects:** Metal fume fever, gastritis, discoloration of skin and hair.	**Critical Effects:** Anemia. **Data Summary:** The current drinking-water standard of 1.3 mg/L is used as a surrogate for the oral RfD, as stated in IRIS.	Class D; inadequate evidence of carcinogenicity.	**Developmental:** Increases in fetal mortality were seen in both mice and minks. **Reproductive:** In a rat study, increases in rat weights were seen. Sexual impotence was seen in factory workers. **Mutagenicity:** No data available.

References: ATSDR Toxicological Profiles; Genetic Activity Program (GAP), 1991; Gossel and Bricker, 1990; Goyer, 1991; IRIS, 1993; Sax and Lewis, 1989; USEPA, 1992a.

Toxicity information was not available for acenaphthylene; benzo(g,h,i)perylene; chrysene; 2,4-dimethylphenol; indeno(1,2,3-c,d)pyrene; 1-methylnaphthalene; 2-methylnaphthalene; and tetrachlorophenol.

CNS	Central nervous system.	NOAEL	No observed adverse effect level.
LOAEL	Lowest observed adverse effect level.	PAHs	Polycyclic aromatic hydrocarbons.
mg/kg	Milligrams per kilogram.	ppm	Parts per million.
mg/kg/day	Milligrams per kilogram per day.	RfC	Reference concentration.
mg/L	Milligrams per liter.	RfD	Reference dose.
mg/m^3	Milligrams per cubic meter.	µg/kg/day	Micrograms per kilogram per day.

Table 5-4. Dermal and Oral Absorption Efficiencies for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituents	Absorption Efficiencies			
	Dermal		Oral	
PAHs	0.03	a	0.85	a
Phenols and Cresols				
m-Cresol	0.10	b	0.84	c
o-Cresol	0.10	b	0.84	c
p-Cresol	0.10	b	0.84	c
2,4-Dimethylphenol	0.10	b	1.00	d
Pentachlorophenol	0.50	e	0.9	e
Phenol	0.80	f	0.95	f
2,3,4,6-Tetrachlorophenol	0.10	b	1.00	d
2,4,5-Trichlorophenol	0.10	b	1.00	d
2,4,6-Trichlorophenol	0.10	b	1.00	d
Inorganics				
Arsenic	0.01	a	0.95	g
Chromium	0.01	a	0.02	h
Copper	0.01	a	0.60	i

a ATSDR (1990a).
b Ryan et al. (1987).
c ATSDR (1990b).
d Assumed.
e ATSDR (1992).
f ATSDR (1988).
g ATSDR (1991a).
h ATSDR (1991b).
i ATSDR (1989b).

Table 5-5. Adjusted Toxicity Values Used to Assess Dermal Exposure for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	RfDo (mg/kg/day)		CSFo (kg-day/mg)	Oral Absorption Efficiency	Reference	RfDa (mg/kg/day)		CSFa (kg-day/mg)
	Subchronic	Chronic				Subchronic	Chronic	
PAHs								
Acenaphthene	6.0E-01	6.0E-02	NC	0.85	a	5.1E-01	5.1E-02	NC
Acenanphthylene	3.0E-01	3.0E-02	NC	0.85	a	2.6E-01	2.6E-02	NC
Anthracene	3.0E+00	3.0E-01	NC	0.85	a	2.6E+00	2.6E-01	NC
Benzo(g,h,i)perylene	3.0E-01	3.0E-02	NC	0.85	a	2.6E-01	2.6E-02	NC
1,1-Biphenyl	5.0E-02	5.0E-02	NC	0.85	a	4.3E-02	4.3E-02	NC
Dibenzofuran	3.0E-01	3.0E-02	NC	0.85	a	2.6E-01	2.6E-02	NC
Fluoranthene	4.0E-01	4.0E-02	NC	0.85	a	3.4E-01	3.4E-02	NC
Fluorene	4.0E-01	4.0E-02	NC	0.85	a	3.4E-01	3.4E-02	NC
1-Methylnaphthalene	3.0E-01	3.0E-02	NC	0.85	a	2.6E-01	2.6E-02	NC
2-Methylnaphthalene	3.0E-01	3.0E-02	NC	0.85	a	2.6E-01	2.6E-02	NC
Naphthalene	4.0E-02	4.0E-02	NC	0.85	a	3.4E-02	3.4E-02	NC
Phenanthrene	3.0E-01	3.0E-02	NC	0.85	a	2.6E-01	2.6E-02	NC
Pyrene	3.0E-01	3.0E-02	NC	0.85	a	2.6E-01	2.6E-02	NC
Phenols and Cresols								
m-Cresol	5.0E-01	5.0E-02	NA	0.84	b	4.2E-01	4.2E-02	NA
o-Cresol	5.0E-01	5.0E-02	NA	0.84	b	4.2E-01	4.2E-02	NA
p-Cresol	5.0E-01	5.0E-02	NA	0.84	b	4.2E-01	4.2E-02	NA
2,4-Dimethylphenol	2.0E-01	2.0E-02	NC	1.00	c	2.0E-01	2.0E-02	NC
Pentachlorophenol	3.0E-02	3.0E-02	1.2E-01	0.90	d	2.7E-02	2.7E-02	1.3E-01
Phenol	6.0E-01	6.0E-01	NC	0.95	e	5.7E-01	5.7E-01	NC
2,3,4,6-Tetrachlorophenol	3.0E-01	3.0E-02	NC	1.00	c	3.0E-01	3.0E-02	NC
2,4,5-Trichlorophenol	1.0E+00	1.0E-01	NC	1.00	c	1.0E+00	1.0E-01	NC
2,4,6-Trichlorophenol	NA	NA	1.1E-02	1.00	c	NA	NA	1.1E-02
Inorganics								
Arsenic	3.0E-04	3.0E-04	1.75E+00	0.95	f	2.9E-04	2.9E-04	1.8E+00
Chromium VI	2.0E-02	5.0E-03	NAP	0.02	g	4.0E-04	1.0E-04	NAP
Copper	3.7E-02	3.7E-02	NAP	0.60	h	2.2E-02	2.2E-02	NAP

Footnotes appear on page 2.

Table 5-5. Adjusted Toxicity Values Used to Assess Dermal Exposure for Constituents of Concern, Southern Wood Piedmont, Wilmington, North Carolina.

a	ATSDR (1990a).	e	ATSDR (1988).
b	ATSDR (1990b).	f	ATSDR (1991a).
c	Assumed.	g	ATSDR (1991b).
d	ATSDR (1992).	h	ATSDR (1989b).

CSFa	Adjusted cancer slope factor.	NAP	Not applicable.
CSFo	Oral cancer slope factor.	NC	Non-carcinogen.
kg-day/mg	Kilograms-day per milligram.	RfDa	Adjusted reference dose.
mg/kg/day	Milligrams per kilogram per day.	RfDo	Oral reference dose.
NA	Not available.		

Table 5-6. Calculated Benzo(a)pyrene Equivalents for Carcinogenic Polycyclic Aromatic Hydrocarbons, Southern Wood Piedmont, Wilmington, North Carolina.

Constituents	TEF [a]	EPC	B(a)P Equivalent [b]
Benzo(a)anthracene	0.1	29	2.9
Benzo(a)pyrene	1.0	22	22
Benzo (b,k)fluoranthene	0.1	50	5
Chrysene	0.01	37	0.37
Dibenzo(a,h)anthracene	1.0	4.3	4.3
Indeno(1,2,3-c,d)pyrene	0.1	10	1
		152	36

All concentrations reported in milligrams per kilogram (mg/kg).

[a] USEPA, 1992b.

[b] EPC x TEF.

EPC Exposure point concentration for constituents of concern (Table 3-3).

TEF Toxicity equivalency factor.

B(a)P Benzo(a)pyrene.

Table 6-1. Exposure Parameters Used to Assess Risk to Receptors, Southern Wood Piedmont, Wilmington, North Carolina.

Parameters	Site Construction Worker	Reference
APcarc (days/lifetime)	25,550	a
APnon (days/lifetime)	91	a
BR (m^3/hour)	2.5	a
BW (kg)	70	a
ED (weeks)	13	b
EF (days/week)	6	b
ET (hours/day)	8	a
IR (mg/day)	480	a
SAR (mg/cm^2-day)	1	c
SSA (cm^2)	2,940	d

a USEPA, 1991a.
b Professional judgment.
c USEPA,1992c.
d USEPA, 1989c.

APcarc Carcinogenic averaging period.
APnon Non-carcinogenic averaging period.
BR Breathing rate.
BW Body weight.
cm^2 Square centimeters.
ED Exposure duration.
EF Exposure frequency.
ET Exposure time.
IR Incidental ingestion rate.
kg Kilograms.
L Liter.
m Meters.
m^3 Cubic meters.
mg Milligrams.
SAR Soil adherence rate.
sec Seconds.
SSA Skin surface area.
yr Year.

Table 6-2. Equations and Sample Calculations for Incidental Ingestion of Soil, Southern Wood Piedmont, Wilmington, North Carolina.

Equation definitions:

$$\text{ADI or LADI} = \frac{C_s \times IR \times EF \times ED \times UC}{BW \times AP}$$

$$HQ = (ADI/RfD_o)$$

$$ELCR = (LADI \times CSF_o)$$

where:

ADI	Average daily intake (mg/kg/day).
AP	Averaging period (days/lifetime).
BW	Body weight (kg).
C_s	Constituent concentration in the soil (mg/kg) (lesser of 95 percent upper confidence limit on the arithmetic average or maximum concentration).
CSF_o	Cancer slope factor for oral exposure $(mg/kg/day)^{-1}$.
ED	Exposure duration (years).
EF	Exposure frequency (days/year).
ELCR	Excess lifetime cancer risk (unitless).
HQ	Hazard quotient (unitless).
IR	Incidental ingestion rate for soil (mg/day).
LADI	Lifetime average daily intake (mg/kg/day).
RfD_o	Reference dose for oral exposure (mg/kg/day).
UC	Unit conversion 1 (10^{-6} kg/mg).

Sample calculation - dibenzo(a,h)anthracene, cancer effects:

$$LADI = \frac{(4.3\ mg/kg) \times (480\ mg/day) \times (6\ days/week) \times (13\ weeks) \times (10^{-6}\ kg/mg)}{(70\ kg) \times (25{,}550\ days)}$$

$$= 9.0 \times 10^{-8}\ mg/kg\text{-}day$$

$$ELCR = 9.0 \times 10^{-8}\ mg/kg\text{-}day \times 7.3\ (mg/kg/day)^{-1}$$

$$= 6.6 \times 10^{-7}$$

Sample calculation - pyrene, non-cancer effects:

$$ADI = \frac{(110\ mg/kg) \times (480\ mg/day) \times (6\ days/week) \times (13\ weeks) \times (10^{-6}\ kg/mg)}{(70\ kg) \times (91\ days)}$$

$$= 6.5 \times 10^{-4}\ mg/kg/day$$

$$HQ = \frac{6.5 \times 10^{-4}\ mg/kg/day}{0.3\ mg/kg/day}$$

$$= 0.002$$

Table 6-3. Equations and Sample Calculations for Dermal Contact with Soil, Southern Wood Piedmont, Wilmington, North Carolina.

Equation definitions:

ADI or LADI $= \frac{C_s \times SSA \times SAR \times ABS \times EF \times ED \times UC}{BW \times AP}$

HQ $= (ADI/RfD_a)$

ELCR $= (LADI \times CSF_a)$

where:

ABS	Dermal absorption efficiency, constituent-specific.
ADI	Average daily intake (mg/kg/day).
AP	Averaging period (days/lifetime).
BW	Body weight (kg).
C_s	Constituent concentration in the soil (mg/kg) (lesser of 95 percent upper confidence limit on the arithmetic average or maximum concentration).
CSF_a	Cancer slope factor for dermal exposure, adjusted to an absorbed dose $(mg/kg/day)^{-1}$.
ED	Exposure duration (years).
EF	Exposure frequency (days/year).
ELCR	Excess lifetime cancer risk (unitless).
HQ	Hazard quotient (unitless).
LADI	Lifetime average daily intake (mg/kg/day).
RfD_a	Reference dose adjusted to an absorbed dose (mg/kg/day).
SAR	Soil adherence rate (1 mg/cm^2-day).
SSA	Exposed skin surface area (cm^2).
UC	Unit conversion (10^{-6} kg/mg).

Sample calculation - pentachlorophenol, cancer effects:

$$LADI = \frac{(23\ mg/kg) \times (2{,}940\ cm^2) \times (1\ mg/cm^2\text{-day}) \times (0.5) \times (6\ days/week) \times (13\ weeks) \times (10^{-6}\ kg/mg)}{(70\ kg) \times (25{,}550\ days)}$$

$$= 1.5 \times 10^{-6}\ mg/kg\text{-day}$$

$$ELCR = 1.5 \times 10^{-6}\ mg/kg\text{-day} \times 0.13\ (mg/kg/day)^{-1}$$

$$= 1.9 \times 10^{-7}$$

Sample calculation - pyrene, non-cancer effects:

$$ADI = \frac{(110\ mg/kg) \times (2{,}940\ cm^2) \times (1\ mg/cm^2\text{-day}) \times (0.03) \times (6\ days/week) \times (13\ weeks) \times (10^{-6}\ kg/mg)}{(70\ kg) \times (91\ days)}$$

$$= 1.2 \times 10^{-4}\ mg/kg/day$$

$$HQ = \frac{1.2 \times 10^{-4}\ mg/kg/day}{2.6 \times 10^{-1}\ mg/kg/day}$$

$$= 4.6 \times 10^{-4}$$

Table 6-4. Equations and Sample Calculations for Inhalation of Fugitive Dust, Southern Wood Piedmont, Wilmington, North Carolina.

Equation definitions:

$$\text{ADI or LADI} = \frac{C_s \times BR \times ET \times EF \times ED}{BW \times AP \times PEF}$$

$$HQ = (ADI_i/RfD_i)$$

$$ELCR = (LADI_i \times CSF_i)$$

where:

ADI	Average daily intake (mg/kg/day).
AP	Averaging period (days/lifetime).
BR	Breathing rate (m^3/hr).
BW	Body weight (kg).
C_s	Constituent concentration in the soil (mg/kg) (lesser of 95 percent upper confidence limit on the arithmetic average or maximum concentration).
CSF_i	Cancer slope factor for inhalation exposure $(mg/kg/day)^{-1}$.
ED	Exposure duration (years).
EF	Exposure frequency (days/year).
ELCR	Excess lifetime cancer risk (unitless).
ET	Exposure time (hrs/day).
HQ	Hazard quotient (unitless).
LADI	Lifetime average daily intake (mg/kg/day).
PEF	Particulate emission factor (2.0×10^9 m^3/kg)
RfD_i	Reference dose for inhalation exposure (mg/kg/day).

Sample Calculation - benzo(a)pyrene:

$$LADI = \frac{(22\ mg/kg) \times (2.5\ m^3\ hours) \times (8\ hours/day) \times (6\ days/week) \times (13\ weeks)}{(70\ kg) \times (25{,}550\ days) \times (2.0 \times 10^9\ m^3/kg)}$$

$$= 9.6 \times 10^{-12}\ mg/kg/day$$

$$ELCR = 9.6 \times 10^{-12}\ mg/kg/day \times 6.1\ (mg/kg/day)^{-1}$$

$$= 6 \times 10^{-11}$$

Table 6-5. Site Construction Worker Exposure and Risk Estimates, Incidental Ingestion of Soil Based On Current Concentrations, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	EPC (mg/kg)	Intake (mg/kg/day)		Toxicity Values		Risk Estimates	
		ADI	LADI	RfD	CSF	HQ	ELCR
PAHs							
Acenaphthene	10	5.9E-05	NC	6.0E-01	NC	9.8E-05	-
Acenaphthylene	3.7	2.2E-05	NC	3.0E-01	NC	7.2E-05	-
Anthracene	140	8.2E-04	NC	3.0E+00	NC	2.7E-04	-
Benzo(a)anthracene	2.9	1.7E-05	6.1E-08	NA	7.3E+00	-	4.4E-07
Benzo(a)pyrene	22	1.3E-04	4.6E-07	NA	7.3E+00	-	3.4E-06
Benzo(b,k)fluoranthene	5.0	2.9E-05	1.0E-07	NA	7.3E+00	-	7.6E-07
Benzo(g,h,i)perylene	8.9	5.2E-05	NC	3.0E-01	NC	1.7E-04	-
1,1-Biphenyl	2.9	1.7E-05	NC	5.0E-02	NC	3.4E-04	-
Carbazole	51	3.0E-04	1.1E-06	NA	2.0E-02	-	2.1E-08
Chrysene	0.37	2.2E-06	7.7E-09	NA	7.3E+00	-	5.7E-08
Dibenzo(a,h)anthracene	4.3	2.5E-05	9.0E-08	NA	7.3E+00	-	6.6E-07
Dibenzofuran	7.7	4.5E-05	NC	3.0E-01	NC	1.5E-04	-
Fluoranthene	98	5.8E-04	NC	4.0E-01	NC	1.4E-03	-
Fluorene	19	1.1E-04	NC	4.0E-01	NC	2.8E-04	-
Indeno(1,2,3-c,d)pyrene	1.0	5.9E-06	2.1E-08	NA	7.3E+00	-	1.5E-07
1-Methylnaphthalene	3.5	2.1E-05	NC	3.0E-01	NC	6.9E-05	-
2-Methylnaphthalene	6.4	3.8E-05	NC	3.0E-01	NC	1.3E-04	-
Naphthalene	5.4	3.2E-05	NC	4.0E-02	NC	7.9E-04	-
Phenanthrene	42	2.5E-04	NC	3.0E-01	NC	8.2E-04	-
Pyrene	110	6.5E-04	NC	3.0E-01	NC	2.2E-03	-
Phenols and Cresols							
o-Cresol	0.039	2.3E-07	8.2E-10	5.0E-01	NA	4.6E-07	-
m,p-Cresol	0.099	5.8E-07	2.1E-09	5.0E-01	NA	1.2E-06	-
2,4-Dimethylphenol	0.48	2.8E-06	NC	2.0E-01	NC	1.4E-05	-
Pentachlorophenol	23	1.4E-04	4.8E-07	3.0E-02	1.2E-01	4.5E-03	5.8E-08
Phenol	1.9	1.1E-05	NC	6.0E-01	NC	1.9E-05	-
Tetrachlorophenol	1.8	1.1E-05	NC	3.0E-01	NC	3.5E-05	-
Trichlorophenol	0.048	2.8E-07	1.0E-09	1.0E+00	1.1E-02	2.8E-07	1.1E-11

Footnotes appear on page 2.

Table 6-5. Site Construction Worker Exposure and Risk Estimates, Incidental Ingestion of Soil Based On Current Concentrations, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	EPC (mg/kg)	Intake (mg/kg/day)		Toxicity Values		Risk Estimates	
		ADI	LADI	RfD	CSF	HQ	ELCR
Inorganics							
Arsenic	21	1.2E-04	4.4E-07	3.0E-04	1.75E+00	4.1E-01	7.7E-07
Chromium	22	1.3E-04	4.6E-07	2.0E-01	NAP	6.5E-04	-
Copper	68	4.0E-04	NC	3.7E-02	NC	1.1E-02	-
						HI	Total ELCR
						0.4	6E-06

ADI	Average daily intake.	LADI	Lifetime average daily intake.
CSF	Cancer slope factor.	mg/kg	Milligrams per kilogram.
ELCR	Excess lifetime cancer risk.	mg/kg/day	Milligrams per kilogram per day.
EPC	Exposure point concentration.	NA	Not available.
HI	Hazard index (sum of HQs).	NC	Not evaluated as a carcinogen.
HQ	Hazard quotient.	RfD	Reference dose.

Table 6-6. Site Construction Worker Exposure and Risk Estimates, Dermal Contact with Soil Based on Current Concentrations, Southern Wood Piedm Wilmington, North Carolina.

Constituent	EPC mg/kg	ABS	Intake (mg/kg/day) ADI	Intake (mg/kg/day) LADI	Toxicity Value RfD	Toxicity Value CSF	Risk Estimates HQ	Risk Estimates ELCR
PAHs								
Acenaphthene	10	0.03	1.1E-05	NC	5.1E-01	NC	2.1E-05	-
Acenaphthylene	3.7	0.03	4.0E-06	NC	2.6E-01	NC	1.5E-05	-
Anthracene	140	0.03	1.5E-04	NC	2.6E+00	NC	5.8E-05	-
Benzo(a)anthracene	2.9	NAP	NA	NA	NA	NAP	-	-
Benzo(a)pyrene	22	NAP	NA	NA	NA	NAP	-	-
Benzo(b,k)fluoranthene	5.0	NAP	NA	NA	NA	NAP	-	-
Benzo(g,h,i)perylene	8.9	0.03	9.6E-06	NC	2.6E-01	NC	3.7E-05	-
1,1-Biphenyl	2.9	0.03	3.1E-06	NC	4.3E-02	NC	7.3E-05	-
Carbazole	51	0.03	NA	NA	NA	NAP	-	-
Chrysene	0.37	NAP	NA	NA	NA	NAP	-	-
Dibenzo(a,h)anthracene	4.3	NAP	NA	NA	NA	NAP	-	-
Dibenzofuran	7.7	0.03	8.3E-06	NC	2.6E-01	NC	3.2E-05	-
Fluoranthene	98	0.03	1.1E-04	NC	3.4E+01	NC	3.1E-06	-
Fluorene	19	0.03	2.1E-05	NC	3.4E-01	NC	6.0E-05	-
Indeno(1,2,3-c,d)pyrene	1.0	NAP	NA	NA	NA	NAP	-	-
1-Methylnaphthalene	3.5	0.03	3.8E-06	NC	2.6E-01	NC	1.5E-05	-
2-Methylnaphthalene	6.4	0.03	6.9E-06	NC	2.6E-01	NC	2.7E-05	-
Naphthalene	5.4	0.03	5.8E-06	NC	3.4E-02	NC	1.7E-04	-
Phenanthrene	42	0.03	4.5E-05	NC	2.6E-01	NC	1.7E-04	-
Pyrene	110	0.03	1.2E-04	NC	2.6E-01	NC	4.6E-04	-
Phenols and Cresols								
o-Cresol	0.039	0.10	1.4E-07	5.0E-10	4.2E-01	NA	3.3E-07	-
m,p-Cresol	0.099	0.10	3.6E-07	1.3E-09	4.2E-01	NA	8.5E-07	-
2,4-Dimethylphenol	0.48	0.10	1.7E-06	NC	2.0E-01	NC	8.6E-06	-
Pentachlorophenol	23	0.50	4.1E-04	1.5E-06	2.7E-02	1.3E-01	1.5E-02	1.9E-07
Phenol	1.9	0.80	5.5E-05	NC	5.7E-01	NC	9.6E-05	-
Tetrachlorophenol	1.8	0.10	6.5E-06	NC	3.0E-01	NC	2.2E-05	-
Trichlorophenol	0.048	0.10	1.7E-07	6.2E-10	1.0E+00	1.1E-02	1.7E-07	6.8E-12

Footnotes appear on page 2.

Table 6-6. Site Construction Worker Exposure and Risk Estimates, Dermal Contact with Soil Based on Current Concentrations, Southern Wood Piedm Wilmington, North Carolina.

Constituent	EPC mg/kg	ABS	Intake (mg/kg/day) ADI	Intake (mg/kg/day) LADI	Toxicity Value RfD	Toxicity Value CSF	Risk Estimates HQ	Risk Estimates ELCR
Inorganics								
Arsenic	21	0.01	7.6E-06	2.7E-08	2.9E-04	1.8E+00	2.6E-02	4.8E-08
Chromium	22	0.01	7.9E-06	2.8E-08	4.0E-04	NAP	2.0E-02	-
Copper	68	0.01	2.4E-05	NC	2.2E-02	NC	1.1E-03	-
							HI	Total ELCR
							0.1	2E-07

ABS	Dermal absorption efficiency.	LADI	Lifetime average daily intake.
ADI	Average daily intake.	mg/kg	Milligrams per kilogram.
CSF	Cancer slope factor.	mg/kg/day	Milligrams per kilogram per day.
ELCR	Excess lifetime cancer risk.	NA	Not available.
EPC	Exposure point concentration.	NAP	Not applicable.
HI	Hazard index (sum of HQs).	NC	Not evaluated as a carcinogen.
HQ	Hazard quotient.	RfD	Reference dose.

Table 6-7. Site Construction Worker Exposure and Risk Estimates, Inhalation of Dust Based On Current Concentrations, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	EPC mg/kg	Intake (mg/kg/day)*		Toxicity Value		Risk Estimates	
		ADI	LADI	RfD	CSF	HQ	ELCR
PAHs							
Acenaphthene	10	1.2E-09	NC	NA	NC	-	-
Acenaphthylene	3.7	4.5E-10	NC	NA	NC	-	-
Anthracene	140	1.7E-08	NC	NA	NC	-	-
Benzo(a)anthracene	2.9	3.6E-10	1.3E-12	NA	6.1E+00	-	7.7E-12
Benzo(a)pyrene	22	2.7E-09	9.6E-12	NA	6.1E+00	-	5.9E-11
Benzo(b,k)fluoranthene	5	6.1E-10	2.2E-12	NA	6.1E+00	-	1.3E-11
Benzo(g,h,i)perylene	8.9	1.1E-09	NC	NA	NC	-	-
1,1-Biphenyl	2.9	3.6E-10	NC	NA	NC	-	-
Carbazole	51	6.2E-09	2.2E-11	NA	NA	-	-
Chrysene	0.37	4.5E-11	1.6E-13	NA	6.1E+00	-	9.8E-13
Dibenzo(a,h)anthracene	4.3	5.3E-10	1.9E-12	NA	6.1E+00	-	1.1E-11
Dibenzofuran	7.7	9.4E-10	NC	NA	NC	-	-
Fluoranthene	98	1.2E-08	NC	NA	NC	-	-
Fluorene	19	2.3E-09	NC	NA	NC	-	-
Indeno(1,2,3-c,d)pyrene	10	1.2E-09	4.4E-12	NA	6.1E+00	-	2.7E-11
1-Methylnaphthalene	3.5	4.3E-10	NC	NA	NC	-	-
2-Methylnaphthalene	6.4	7.8E-10	NC	NA	NC	-	-
Napthalene	5.4	6.6E-10	NC	NA	NC	-	-
Phenanthrene	42	5.1E-09	NC	NA	NC	-	-
Pyrene	110	1.3E-08	NC	NA	NC	-	-
Phenols and Cresols							
o-Cresol	0.039	4.8E-12	1.7E-14	NA	NA	-	-
m,p-Cresol	0.099	1.2E-11	4.3E-14	NA	NA	-	-
2,4-Dimethylphenol	0.48	5.9E-11	NC	NA	NC	-	-
Pentachlorophenol	23	2.8E-09	1.0E-11	NA	NA	-	-
Phenol	1.9	2.3E-10	NC	NA	NC	-	-
Tetrachlorophenol	1.8	2.2E-10	NC	NA	NC	-	-
Trichlorophenol	0.048	5.9E-12	2.1E-14	NA	1.1E-02	-	2.3E-16

Footnotes appear on page 2.

Table 6-7. Site Construction Worker Exposure and Risk Estimates, Inhalation of Dust Based On Current Concentrations, Southern Wood Piedmont, Wilmington, North Carolina.

Constituent	EPC mg/kg	Intake (mg/kg/day)* ADI	Intake (mg/kg/day)* LADI	Toxicity Value RfD	Toxicity Value CSF	Risk Estimates HQ	Risk Estimates ELCR
Inorganics							
Arsenic	21	2.6E-09	9.2E-12	NA	5.0E+01	-	4.6E-10
Chromium	22	2.7E-09	9.6E-12	NA	4.1E+01	-	3.9E-10
Copper	68	8.3E-09	NC	NA	NC	-	-
						HI	Total ELCR
						-	1E-09

*	Based on predicted respirable dust concentration of 0.005 mg/m³ (Appendix A).		
ADI	Average daily intake.	m³/kg	Cubic meters per kilogram.
CSF	Inhalation cancer slope factor.	mg/kg	Milligrams per kilogram.
ELCR	Excess lifetime cancer risk.	mg/kg/day	Milligrams per kilogram per day.
EPC	Exposure point concentration.	NA	Not available.
HI	Hazard index (sum of HQs).	NC	Not evaluated as a carcinogen.
HQ	Hazard quotient.	RfD	Inhalation reference dose.
LADI	Lifetime average daily intake.		

Table 7-1. Total Site Risks, Future Construction Worker, Southern Wood Piedmont, Wilmington, North Carolina.

Receptor	ELCR	HI
Ingestion	6×10^{-6}	0.4
Dermal contact	2×10^{-7}	0.1
Inhalation of dust	1×10^{-9}	--
Total	6×10^{-6}	0.5

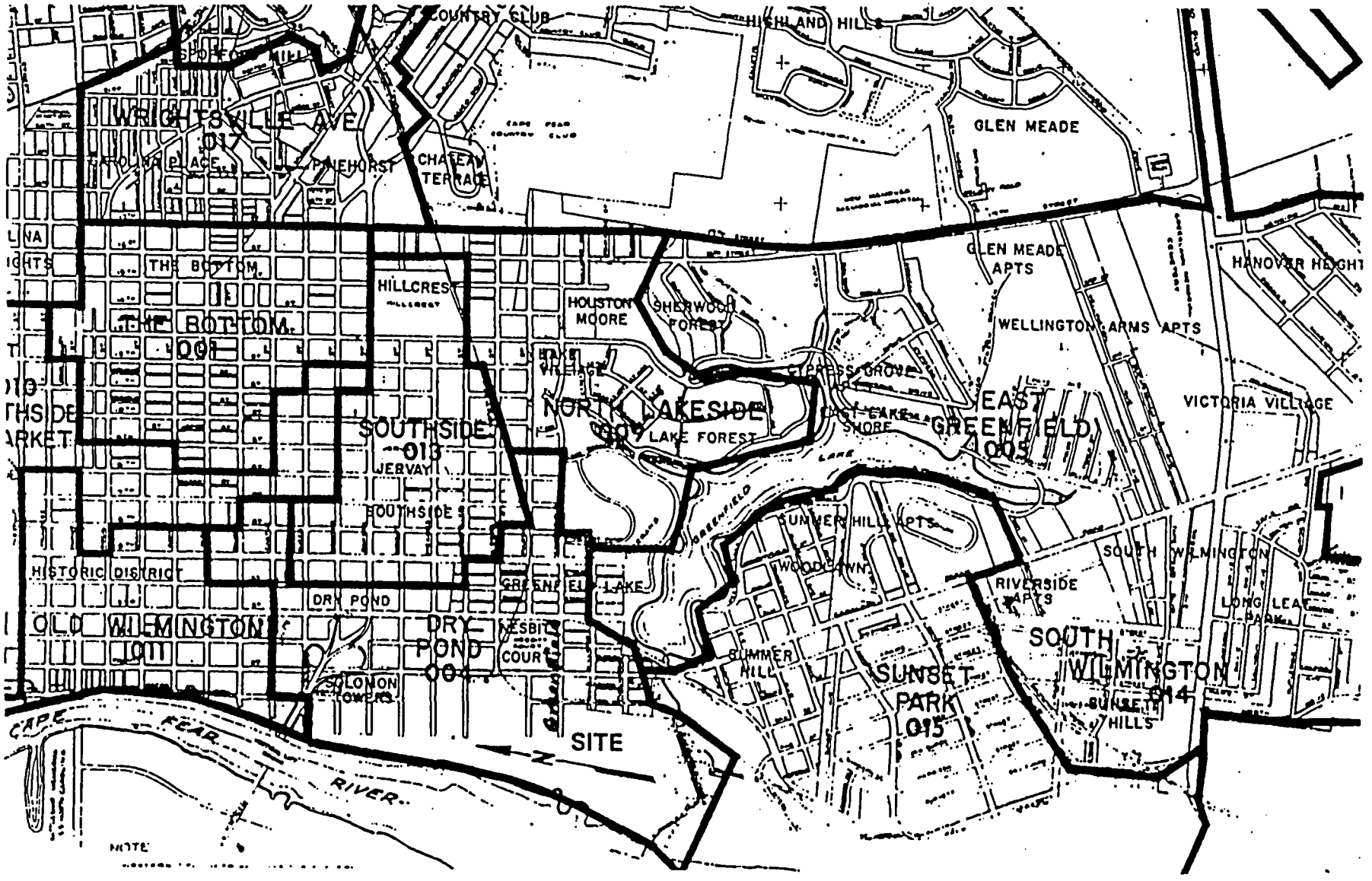
ELCR Excess lifetime cancer risk.
HI Hazard index.
-- Reference doses unavailable.

NC09006/1421swp/03Dec93

FIGURES

NC09006/1421swp/09Dec93

DWG DATE: 26 APR 93	PRJCT NO.: NC090.06	FILE NO.: NC090.06	DRAWING: NC09006C.DWG	CHECKED: S. ATWOOD	APPROVED: S. ATWOOD	DRAFTER: T. GREER



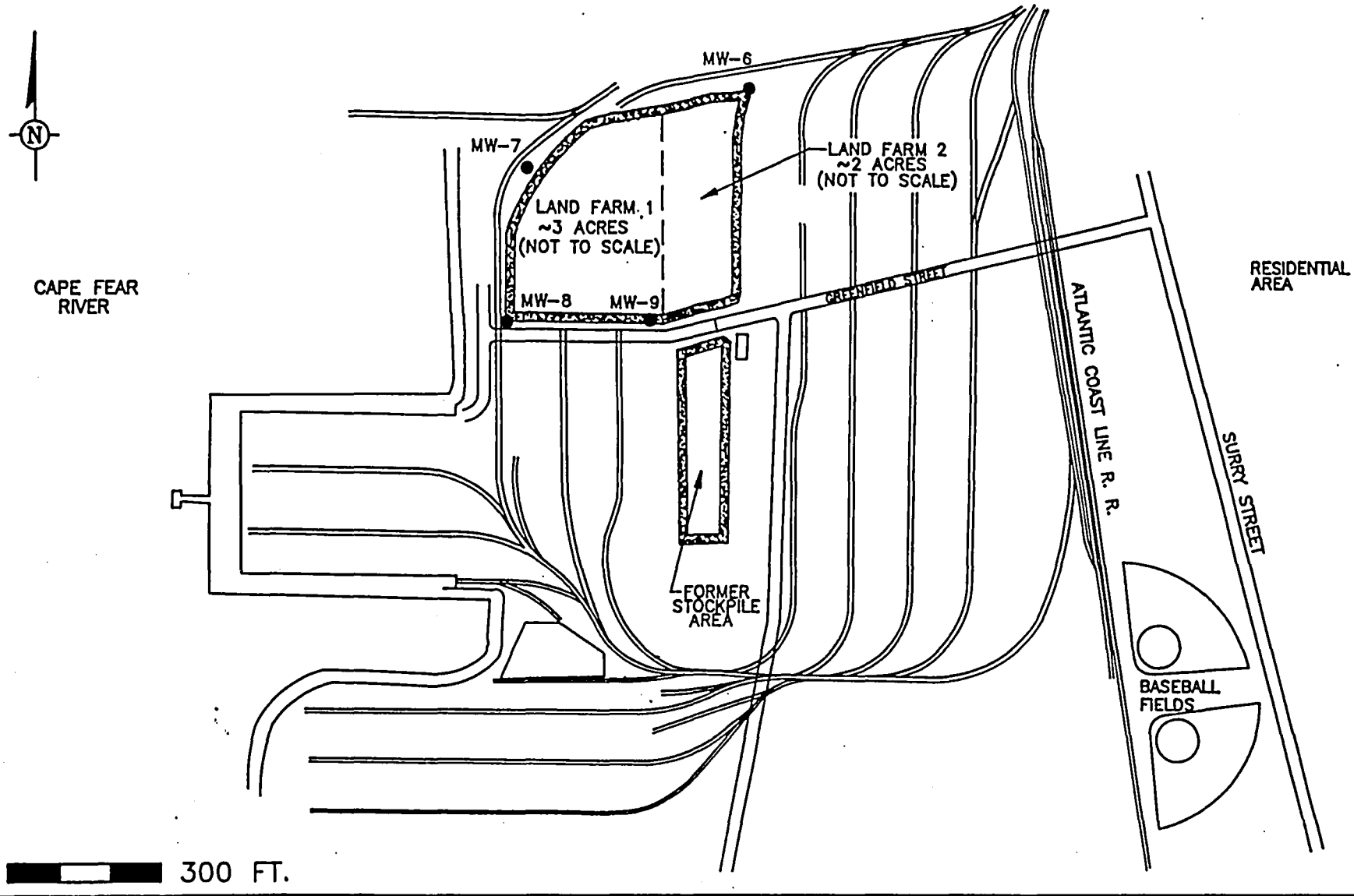
GERAGHTY & MILLER, INC.
Environmental Services

REGIONAL MAP OF SOUTHERN WOOD PIEDMONT SITE

SOUTHERN WOOD PIEDMONT
WILMINGTON, NORTH CAROLINA

FIGURE
2-1

DWG DATE: 09 DEC 93 | PRJCT NO.: NC0090.006 | FILE NO.: SWP-WILM | DRAWING: S[illegible] | CHECKED: S. ATWOOD | APPROVED: C. LOVDAHL | DRAFTER: N. JOHNSON



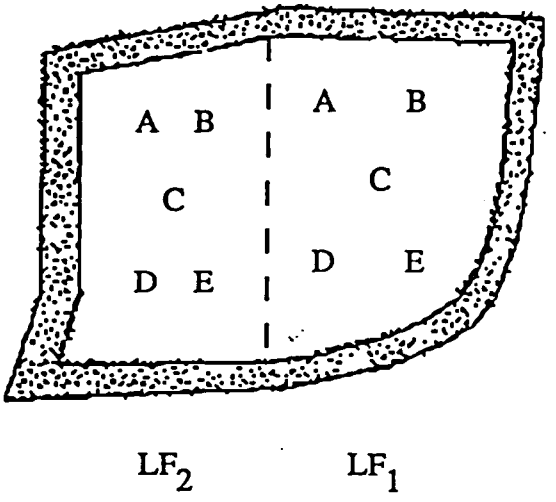
GERAGHTY & MILLER, INC.
Environmental Services

GENERALIZED SITE MAP

SOUTHERN WOOD PIEDMONT
WILMINGTON, NORTH CAROLINA

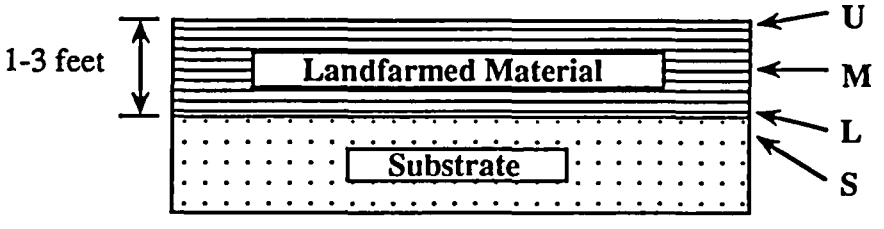
FIGURE
2-2

Plan View



Soil Sampling Locations in Landfarm Areas 1 and 2 Southern Wood Piedmont, Wilmington

Cross-Sectional View



U Upper soil sample taken approximately 3" below landfarm surface.

M Middle soil sample taken midway through the landfarmed material.

L Lower soil sample taken within the bottom 6" of the landfarmed material.

S Substrate sample taken approximately 6" below the base of the landfarmed material.

GERAGHTY & MILLER, INC. *Environmental Services*	Soil Sampling Locations within the Landfarm Areas at Southern Wood Piedmont's Former Wood-Treatment Facility - Wilmington, North Carolina (Not to Scale)	Figure 2-3

APPENDIX A

Particulate Emission Factor Calculations

NC09006/1421swp/08Dec93

Table A-1. Particulate Emission Factor Calculation, Southern Wood Piedmont, Wilmington, North Carolina.

$$PEF = \frac{LS \times V \times DH \times UC1}{AP} \times \frac{UC2}{0.036 \times (1-G) \times (Um/Ut)^3 \times F(x)}$$

where:

Parameter	Definition	Value
A	Area of contamination	22,300 m^2
DH	Diffusion height	2 m
F(x)	Function dependent on Um/Ut (unitless)	0.0497
G	Fraction of vegetative cover	0
LS	Width of contaminated area	220 m
PEF	Particulate emission factor	2×10^9 m^3/kg
UC1	Unit conversion 1	3,600 s/hr
UC2	Unit conversion 2	1,000 g/kg
Um	Mean annual wind speed	4.5 m/s
Ut	Equivalent threshold value of wind speed at 10 m	12.8 m/s
V	Wind speed in mixing zone	2.25 m/s

calculation:

$$PEF = \frac{220\ m \times 2.25\ m/s \times 2\ m \times 3{,}600\ s/hr}{22{,}300\ m^2} \times \frac{1{,}000\ g/kg}{0.036 \times (4.5\ m/s\ /\ 12.8\ m/s)^3 \times 0.0497}$$

$$= 2 \times 10^9\ m^3/kg$$

Publication 9285.7-01B
December 1991

Risk Assessment Guidance for Superfund: Volume I — Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals)

Interim

Office of Emergency and Remedial Response
U.S. Environmental Protection Agency
Washington, DC 20460

NOTICE

The policies set out in this document are intended solely as guidance; they are not final U.S. Environmental Protection Agency (EPA) actions. These policies are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the United States. EPA officials may decide to follow the guidance provided in this document, or to act at variance with the guidance, based on an analysis of specific site circumstances. The Agency also reserves the right to change this guidance at any time without public notice.

This guidance is based on policies in the Final Rule of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), which was published on March 8, 1990 (55 *Federal Register* 8666). The NCP should be considered the authoritative source.

DEFINITIONS

Term	Definition
Applicable or Relevant and Appropriate Requirements (ARARs)	"Applicable" requirements are those clean-up standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site. "Relevant and appropriate" requirements are those clean-up standards which, while not "applicable" at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. ARARs can be action-specific, location-specific, or chemical-specific.
Cancer Risk	Incremental probability of an individual's developing cancer over a lifetime as a result of exposure to a potential carcinogen.
Conceptual Site Model	A "model" of a site developed at scoping using readily available information. Used to identify all potential or suspected sources of contamination, types and concentrations of contaminants detected at the site, potentially contaminated media, and potential exposure pathways, including receptors. This model is also known as "conceptual evaluation model".
Exposure Parameters	Variables used in the calculation of intake (e.g., exposure duration, inhalation rate, average body weight).
Exposure Pathway	The course a chemical or physical agent takes from a source to an exposed organism. An exposure pathway describes a unique mechanism by which an individual or population is exposed to chemicals or physical agents at or originating from a site. Each exposure pathway includes a source or release from a source, an exposure point, and an exposure route. If the exposure point differs from the source, a transport/exposure medium (e.g., air) or media (in cases of intermedia transfer) also would be indicated.
Exposure Point	A location of potential contact between an organism and a chemical or physical agent.
Exposure Route	The way a chemical or physical agent comes in contact with an organism (i.e., by ingestion, inhalation, dermal contact).
Final Remediation Levels	Chemical-specific clean-up levels that are documented in the Record of Decision (ROD). They may differ from preliminary remediation goals (PRGs) because of modifications resulting from consideration of various uncertainties, technical and exposure factors, as well as all nine selection-of-remedy criteria outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

DEFINITIONS (Continued)

Term	Definition
Hazard Index (HI)	The sum of two or more hazard quotients for multiple substances and/or multiple exposure pathways.
Hazard Quotient (HQ)	The ratio of a single substance exposure level over a specified time period to a reference dose for that substance derived from a similar exposure period.
"Limiting" Chemical(s)	Chemical(s) that are the last to be removed (or treated) from a medium by a given technology. In theory, the cumulative residual risk for a medium may approximately equal the risk associated with the limiting chemical(s).
Preliminary Remediation Goals (PRGs)	Initial clean-up goals that (1) are protective of human health and the environment and (2) comply with ARARs. They are developed early in the process based on readily available information and are modified to reflect results of the baseline risk assessment. They also are used during analysis of remedial alternatives in the remedial investigation/feasibility study (RI/FS).
Quantitation Limit (QL)	The lowest level at which a chemical can be accurately and reproducibly quantitated. Usually equal to the method detection limit multiplied by a factor of three to five, but varies for different chemicals and different samples.
Reference Dose (RfD)	The Agency's preferred toxicity value for evaluating potential noncarcinogenic effects in humans resulting from contaminant exposures at CERCLA sites. (See RAGS/HHEM Part A for a discussion of different kinds of reference doses and reference concentrations.)
Risk-based PRGs	Concentration levels set at scoping for individual chemicals that correspond to a specific cancer risk level of 10^{-6} or an HQ/HI of 1. They are generally selected when ARARs are not available.
Slope Factor (SF)	A plausible upper-bound estimate of the probability of a response per unit intake of a chemical over a lifetime. The slope factor is used to estimate an upper-bound probability of an individual's developing cancer as a result of a lifetime of exposure to a particular level of a potential carcinogen.
Target Risk	A value that is combined with exposure and toxicity information to calculate a risk-based concentration (e.g., PRG). For carcinogenic effects, the target risk is a cancer risk of 10^{-6}. For noncarcinogenic effects, the target risk is a hazard quotient of 1.

ACRONYMS/ABBREVIATIONS

Acronym/ Abbreviation	Definition
ARARs	Applicable or Relevant and Appropriate Requirements
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
EAG	Exposure Assessment Group
ECAO	Environmental Criteria and Assessment Office Superfund Health Risk Technical Support Center
EF	Exposure Frequency
EPA	U.S. Environmental Protection Agency
FWQC	Federal Water Quality Criteria
HEAST	Health Effects Assessment Summary Tables
HHEM	Human Health Evaluation Manual
HI	Hazard Index
HQ	Hazard Quotient
HRS	Hazard Ranking System
IRIS	Integrated Risk Information System
LLW	Low-level Radioactive Waste
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
OSWER	Office of Solid Waste and Emergency Response
OERR	Office of Emergency and Remedial Response

ACRONYMS/ABBREVIATIONS (Continued)

Acronyms/ Abbreviation	Definition
PA/SI	Preliminary Assessment/Site Inspection
PEF	Particulate Emission Factor
PRG	Preliminary Remediation Goal
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RfC	Reference Concentration
RfD	Reference Dose
RI/FS	Remedial Investigation/Feasibility Study
RME	Reasonable Maximum Exposure
ROD	Record of Decision
RPM	Remedial Project Manager
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SF	Slope Factor
TR	Target Risk
VF	Volatilization Factor
WQS	State Water Quality Standards

A chemical-specific value for VF is used in the standard default equations (Equations (6), (6'), (7), and (7') in Section 3.2.2) and is developed in Equation (8). The VF value calculated using Equation (8) has been developed for specific use in the other equations in this guidance; it may not be applicable in other technical contexts. Equation (8) lists the standard default parameters for calculating VF. If site-specific information is available, Equation (8) may be modified to calculate a VF that is more appropriate for the particular site. Supporting references should be consulted when substituting site-specific data to ensure that the model and specific parameters can be appropriately applied to the given site.

3.3.2 PARTICULATE EMISSION FACTOR

The particulate emission factor (PEF) relates the contaminant concentration in soil with the concentration of respirable particles (PM_{10}) in the air due to fugitive dust emissions from surface contamination sites. This relationship is derived by Cowherd (1985) for a rapid assessment procedure applicable to a typical hazardous waste site where the surface contamination provides a relatively continuous and constant potential for emission over an extended period of time (e.g., years). The particulate emissions from contaminated sites are due to wind erosion and, therefore, depend on the erodibility of the surface

SOIL-TO-AIR VOLATILIZATION FACTOR

$$VF\ (m^3/kg) = \frac{(LS \times V \times DH)}{A} \times \frac{(3.14 \times \alpha \times T)^{1/2}}{(2 \times D_{ei} \times E \times K_{sa} \times 10^{-3}\ kg/g)} \qquad (8)$$

where:

$$\alpha\ (cm^2/s) = \frac{(D_{ei} \times E)}{E + (\rho_s)(1-E)/K_{sa}}$$

Standard default parameter values that can be used to reduce Equation (8) are listed below. These represent "typical" values as identified in a number of sources. For example, when site-specific values are not available, the length of a side of the contaminated area (LS) is assumed to be 45 m; this is based on a contaminated area of 0.5 acre which approximates the size of an average residential lot. The "typical" values LS, DH, and V are from EPA 1986. "Typical" values for E, OC, and ρ_s are from EPA 1984, EPA 1988b, and EPA 1988f. Site-specific data should be substituted for the default values listed below wherever possible. Standard values for chemical-specific D_i, H, and K_{oc} can be obtained by calling the Superfund Health Risk Technical Support Center.

Parameter	Definition (units)	Default
VF	volatilization factor (m^3/kg)	—
LS	length of side of contaminated area (m)	45 m
V	wind speed in mixing zone (m/s)	2.25 m/s
DH	diffusion height (m)	2 m
A	area of contamination (cm^2)	20,250,000 cm^2
D_{ei}	effective diffusivity (cm^2/s)	$D_i \times E^{0.33}$
E	true soil porosity (unitless)	0.35
K_{sa}	soil/air partition coefficient (g soil/cm^3 air)	$(H/K_d) \times 41$, where 41 is a units conversion factor
ρ_s	true soil density or particulate density (g/cm^3)	2.65 g/cm^3
T	exposure interval (s)	7.9×10^8 s
D_i	molecular diffusivity (cm^2/s)	chemical-specific
H	Henry's law constant (atm-m^3/mol)	chemical-specific
K_d	soil-water partition coefficient (cm^3/g)	chemical-specific, or $K_{oc} \times OC$
K_{oc}	organic carbon partition coefficient (cm^3/g)	chemical-specific
OC	organic carbon content of soil (fraction)	site-specific, or 0.02

material. The equation presented below, Equation (9), is representative of a surface with "unlimited erosion potential," which is characterized by bare surfaces of finely divided material such as sandy agricultural soil with a large number ("unlimited reservoir") of erodible particles. Such surfaces erode at low wind speeds, and particulate emission rates are relatively time-independent at a given wind speed.

This model was selected for use in RAGS/HHEM Part B because it represents a conservative estimate for intake of particulates; it is used to derive Equations (6) and (7) in Section 3.2.2.

Using the default parameter values given in the box for Equation (9), the default PEF is equal to 4.63×10^9 m^3/kg. The default values necessary to calculate the flux rate for an "unlimited reservoir" surface (i.e., G, U_m, U_t, and F(x)) are provided by Cowherd (1985), and the remaining default values (i.e., for LS, V, and DH) are "typical" values (EPA 1986). If site-specific information is available, Equation (9) may be modified to calculate a PEF that is more appropriate for the particular site. Again, the original reference should be consulted when substituting site-specific data to ensure applicability of the model to specific site conditions.

PARTICULATE EMISSION FACTOR

$$PEF\ (m^3/kg) = \frac{LS \times V \times DH \times 3600\ s/hr}{A} \times \frac{1000\ g/kg}{0.036 \times (1-G) \times (U_m/U_t)^3 \times F(x)} \quad (9)$$

where:

Parameter	Definition (units)	Default
PEF	particulate emission factor (m^3/kg)	4.63×10^9 m^3/kg
LS	width of contaminated area (m)	45 m
V	wind speed in mixing zone (m/s)	2.25 m/s
DH	diffusion height (m)	2 m
A	area of contamination (m^2)	2025 m^2
0.036	respirable fraction (g/m^2-hr)	0.036 g/m^2-hr
G	fraction of vegetative cover (unitless)	0
U_m	mean annual wind speed (m/s)	4.5 m/s
U_t	equivalent threshold value of wind speed at 10 m (m/s)	12.8 m/s
F(x)	function dependent on U_m/U_t (unitless)	0.0497 (determined using Cowherd 1985)

3.4 CALCULATION AND PRESENTATION OF RISK-BASED PRGs

The equations presented in this chapter can be used to calculate risk-based PRGs for both carcinogenic and noncarcinogenic effects. If both a carcinogenic and a noncarcinogenic risk-based PRG are calculated for a particular chemical, then the lower of the two values is considered the appropriate risk-based PRG for any given contaminant. The case-study box below illustrates a calculation of a risk-based PRG. A summary table — such as that in the final case-study box — should be developed to present both the risk-based PRGs and the ARAR-based PRGs. The table should be labeled as to whether it presents the concentrations that were developed during scoping or after the baseline risk assessment.

APPENDIX B

Threatened and Endangered Species
Wilmington, North Carolina

NC09006/1421rwp/08Dec93

RECEIVED
APR 2 1993
G & M RALEIGH

State of North Carolina
Department of Environment, Health, and Natural Resources
512 North Salisbury Street • Raleigh, North Carolina 27604

James B. Hunt, Jr., Governor

Jonathan B. Howes, Secretary

April 20, 1993

Mr. Adam Ayers
Geraghty & Miller, Inc.
CrossPointe II
2840 Plaza Place, Suite 350
Raleigh, NC 27612

SUBJECT: Rare, Threatened, and Endangered Species -- Wilmington

Dear Mr. Ayers:

The North Carolina Natural Heritage Program has numerous records of rare, threatened, and endangered species in the Wilmington area. Enclosed please find a list of such species, as well as significant natural communities, that are known to occur in the area depicted on the Wilmington USGS topo map.

Northwest of the site, there is an identified priority natural area called Brunswick River - Cape Fear River Marshes. This site is significant for its extensive Tidal Freshwater Marshes. These are important in their own right, and they also provide habitat for fish and other animal species.

We have several records of rare species within about a mile of the site. Some of these have not been seen in recent years. Field surveys would be necessary to determine what species are still extant in the area. Any rare species still surviving in the vicinity presumably could be impacted by the site, since they are all aquatic or wetland species.

Three rare plant species have been reported from the area: cypress knee sedge (Carex decomposita), a state Significantly Rare and federal Candidate (3C) species; Carolina grasswort (Liliaeopsis carolinensis), a state Threatened and federal Candidate (3C) species; and Carolina bishopweed (Ptiliumnium sp. 1), a state Candidate species. Rare animal species reported from the area include American alligator (Alligator mississippiensis), a state and federal Threatened species; shortnose sturgeon (Acipenser brevirostrum), a state and federal Endangered species of fish; least killifish (Heterandria formosa), a state Special Concern species of fish; barrel floater (Anodonta couperiana), a state

P.O. Box 27687, Raleigh, North Carolina 27611-7687 Telephone 919-733-4984 Fax # 919-733-0513

An Equal Opportunity Affirmative Action Employer

Endangered freshwater bivalve; Greenfield ramshorn snail (Helisoma eucosmium), believed to be extinct; and magnificent rams-horn (Planorbella magnifica), a state Endangered and federal Candidate freshwater snail.

Please contact me at 919-733-7701 or at the address given below if you have any questions or require further information.

Sincerely,

Ann W. Kelly

Ann W. Kelly
Natural Heritage Program
Division of Parks and Recreation

/awk

Enclosures

NATURAL HERITAGE ELEMENTS AND SPECIES STATUS CODES

The attached output from the N.C. Natural Heritage Program database is a listing of the elements (rare species, geologic features, natural communities, and special animal habitats) known to occur in your geographic area of interest. The information on this printout is compiled from a variety of sources, including field surveys, museums and herbaria, literature, and personal communications. The database is dynamic, with new records being added and old records being revised as we receive new information. The enclosed list cannot be considered a definitive record of natural heritage elements, and it should not be considered a substitute for field surveys. When this information is used in any document, we request that the printout date be given and that the Natural Heritage Program be credited.

This cover sheet explains the four columns of status codes that are given on the right-hand side of the printout.

STATE PROTECTION

CODE	STATUS	CODE	STATUS
E	Endangered	SR	Significantly Rare
T	Threatened	V	Vulnerable
SC	Special Concern	UNK	Undetermined
C	Candidate	EX	Extirpated
P_	Proposed (E, T, or C)		

Plant statuses are determined by the Plant Conservation Program (N.C. Dept. of Agriculture) and the Natural Heritage Program (N.C. Dept. of Environment, Health, and Natural Resources). E, T, and SC species are protected by state law (the Plant Protection and Conservation Act, 1979); C and SR designations indicate rarity and the need for population monitoring and conservation action, as determined by the Plant Conservation and Natural Heritage Programs.

Animal statuses that indicate state protection (E, T, and SC) are published in "Endangered Wildlife of North Carolina", March 16, 1992, N.C. Nongame and Endangered Wildlife Program. The Significantly Rare, Undetermined, Vulnerable and Extirpated statuses are (for the most part) Natural Heritage Program designations. They indicate rarity and the need for population monitoring and conservation action.

FEDERAL PROTECTION

The current federal status is listed in "Endangered and Threatened Wildlife and Plants, July 15, 1991 (50 CFR 17.11 & 17.12, Department of the Interior). Definitions are taken from the Endangered Species Act of 1973, as amended through the 100th Congress (1988), and the Federal Register, Part VIII, November 21, 1991 (50 CFR 17, Department of the Interior).

CODE	STATUS	DEFINITION
E	Endangered	A taxon which "is in danger of extinction throughout all or a significant portion of its range"
T	Threatened	A taxon "which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range"
P_	Proposed	A taxon which has been proposed for official listing as endangered or threatened
L_	Listed	A taxon which has been officially listed as endangered or threatened
C1	Category 1 ("Candidate 1")	A taxon which is under consideration, and for which there is sufficient information to support listing

USGS Quad: Wilmington

N.C. NATURAL HERITAGE PROGRAM AND PLANT CONSERVATION PROGRAM ELEMENT LIST

SCIENTIFIC AND COMMON NAME	STATE PROT.	FED. PROT.	STATE RANK	GLOBAL RANK
*** Vertebrates				
Acipenser brevirostrum Shortnose sturgeon	E	LE	S1	G3
Alligator mississippiensis American alligator	T	T/SA	S3	G5
Heterandria formosa Least killifish	SC		S1	G5
Himantopus mexicanus Black-necked stilt	SR		S2B	G5
Micrurus fulvius Eastern coral snake	SR		S1	G5
Ophisaurus mimicus Mimic glass lizard	SC		S2	G3
Picoides borealis Red-cockaded woodpecker	E	LE	S2	G2
Rana capito capito Carolina gopher frog	SC	C2	S2	G4T?
Tadarida brasiliensis Brazilian free-tailed bat	SC		SUB,S2N	G5
*** Invertebrates				
Alasmidonta couperiana Barrel floater	E		S1	G3G4
Helisoma eucosmium Greenfield ramshorn snail	EX	C2	SX	GH
Planorbella magnifica Magnificent rams-horn	E	C2	S1	G1
Problema bulenta Rare skipper	SR	C2	S1?	G2G3
*** Vascular plants				
Carex decomposita Cypress knee sedge	SR	3C	SH	G3G4
Crinum americanum Swamp-lily	C		S1	G5
Cyperus lecontei Leconte's flatsedge	SR		S1	G4?
Dionaea muscipula Venus flytrap	C-SC	3C	S3	G3
Eleocharis melanocarpa Blackfruit spikerush	C		S1?	G4
Elodeopsis carolinensis Carolina grasswort	T	3C	S2	G3
Litsea aestivalis Pondspice	C	C2	S2	G3G4
Platanthera nivea Snowy orchid	T		S2	G5

N.C. NATURAL HERITAGE PROGRAM AND PLANT CONSERVATION PROGRAM ELEMENT LIST

SCIENTIFIC AND COMMON NAME	STATE PROT.	FED. PROT.	STATE RANK	GLOBAL RANK
Ptilimnium costatum Ribbed bishop's-weed	C		S1	G5
Ptilimnium sp 1 Carolina bishopweed	C		S1	G2?
Rhynchospora oligantha Feather-bristle beakrush	C		S2	G5
Rhynchospora pleiantha Coastal beakrush	C		S1	G3

25 Records Processed

REFERENCE 68

Ref. 68

DATA SUMMARY REPORT FOR THE 1991 LANDFARM AREA SAMPLING AND COMPARISON OF 1990 AND 1991 SOIL AND GROUND-WATER DATA SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA

September 1993

Prepared for

SOUTHERN WOOD PIEDMONT COMPANY
Spartanburg, South Carolina

Prepared by

GERAGHTY & MILLER, INC.
Environmental Services
2840 Plaza Place, Suite 350
Raleigh, North Carolina 27612

139Sewp

DATA SUMMARY REPORT FOR THE 1991 LANDFARM AREA SAMPLING AND COMPARISON OF 1990 AND 1991 SOIL AND GROUND-WATER DATA SOUTHERN WOOD PIEDMONT COMPANY WILMINGTON, NORTH CAROLINA

September 1993

Geraghty & Miller, Inc., is submitting this report to Southern Wood Piedmont Company for work performed at the landfarm areas in Wilmington, North Carolina. The report was prepared in conformance with Geraghty & Miller's strict quality assurance/quality control procedures to ensure that the report meets industry standards in terms of the methods used and the information presented. If you have any questions or comments concerning this report, please contact one of the individuals listed below.

Respectfully submitted,

GERAGHTY & MILLER, INC.

Mark E. Radecke
Staff Scientist/Quality Assurance Officer

Christopher W. Lovdahl
Project Scientist/Project Manager

Stanley T. Atwood
Project Toxicologist

William H. Doucette, Jr., Ph.D.
Associate and Senior Technical Consultant

CONTENTS

Page

1.0 INTRODUCTION 1-1

2.0 SITE HISTORY AND ENVIRONMENTAL SETTING 2-1
- 2.1 SITE HISTORY 2-1
- 2.2 HISTORY OF LANDFARMING OPERATIONS AND PREVIOUS SAMPLING 2-1
- 2.4 REGIONAL AND SITE GEOLOGY AND HYDROLOGY 2-3

3.0 INVESTIGATIVE METHODS 3-1
- 3.1 SOIL SAMPLING 3-1
- 3.2 GROUND-WATER SAMPLING 3-2
- 3.3 LABORATORY ANALYSES AND QUALITY ASSURANCE/QUALITY CONTROL PRACTICES 3-3
- 3.4 CHAIN OF CUSTODY 3-3
- 3.5 DATA VALIDATION 3-4

4.0 SAMPLING RESULTS 4-1
- 4.1 SOIL SAMPLE RESULTS 4-1
- 4.2 GROUND-WATER SAMPLE RESULTS 4-2

5.0 ANALYSIS OF 1990 AND 1991 LANDFARM SAMPLING DATA 5-1
- 5.1 DATA REDUCTION 5-1
- 5.2 DATA COMPARISON 5-2

6.0 FINDINGS AND RECOMMENDATIONS 6-1

7.0 REFERENCES 7-1

TABLES

2-1. Constituents Analyzed for in Landfarm Soil and Ground-Water Samples Collected at the Southern Wood Piedmont Facility, Wilmington, North Carolina (1991).

3-1. Analytical Results for Quality Control Samples Associated with Ground-Water Samples Collected in 1991, Southern Wood Piedmont Site, Wilmington, North Carolina.

4-1. Analytical Results for Soil Samples Collected in 1991 Within the River Landfarm 1 at the Southern Wood Piedmont Site, Wilmington, North Carolina.

4-2. Analytical Results for Soil Samples Collected in 1991 Within the Office Landfarm 2 at the Southern Wood Piedmont Site, Wilmington, North Carolina.

4-3. Analytical Results for Ground-Water Samples Collected in 1991 from the Upgradient Monitor Well (W-6) and Three Downgradient Monitor Wells (W-7, W-8, and W-9) Located on the Perimeter of Landfarms1 and 2 at the Southern Wood Piedmont Site, Wilmington, North Carolina.

4-4. Comparison of Constituents Detected in Both 1990 and 1991 in Soil, Southern Wood Piedmont Facility, Wilmington, North Carolina.

4-5. Degradation of Polycyclic Aromatic Hydrocarbons Based on Ring Number, Landfarms 1 and 2, Southern Wood Piedmont Facility, Wilmington, North Carolina.

4-6. Data Comparison for Polycyclic Aromatic Hydrocarbons, Landfarms 1 and 2, Southern Wood Piedmont Facility, Wilmington, North Carolina.

FIGURES

2-1. Generalized Site Map, Southern Wood Piedmont, Wilmington, North Carolina.

3-1. Soil Sampling Locations Within the Landfarm Areas at Southern Wood Piedmont's Former Wood-Treatment Facility, Wilmington, North Carolina.

APPENDICES

A. Ground-Water Sampling Logs, Laboratory Data Reports, and Chain-of-Custody Records.

B. 1990 and 1991 Data Reduction Tables.

2.0 SITE HISTORY AND ENVIRONMENTAL SETTING

This section gives of brief description of the history of the site and landfarming operations and a review of historical landfarm sampling data. Land use for the surrounding area and regional/local geology and hydrogeology are also discussed.

2.1 SITE HISTORY

SWP and its predecessors leased and operated a wood-treatment facility in Wilmington, North Carolina, from approximately 1932 to 1983. In 1932 the North State Company leased the property previously operated by Liberty Shipyards. The North State Company purchased and sold non-treated wood from 1932 to 1935. In 1935, the Taylor Colquitt Company leased the property to establish a wood-preserving facility to treat piling and poles with creosote. ITT, of which SWP is a subsidiary, acquired the company in 1969. SWP added chromated copper arsenate (CCA) to the wood-treatment process in the early 1970s and pentachlorophenol (PCP) in the late 1970s. Each of the three preservatives was stored on site in tanks adjacent to the respective treating facility. Additional creosote storage was in the southwestern property corner. In June 1983, the SWP facility ceased its wood-treatment operations and began closure procedures.

2.2 HISTORY OF LANDFARMING OPERATIONS AND PREVIOUS SAMPLING

In the northwest corner of the SWP property, a 5-acre area was bermed and ditched following the removal of rails and crossties and was divided into two landfarm areas: Landfarm 1 (LF1) and Landfarm 2 (LF2) (Figure 2-1). This area was formerly used as the treated wood storage area.

During the period July 1984 through April 1990, soil material originating from the spoil pile area was applied at regular intervals. Over the period, approximately 17 different soil amendments occurred for LF1 and 20 for LF2. Each amendment consisted of a 2-inch-thick layer of spoil pile material being added to the surface of the landfarm. During the landfarm operation, irrigation water, 10-10-10 fertilizer, and chicken and turkey manure were added to promote and enhance microbial growth and polycyclic aromatic hydrocarbon (PAH) degradation. The two landfarm areas were tilled to a depth of 6 inches weekly, promoting biological and photochemical treatment of residual chemicals.

Two composite sets of soil samples were taken by a SWP representative. A composite sample was taken for each of the following depths: 0 to 3 inches, 9 to 12 inches, and 21 to 24 inches. Soil from the four corners of each landfarm was mixed to make up the two composite samples for each depth. Each landfarm was sampled separately. The initial sampling began in September 1985 for LF2 and in November 1985 for LF1. Over the time period of operation, 59 sets of samples were taken from LF2 and 37 from LF1.

The samples were analyzed for total nitrogen, total phosphorus, chloride, total organic carbon, soil pH, PAH, PCP, phenol, and microbial counts by the Mississippi State Unviersity Forest Products Research Division Laboratory (MSUFPRD) in State College, Mississippi. A discussion of results of these sampling events is provided in the 1990 Data Summary Report (Geraghty & Miller, 1993a).

The quality of ground water in the two landfarmed areas was monitored during the landfarm operations. Four monitor wells were installed in September 1985 on the perimeter of the landfarm area. Ground-water samples from the upgradient (MW-6) and three downgradient (MW-7, -8, and -9) monitor wells initially were collected biannually and subsequently annually and analyzed for PCP and the major constituents of creosote. Composite soil samples were also taken directly from the spoil pile and analyzed for PAH constituents.

Cultivation and fertilization treatments were ended in May 1990. On October 9 and 10, 1990, the four monitor wells and the two landfarms, LF1 and LF2, were sampled by Geraghty & Miller for the MSUFPRD list of constituents to establish a baseline of current conditions (Table 2-1) (Geraghty & Miller, 1993a). The four monitor wells and two landfarms were resampled by Geraghty & Miller on October 14 and 15, 1991.

2.3 SURROUNDING LAND USE

The SWP facility, which measures approximately 1,000 feet east to west by 1,600 feet north to south, lies within an industrialized area of Wilmington, North Carolina. Industry in the vicinity includes the Hess Fuel Tank Farms separated from the SWP property by a ditch on the north side and the Poctank, Inc., plant separated by an undeveloped lot on the south side of the SWP property. The major roads in the vicinity of the plant are Greenfield and Surrey Street. Greenfield Street runs in an east-west direction and dead ends into the center of the facility. Surrey Street runs in a north-south direction and is situated east of the property. The Cape Fear River borders the property on the west.

2.4 REGIONAL AND SITE GEOLOGY AND HYDROLOGY

The Wilmington site is located in the Coastal Plain Physiographic Province of North Carolina, a region underlain by Cretaceous and Cenozoic marine and non-marine sedimentary sequences. Approximately 1500 feet of Coastal Plain sediments overlie pre-Mesozoic crystalline basement rock in the Wilmington area (NCGS, 1985). The site is directly underlain by the Cretaceous-age Pee Dee Formation (NCGS, 1985), which consists predominantly of unconsolidated, dark green to gray, clay-rich, marine sand and which may contain calcareous sandstone ledges (Sohl and Owens, 1991).

Five soil borings were advanced at the site to a maximum depth of approximately 50 feet by Soil and Material Engineers, Inc., during 1981 and an additional four borings (to a maximum

depth of 20 feet) were drilled by Law Environmental in 1985. Lithologic logs (presented in Soil and Material Engineers, 1981, and Law Environmental, 1985) indicate that a surficial layer of sandy fill material or sand is present at the site, which varies from less than 1 foot to 18 feet in thickness. This layer, which appears to be thickest in the northern part of the site, is described as consisting of fine to medium sand, with wood, roots, or other material occasionally found. Below this sandy material is a layer consisting of dark brown, organic-rich silt or peat, which may contain traces of fine sand, roots, and wood fragments. This layer ranges in thickness from 5 to 19 feet.in the soil boring locations, and apparently increases in thickness toward the Cape Fear River to the west. Fine to medium sands extend from below the organic rich layers to a depth of 42 to 45.5 feet, below which a gray marl is encountered (Soil and Material Engineers, Inc., 1981).

Based on their observations, Soil and Material Engineers (1981) concluded that the dominant direction of shallow ground-water flow at the site was to the south, parallel to the Cape Fear River. Water table maps prepared by Law Environmental (1985) indicate westward to southwestward flow (toward the river) near the Landfarm areas, and generally southward flow at the eastern part of the site. Tidal influences may cause temporary alterations or reversals in these flow directions. Hydraulic conductivities ranging from 3×10^{-5} centimeters/second (cm/sec) to 10^{-6} cm/sec were determined based on in-situ monitor well tests, and an average ground-water flow velocity of 0.10 feet/year was calculated (Law Environmental, 1985).

3.0 INVESTIGATIVE METHODS

A soil and ground-water sampling program was conducted in October 1991 within the two landfarmed areas, LF1 and LF2, to provide data on current conditions. The soil sampling locations and depths were selected to assess the presence of PAHs, CCA, and nutrients within the landfarmed material. The samples were collected from the ten locations previously sampled in 1990 (Figure 3-1). The sampling depths, however, were modified to include only the upper and lower layers of landfarmed material. The landfarmed material center and underlying substrate were not sampled since the 1990 sampling program indicated the PAH concentrations in the landfarmed material to be consistent with depth and to be significantly lower in the underlying substrate (Geraghty & Miller, 1993).

The soil samples were collected in the landfarmed material in accordance with standard operating procedures presented in the Work Plan. Ground-water samples were collected from the four monitor wells bordering LF1 and LF2. All samples were analyzed by Savannah Laboratories and Environmental Services, Inc., Savannah, Georgia, for the expanded list of constituents presented in Table 2-1 in accordance with U.S. Environmental Protection Agency (USEPA) methodologies. All field records and analytical data were reviewed and validated by a Geraghty & Miller Quality Assurance/Quality Control Manager.

3.1 SOIL SAMPLING

Soil samples were collected on October 15, 1991, from the five locations sampled on October 10, 1990, within the two landfarmed areas as illustrated in Figure 3-1. At each location, two samples were collected within the landfarmed material and analyzed for pH and the expanded list of wood-preserving constituents and nutrients (Table 2-1).

A small-diameter (<4-inch), stainless steel, hand-held bucket auger was used to determine the depth of the underlying substrate soil at each sampling location prior to collecting soil samples. Following this preliminary activity, the auger was decontaminated with a laboratory-grade soap solution and rinsed three times with distilled water. The depth of the landfarmed material in LF1 and LF2 ranged from 15 to 26 inches and 15 to 20.5 inches, respectively. These depths are on the average less than those recorded in 1990 (12 to 30 inches).

The two soil samples within the landfarmed material were collected at each sampling location by means of a hand-held bucket auger. Each borehole consisted of a sample taken at the surface and above the substrate layer. The upper and lower sections of the individual soil cores were removed and discarded to prevent potential contamination between subsequent samples. The landfarmed soil was black, friable, and had a moist consistency. Bricks and glass were encountered at the landfarmed material-substrate interface at several borehole locations. The samples were placed in stainless steel bowls and thoroughly mixed prior to being stored in sample containers on ice at 4°C. Following the collection of the samples and the removal of the intermediate soil layers, the bucket auger was decontaminated with a laboratory grade soap solution and rinsed three times with distilled water.

3.2 GROUND-WATER SAMPLING

The three downgradient (MW-7, MW-8, and MW-9) and upgradient (MW-6) monitor wells on the perimeter of LF1 and LF2 were sampled on October 14 and 15 for total suspended solids and for the expanded list of nutrients and wood-preserving constituents (Table 2-1). Plastic sheeting was placed around the wells to protect the sampling equipment from potential contamination prior to determining the well depth and water elevation using an electronic water-level meter. The wells were evacuated and sampled with disposable polyethylene bailers in accordance with standard operating procedures outlined in the Work Plan (Geraghty & Miller,

1990). The ground-water samples were placed in appropriate sample containers and stored on ice at 4°C. Ground-water sampling logs are included in Appendix A.

3.3 LABORATORY ANALYSES AND QUALITY ASSURANCE/QUALITY CONTROL PRACTICES

All soil and ground-water samples were analyzed by Savannah Laboratories and Environmental Services, Inc., Savannah, Georgia, for nutrients (total nitrogen, total phosphorus, total organic carbon, and chloride) and wood-preserving constituents in accordance with USEPA-approved methodologies. The 1991 list of constituents was expanded to include the PAHs and metals detected during the former treated and non-treated wood storage area sampling programs (Table 2-1). The 1990 analytical data for these additional PAHs were requested from Savannah Laboratories and Environmental Services, Inc., to permit a more comprehensive comparison between the two data sets. Several field quality control samples were collected during the ground-water and soil sampling programs to assess field techniques and laboratory performance. These samples included rinsate blanks (RB-1 and RB-2) and field blanks (FB-1 and FB-2). Sample RB-1was collected using a clean disposable polyethylene bailer whereas sample RB-2 was collected using the decontaminated bucket auger and stainless steel bowl following the collection of sample LF2ALS. Samples FB-1 and FB-2 were taken concurrently. The quality control samples were prepared in accordance with standard operating procedures.

3.4 CHAIN OF CUSTODY

Samples collected in the field remained in the presence of a project representative at all times until they were shipped to the analytical laboratory. The transfer for the samples to the laboratory was accomplished by means of chain-of-custody records. The placement of the custody seals ensured the integrity of the samples and prevented potential tampering. Chain-of-custody records are included in Appendix A.

3.5 DATA VALIDATION

The purpose of this section is to evaluate the field data for its adherence to the approved Work Plan (Geraghty & Miller, 1990) and to ensure the completion of required documentation. Additionally, the analytical laboratory data were reviewed for the completeness of the data package deliverables and the achievement of project-specific data quality objectives.

All field activities were appropriately documented. Field and rinsate blanks for nutrient and wood-preserving constituent analysis were taken at a frequency of 1 for every 20 samples collected using procedures described in the Work Plan (Geraghty & Miller, 1990). Blank sample results are presented in Table 3-1. Total organic carbon was detected at concentrations ranging from 1.8 to 2.4 milligrams per liter (mg/L) in samples RB-1, RB-2, FB-1, and FB-2. Nitrate-nitrite was detected at 0.10 mg/L in RB-2. This constituent was not found in FB-2.

The requested detection limits for the wood-preserving constituents analyzed in the soil samples were not achieved for the majority of the soil samples. The samples were diluted due to PAH concentrations above the calibration range of the gas chromatography/mass spectroscopy (GC/MS) detection system. These dilutions accounted for the absence of surrogate recoveries for sample LF1ALS. The remaining quality control (QC) data, however, were within established control limits. Matrix spike and matrix spike duplicate recoveries were not reported for many PAHs due to the abundance of a target constituent in this sample. Relative percent differences above established control limits were also reported for several PAHs, phenolic constituents, and arsenic. Estimated constituent concentrations (J qualified) were reported for levels below the practical quantitation limits (PQL) where applicable.

All soil, ground-water, and QC samples collected were analyzed within the required holding times. With the exception of the deviation reported herein, all QC samples were found to be within established control limits.

4.0 SAMPLING RESULTS

4.1 SOIL SAMPLE RESULTS

The wood-preserving constituent, pH, and nutrient results for soil samples collected from LF1 and LF2 in 1991 are presented in Tables 4-1 and 4-2, respectively. Sample results are identified with a unique sample ID consisting of the landfarm (LF1 or LF2), the location (A through E), and the sampling depth (US [upper sample] or LS [lower sample]). For example, sample LF2BUS was the upper sample collected from location B in LF2. Laboratory data reports are included in Appendix A.

A total of 20 semi-volatile organic compounds (semi-VOCs) were detected above their respective practical quantitation limits (PQLs) in the landfarm samples. Sixteen are PAHs: naphthalene; 2-methylnaphthalene; acenaphthene; acenaphthylene; fluorene; phenanthrene; anthracene; pyrene; benzo(a)anthracene; chrysene; benzo(a)pyrene; benzo(g,h,i)perylene; fluoranthene; benzo(b,k)fluoranthene (the laboratory could not resolve the two isomers and reported them together); indeno(1,2,3-cd)pyrene; and dibenzo(a,h)anthracene. Two of the constituents are heterocyclic organics: carbazole and dibenzofuran. Pentachlorophenol and 1,1-biphenyl were also detected. An additional 7 semi-VOCs were detected in the landfarm samples, but the concentrations were below the PQLs: 1,1-methylnaphthalene; phenol; 2,4-dimethylphenol; trichlorophenols; cresols (o, m, & p); and tetrachlorophenols. All except the first constituent are phenolic compounds. 1,1-Methylnaphthalene is a PAH. Compounds detected below PQLs are "J"-qualified on the data tables.

Pyrene, a 4-ring PAH, had the highest concentration of the semi-VOCs: 980 milligrams per kilogram (mg/kg) in the lower sample from location D in LF2. Fluoranthene occurred in the second-highest concentration: up to 500 mg/kg in the same sample. Generally, there was no observable trending in semi-VOC constituent concentrations between the upper and lower

samples from the landfarm areas. For example, chrysene (a 4-ring PAH) occurred in concentrations of 11 and 150 mg/kg for the upper and lower samples, respectively, from location D in LF2. However, anthracene (a 3-ring PAH) occurred in concentrations of 310 and 19 mg/kg for the upper and lower samples, respectively, from location B in LF2. Analyses of variance (ANOVA) performed on the data indicate no significant difference in constituent concentrations between the upper and lower samples.

Arsenic, chromium, and copper were detected in all of the landfarm samples, with maximum concentrations of 84, 100, and 150 mg/kg, respectively. The maximum arsenic and chromium concentrations occurred in the lower sample from location B in LF2 (copper occurred at a concentration of 140 mg/kg in this sample). The maximum concentration of copper occurred in the lower sample from location D in LF2. Chromium and copper levels are within naturally-occurring ranges for the eastern U.S. soils of up to 1,000 and 700 mg/kg, respectively (USGS, 1984). The maximum naturally-occurring concentration of arsenic has been reported to be 73 mg/kg (USGS, 1984).

4.2 GROUND-WATER SAMPLE RESULTS

The wood-preserving constituent, pH, suspended solids, and nutrient results for ground-water samples collected from monitor wells MW-6, MW-7, MW-8, and MW-9 are presented in Table 4-3. None of the wood-preserving constituents were detected in any of the ground-water samples.

5.0 ANALYSIS OF 1990 AND 1991 LANDFARM SAMPLING DATA

Data used in this assessment include 30 soil samples collected in 1990 and 20 soil samples collected in 1991 from LF1 and LF2 at the former SWP facility in Wilmington, North Carolina. Data for 1990 are presented in the 1990 Landfarm Data Summary Report (Geraghty & Miller, 1993a).

5.1 DATA REDUCTION

Data were reduced according to current USEPA guidelines (USEPA, 1989a). The frequency of detection, maximum detected value, mean, and 95 percent upper confidence limit (UCL) of the mean for soil samples were determined. If a constituent concentration was below the PQL, one-half the PQL was entered into the data to calculate the mean. Estimated (J qualified) values were also used to calculate the means.

PAHs were divided into two classes: carcinogenic (cPAHs) and total PAHs (tPAHs) for the risk assessment (Geraghty & Miller, 1993b). tPAH and cPAH data for 1990 are listed by sample number in Appendix B (Tables B-1 and B-2). tPAH and cPAH data for 1991 are listed in Tables B-3 and B-4, respectively. cPAH data were further reduced according to a toxicity equivalency factor (TEF) scheme (USEPA, 1989b). Because cancer slope factors (CSFs) required for quantitative cancer risk assessments were only available for benzo(a)pyrene and carbazole, all the other cPAHs were reduced to benzo(a)pyrene equivalents. Dibenzo(a)anthracene was considered equally potent compared to benzo(a)pyrene. 1-, and 2-Methylnaphthalene, benzo(a)anthracene, chrysene, benzo(b,k)fluoranthene, benzo(g,h,i)perylene, and indo(1,2,3-c,d)pyrene were considered to be one/one-hundredth (0.01) as potent as benzo(a)pyrene (USEPA, 1989b). Therefore, concentrations of the cPAHs were multiplied by TEFs (1 or 0.01) and summed together to derive the total benzo(a)pyrene equivalent cPAH

concentration. The tPAH concentration was calculated as the total of all PAH concentrations. TEF values were not used to derive tPAH concentrations.

The 1990 data indicated no statistical differences in constituent concentrations with sampling depth. Likewise, the 1991 data were examined for differences between the two sampling depths. The landfarms had not been tilled for about a year prior to the 1991 sampling event. The landfarm soils had settled and weeds were present. Mean tPAH concentrations were 531 milligrams per kilogram (mg/kg) in the lower zone and 385 mg/kg in the upper zone (Tables B-5 and B-6). Two sampling points were primarily responsible for the apparent higher concentrations in the lower zone. Sampling point LF2D had tPAH concentrations of 2,573 and 273 mg/kg in the lower and upper zones, respectively, and sampling point LF2E had tPAH concentrations of 1,146 and 273 mg/kg in the lower and upper zones, respectively. Conversely, sampling points LF1C, D, and E, and LF2B had much higher tPAH concentrations in the upper zone. Statistical comparisons of the data in the lower and upper zones did not indicate a significant difference.

5.2 DATA COMPARISON

The results from the 1991 soil sampling program are shown by sample number in Table B-7. Soil data for 1990 and 1991 are compared in Table 4-4. Because of the differences in the analyses requested for the two sets of data, temporal comparisons are limited to PCP and PAHs. The data were log-normally distributed; therefore, statistical comparisons were based on log transformations of the data. A non-parametric test (Mann-Whitney) was also used because the samples were not randomly selected. The sampling plan was not specifically designed to determine PAH degradation rates; therefore, results of these statistical tests are tentative.

PCP was detected in only 1 of 30 samples in 1990 because of the high PQL. A lower PQL was obtained for the 1991 samples, and PCP was detected in 16 of 20 samples, although most concentrations were estimated values which were lower than the PQL. The maximum PCP

concentration was 150 mg/kg in 1991. The UCL (which is used in risk calculations) increased from 19 mg/kg in 1990 to 29 mg/kg in 1991.

PAHs were detected in all samples collected in 1990 and 1991; however, all PAHs were not detected in all samples. Although the highest tPAH concentration (2,572 mg/kg) was detected in the 1991 data, the mean concentrations for both tPAHs and cPAHs showed a slight decrease. Mean tPAH concentrations declined from 527 mg/kg to 458 mg/kg; however, UCL concentrations were essentially the same (733 mg/kg in 1990 and 726 mg/kg in 1991) because of higher variability in the 1991 data. Both mean and UCL cPAH concentrations declined by about 24 percent (25.9 mg/kg to 19.8 mg/kg) and 16 percent (30.9 mg/kg to 25.7 mg/kg), respectively, between 1990 and 1991. However, statistical analyses of the data generally did not indicate that the concentrations reported in 1991 were significantly different than 1990 concentrations. A t-test of the log-transformed data for cPAHs indicated that 1991 concentrations were slightly lower ($P = 0.041$) than 1990 concentrations. The non-parametric test (Mann-Whitney) did not indicate a significant difference in cPAH concentrations. However, the sampling plan was not specifically designed to examine site-specific degradation rates; therefore, the statistical power of the tests was low. In other words, large differences would be necessary in order to detect a significant difference.

More detailed comparisons of the PAH data are shown in Tables 4-5 and 4-6. PAHs have variable degradation rates which are closely correlated with the number of rings in the chemical structure of the compound. PAHs with two or three rings are expected to degrade faster than those with four or more rings. The site data are consistent with this expectation (Table 4-5). Two- and three-ring PAHs decreased from 9 to 88 percent between 1990 and 1991. The average decrease was about 33 percent. Concentrations of four-, five-, and six-ring PAHs had a net average increase of 4.5 percent. However, the data for the PAHs with more than four rings was highly variable. For example, pyrene (four rings) had an increase of more than 40 percent while dibenzo(a)anthracene (five rings) and benzo(g,h,i)perylene (six rings) decreased by about 40 percent (Table 4-5).

Relative degradation percentages were also examined for the cPAHs because they were more important to the risk assessment than tPAHs (Table 4-6). cPAH concentrations decreased by an average of 14.5 percent between 1990 and 1991. This was not significantly different from the 13.1 percent decline for tPAHs. Eliminating the methylnaphthalenes (the only two-ring PAHs with a TEF) resulted in a 10.8 percent average decrease in cPAH concentrations. Benzo(b)fluoranthene and benzo(k)fluoranthene were the only cPAHs which had higher concentrations in the 1991 data (Table 4-6). Benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)anthracene, chrysene, and benzo(a)pyrene were the predominant cPAHs detected at the site and therefore control the risk. The average decrease was about 9.4 percent for these compounds. These degradation rates are consistent with the reported literature values; however, conclusive statements about the site-specific degradation rates cannot be made because of statistical limitations.

Using constituent-specific degradation half-life values from the literature, concentrations of organic wood-preserving constituents estimated to occur in landfarm soils after a period of 30 years were calculated.. Most of the constituents will be degraded to less than 0.001 mg/kg, and the 4- and 5-ring PAHs will have concentrations of 2 mg/kg or less, based on these calculations (Geraghty & Miller, 1993b).

6.0 FINDINGS AND RECOMMENDATIONS

After reviewing the data, Geraghty & Miller makes the following findings: mean PAH concentrations showed an overall decrease between the 1990 and 1991 sampling events, especially PAHs having two and three rings in their structures. Although the overall decrease was not statistically significant, this does not necessarily mean that the PAHs are not degrading. Rather, the failure to detect a significant decrease in PAH concentrations was more likely related to the power of the statistical tests and analytical procedures.

Calculations of constituent degradation over a 30-year period show that most of the constituents will be degraded to less than 0.001 mg/kg after 30 years, based on constituent-specific half-lives from the literature (Geraghty & Miller, 1993b). Those constituents estimated to still occur after 30 years (all are four- and five-ring PAHs) have calculated concentrations of 2 mg/kg or less.

Geraghty & Miller recommends consideration of an anerobic approach to accelerate degradation of PAHs with four or more aromatic rings.

TABLES

Table 2-1. Constituents Analyzed for in Landfarm Soil and Ground-Water Samples Collected at the Southern Wood Piedmont Facility, Wilmington, North Carolina, (1991).

- Base Neutral Acid Extractable Constituents

Naphthalene*	Benzo(g,h,i)perylene*
2-Methylnaphthalene*	Pentachlorophenol*
1-Methylnaphthalene*	Fluoranthene*
1,1-Biphenyl*	2-Chlorophenol
Acenaphthylene*	Phenol
Acenaphthene*	2,4-Dimethylphenol
Dibenzofuran*	Trichlorophenols
Fluorene*	o-Cresol
Phenanthrene*	m & p-Cresol
Anthracene*	p-Chloro-m-cresol
Carbazole*	Tetrachlorophenols
Pyrene*	2,4-Dinitrophenol
Benzo(a)anthracene*	Benzo(b,k)fluoranthene
Chrysene*	Indeno(1,2,3-c,d)pyrene
Benzo(a)pyrene*	Dibenzo(a,h)anthracene

- Metals

  Arsenic
  Copper
  Chromium

- Nitrogen Series

  Total Kjeldahl Nitrogen-N*
  Nitrate + Nitrite-N*
  Total Nitrogen*

- Total phosphorus*
  Total Organic Carbon*
  Chloride*

- pH*

* 1990 Mississippi State University Forest Product Research Division (MSUFPRD) Constituent List (also included polychlorinated dibenzodioxins and polychlorinated dibenzofurans). Data for other constituents (1990 sampling program) were requested in 1991.

Table 3-1. Analytical Results for Quality Control Samples Associated with Ground-Water Samples Collected in 1991, Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification #	FB-1	FB-2	RB-1 (a)	RB-2 (b)
Constituents (mg/L)				
Semi-Volatile Organic Constituents (8270)				
Naphthalene	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND
1-Methylnaphthalene	ND	ND	ND	ND
1,1-Biphenyl	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND
Benzo(a)Anthracene	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND
Phenol	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND
Creosol (ortho)	ND	ND	ND	ND
Creosol m&p	ND	ND	ND	ND
P-chloro-m-cresol	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND
Benzo(b,k)fluoranthene	ND	ND	ND	ND
Ideno(1,2,3-cd)pyrene	ND	ND	ND	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND
Metals				
Arsenic (7060)	ND	ND	ND	ND
Chromium (6010)	ND	ND	ND	ND
Copper (6010)	ND	ND	ND	ND
Nitrogen Series				
Total Kjeldahl Nitrogen-N	ND	ND	ND	ND
Nitrate + Nitrite-N	ND	ND	ND	0.10
Total Nitrogen	ND	ND	ND	0.10
Total Phosphorous	ND	ND	ND	ND
Total Organic Carbon	2.3	2.1	1.8	2.4
Chloride	ND	ND	ND	ND
pH (150.1)	5.0	NA	5.4	NA

RB Rinsate blank.
FB Field blank.
ND Compound was not detected.
NA pH was not analyzed.
(a) Rinsate of bailer
(b) Rinsate of bucket auger soil sampler

Table 4-1. Analytical Results for Soil Samples Collected in 1991 within the River Landfarm 1 at the Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification # /1	LF1AUS 9663A	LF1ALS 9663B	LF1BUS 9664A	LF1BLS 9664B	LF1CUS 9665A	LF1CLS 9665B	LF1DUS 9666A	LF1DLS 9666B	LF1EUS 9667A	LF1ELS 9667B
Constituents (mg/kg dw)										
Semi-Volatile Organic Compounds (8270)										
Naphthalene	2.8	0.56J	1.1J	0.27J	3.4J	0.23J	1.0	0.088J	4.7J	0.13J
2-Methylnaphthalene	2.7	0.29J	0.93J	0.18J	6.4J	0.14J	1.1	0.070J	7.7	0.11J
1-Methylnaphthalene	0.22J	0.17J	0.27J	0.11J	4.0J	0.097J	0.14J	0.067J	0.56J	0.063J
1,1-Biphenyl	0.42	0.092J	0.23J	0.066J	0.90J	0.040J	0.24J	0.022J	2.1J	0.028J
Acenaphthylene	3.8	0.59J	1.7J	4.1J	2.1J	0.58	1.4	0.13J	1.4J	0.35
Acenaphthene	0.95	1.9J	0.52J	1.1J	0.62J	0.15J	0.36	0.18J	0.78J	0.070J
Dibenzofuran	2.7	0.89J	1.2J	0.31J	5.6J	0.18J	1.6	0.21J	9.3	0.14J
Fluorene	6.9	2.4J	2.6J	1.1J	14	0.20J	4.9	0.21J	25	0.18J
Phenanthrene	16	15	6.4	17	21	1.4	7.7	3.3	34	0.98
Anthracene	54	5.7	23	16	140	2.3	36	1.0	350	1.8
Carbazole	23	1.1J	7	5.4J	38	0.97	8.2	0.98	98	1.1
Pyrene	20	69	18	62	34	10	28	5.7	25	4.2
Benzo(a)Anthracene	11	24	10	31	11	5.7	15	2.1	9.6	2.0
Chrysene	12	28	13	36	15	8.9	18	3.0	3.6J	2.9
Benzo(a)pyrene	13	14	11	21	14	4.1	11	1.8	11	1.5
Benzo(g,h,i)perylene	7.4	6.5	4.6	9.1	6.4J	1.8	2.1	0.70	4.3J	0.6
Pentachlorophenol	1.2	3.9J	1.6J	4.3J	ND	1.3J	0.79J	ND	ND	0.70J
Fluoranthene	22	77	17	72	15	12	24	4.7	22	3.7
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	0.060J	ND	ND	0.057J	0.86J	0.050J	0.028J	ND	0.14J	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Creosol (ortho)	ND	ND	ND	ND	0.023J	ND	ND	ND	ND	ND
Creosol m&p	0.044J	ND	ND	0.047J	ND	ND	ND	ND	ND	ND
P-chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	0.19J	ND	0.31J	0.44J	ND	0.13J	ND	ND	ND	0.045J
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b,k)fluoranthene	30	36	31	61	43	18	32	3.4	30	4.4
Ideno(1,2,3-cd)pyrene	9.6	9.2	5.6	12	7.9	1.9	4.4	0.74	5.3J	0.7
Dibenzo(a,h)anthracene	3.4	2.9J	ND	2.3J	ND	0.58	1.1	0.26J	ND	ND
Metals										
Arsenic (7060)	6.5	23	7.9	13	2.5	4.9	4.9	15	6.9	9.9
Chromium (6010)	6.2	14	8.2	7.9	12	5.4	5.5	1.9	6.7	2.8
Copper (6010)	37	70	30	35	39	38	22	12	44	17
Nitrogen Series										
Total Kjeldahl Nitrogen-N	1,500	980	5,000	1,000	1,100	1,000	1,200	290	1,600	300
Nitrate + Nitrite-N	ND	ND	ND	ND	7	ND	14	6.3	ND	ND
Total Nitrogen	1,500	980	5,000	1,000	1,100	1,000	1,200	300	1,600	300
Total Phosphorous	730	980	920	460	1,000	520	700	240	1,300	270
Total Organic Carbon	33,000	24,000	27,000	22,000	35,000	16,000	21,000	5,000	31,000	5,900
Chloride	ND	ND	29	ND	ND	ND	ND	ND	ND	ND
pH	6.3	6.9	7.1	7.4	6.6	7.6	6.3	6.7	7	7.4
Percent Solids %	86	89	88	88	84	92	92	94	88	95

1 Represents Landfarm 1 location (A, B, C, D, or E) depth sampled (US or LS).
J Estimated concentration below the practical quantitation limit.
ND Compound was not detected.

Table 4-2. Analytical Results for Soil Samples Collected in 1991 within the Office Landfarm 2 at the Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification # /1	LF2AUS 9668A	LF2ALS 9668B	LF2BUS 9669A	LF2BLS 9669B	LF2CUS 9670A	LF2CLS 9670B	LF2DUS 9671A	LF2DLS 9671B	LF2EUS 9672A	LF2ELS 9672B
Constituents (mg/kg dw)										
Semi-Volatile Organic Compounds (8270)										
Naphthalene	2.2J	0.36J	11J	1.4J	4.3J	1.9J	3.4J	14J	3.5J	2.5J
2-Methylnaphthalene	2.1J	0.22J	16J	0.88J	4.6J	0.85J	4.4J	8.0J	5.1	2.4J
1-Methylnaphthalene	0.22J	0.13J	0.59J	0.29J	0.46J	0.34J	0.26J	1.6J	0.26J	0.41J
1,1-Biphenyl	0.37J	0.078J	2.1J	0.18J	0.91J	0.27J	0.64J	2.3J	0.66J	0.59J
Acenaphthylene	5.2	2.4J	5.0J	2.4J	4.7J	4.3J	3.7J	5.4J	3.8J	5.0J
Acenaphthene	1.0J	0.62J	2.5J	1.6J	5.5J	1.7J	1.3J	92	1.0J	8.1J
Dibenzofuran	2.6J	0.49J	20	1.7J	8.4	2.2J	5.0J	21J	5.1	5.6J
Fluorene	7.1	1.2J	62	2.8J	26	7.2J	14	59J	13	19J
Phenanthrene	12	4.1	87	13	38	21	20	91	21	45
Anthracene	41	9.5	310	19	120	84	75	170	64	93
Carbazole	18	3.1J	170	6.8	60	15	34	46J	37	28J
Pyrene	21	25	64	25	35	74	17	980	19	310
Benzo(a)Anthracene	13	12	25	12	17	28	8.6	130	11	63
Chrysene	15	18	31	15	20	41	11	150	12	69
Benzo(a)pyrene	16	9.6	23	9.2	20	27	12	61J	12	29J
Benzo(g,h,i)perylene	7.2	3.7J	10J	5.5	6.0J	5.6J	7.0J	6.7J	5.1	8.3J
Pentachlorophenol	3.8J	2.8J	ND	10	4.6J	22J	6.4J	150J	4.1J	19J
Fluoranthene	20	24	78	30	37	83	19	520	20	350
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	2.2J	ND	ND
2,4-Dimethylphenol	0.092J	0.082J	ND	0.037J	0.087J	0.12J	ND	ND	0.081J	ND
Trichlorophenols	ND	ND	ND	0.048J	ND	ND	ND	ND	ND	ND
Creosol (ortho)	0.024J	ND	ND	0.040J	0.028J	0.026J	ND	ND	0.022J	ND
Creosol m&p	0.10J	0.070J	ND	ND	ND	ND	ND	ND	0.087J	ND
P-chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	0.48J	0.25J	ND	0.52J	ND	0.85J	0.34J	3.5J	0.47J	1.1J
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b,k)fluoranthene	34	32	55	21	37	81	26	190	30	90
Ideno(1,2,3-cd)pyrene	9.2	5.2	13J	6.8	9.1	9.8	8.8	18J	7.3	12J
Dibenzo(a,h)anthracene	2.0J	1.2J	3.4J	2.6J	3.4J	4.0J	2.0J	6.6J	2.5J	5.1J
Metals										
Arsenic (7060)	7.9	18	8.3	84	5.6	14	6.4	22	6.7	9.5
Chromium (6010)	15	12	11	100	6.2	9.8	7.1	21	7.8	15
Copper (6010)	42	120	44	140	41	41	35	150	39	51
Nitrogen Series										
Total Kjeldahl Nitrogen-N	1,300	1,900	1,900	840	1,600	1,100	1,200	4,900	1,700	1,300
Nitrate + Nitrite-N	6.9	6.1	ND	12	ND	ND	ND	ND	7.2	ND
Total Nitrogen	1,300	1,900	1,900	850	1,600	1,100	1,200	4,900	1,700	1,300
Total Phosphorous	580	470	760	440	580	280	490	610	200	200
Total Organic Carbon	26,000	21,000	34,000	21,000	26,000	28,000	32,000	47,000	32,000	23,000
Chloride	ND	ND	ND	ND	ND	ND	46	100	ND	ND
pH	6.7	6.8	6.8	7.5	6.4	6.5	6.9	7.1	6.7	6.9
Percent Solids %	83	82	86	89	86	88	83	80	85	89

1 Represents Landfarm 2 location (A, B, C, D, or E) depth sampled (US or LS).
J Estimated concentration below the practical quantitation limit.
ND Compound was not detected.

Table 4-3. Analytical Results for Ground-Water Samples Collected in 1991 from the Upgradient Monitor Well (W-6) and Three Downgradient Monitor Wells (W-7, W-8, and W-9) Located on the Perimeter of Landfarms 1 and 2 at the Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification #	MW-6 9673	MW-7 9674	MW-8 9675	MW-9 9676
Constituents (mg/L)				
Semi-Volatile Organic Compounds (8270)				
Naphthalene	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND
1-Methylnaphthalene	ND	ND	ND	ND
1,1-Biphenyl	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND
Benzo(a)Anthracene	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND
Phenol	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND
Creosol (ortho)	ND	ND	ND	ND
Creosol m&p	ND	ND	ND	ND
P-chloro-m-cresol	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND
Benzo(b,k)fluoranthene	ND	ND	ND	ND
Ideno(1,2,3-cd)pyrene	ND	ND	ND	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND
Metals				
Arsenic (7060)	ND	ND	ND	ND
Chromium (6010)	ND	ND	ND	ND
Copper (6010)	ND	ND	ND	ND
Total Suspended Solids (160.2)	34	20	ND	ND
Nitrogen Series				
Total Kjeldahl Nitrogen-N	11	8.3	9.7	6.3
Nitrate + Nitrite-N	ND	ND	ND	ND
Total Nitrogen	11	8.3	9.7	6.3
Total Phosphorous	2.0	0.72	0.78	0.89
Total Organic Carbon	16	22	27	20
Chloride	310	200	130	120

ND Compound was not detected.

Table 4-4. Comparison of Constituents Detected in Both 1990 and 1991 in Soil, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	Frequency of Detects (%)*		Maximum Concentration		Mean		UCL	
	1990	1991	1990	1991	1990	1991	1990	1991
Phenols and Cresols								
o-Cresol	0	30	NA	0.04	NA	4.39	NA	8.14
m,p-Cresol	0	25	NA	0.1	NA	4.81	NA	8.52
2,4-Dimethylphenol	0	60	NA	0.86	NA	3.96	NA	7.76
Pentachlorophenol	3	80	20	150	19	16.22	19.00	29.21
Phenol	0	5	NA	2.2	NA	3.35	NA	4.98
Tetrachlorophenols	0	60	NA	3.5	NA	1.61	NA	2.54
Trichlorophenols	0	5	NA	0.048	NA	5.19	NA	8.85
PAHs								
tPAHs	100	100	2064.2	2572.6	527.51	458.18	732.88	725.82
cPAHs	100	100	78.4	72.64	25.9	19.78	30.90	25.73
Carbazole	100	100	270	170	43.2	30.08	63.20	45.99
Inorganics								
Arsenic	0	100	NA	84	NA	13.85	NA	20.60
Chromium	0	100	NA	100	NA	13.78	NA	21.82
Copper	0	100	NA	150	NA	53.40	NA	68.31

Concentrations are given in milligrams per kilogram (mg/kg).

* 1990 data included 30 samples; 1991 data included 20 samples.

NA Not available.

UCL 95 percent upper confidence limit of the mean.

Table 4-5. Degradation of Polycyclic Aromatic Hydrocarbons Based on Ring Number, Landfarms 1 and 2, Southern Wood Piedmont Facility, Wilmington, North Carolina.

# Rings	Constituent		Mean Concentration (mg/kg) 1990	1991	1990-1991	% Change
2	1,1-Biphenyl		3.77	0.61	3.16	-83.82
2	1-Methylnaphthalene		4.3	0.51	3.79	-88.14
2	2-Methylnaphthalene		6.05	3.21	2.84	-46.94
2	Naphthalene		5.18	2.94	2.24	-43.24
3	Acenaphthene		6.72	6.1	0.62	-9.23
3	Acenaphthylene		3.77	2.9	0.87	-23.08
3	Anthracene		117.66	80.77	36.89	-31.35
3	Carbazole		43.19	30.08	13.11	-30.35
3	Dibenzofuran		7.16	4.71	2.45	-34.22
3	Fluorene		15.53	13.44	2.09	-13.46
3	Phenanthrene		37.53	23.74	13.79	-36.74
		Total	250.86	169.01	81.85	-32.63
		Mean	22.81	15.36	7.44	-32.63
4	Benzo(a)anthracene		23.57	22.05	1.52	-6.45
4	Chrysene		32.14	26.12	6.02	-18.73
4	Fluoranthene		71.45	72.52	-1.07	1.50
4	Pyrene		65.76	92.3	-26.54	40.36
5	Benzo(a)pyrene		20.32	16.06	4.26	-20.96
5	Benzo(b,k)fluoranthene		40.7	44.24	-3.54	8.70
5	Dibenzo(a,h)anthracene		4.37	2.62	1.75	-40.05
6	Benzo(g,h,i)perylene		8.96	5.43	3.53	-39.40
6	Indeno(1,2,3-c,d)pyrene		9.38	7.83	1.55	-16.52
		Total	276.65	289.17	-12.52	4.53
		Mean	30.74	32.13	-1.39	4.53

mg/kg Milligrams per kilogram.

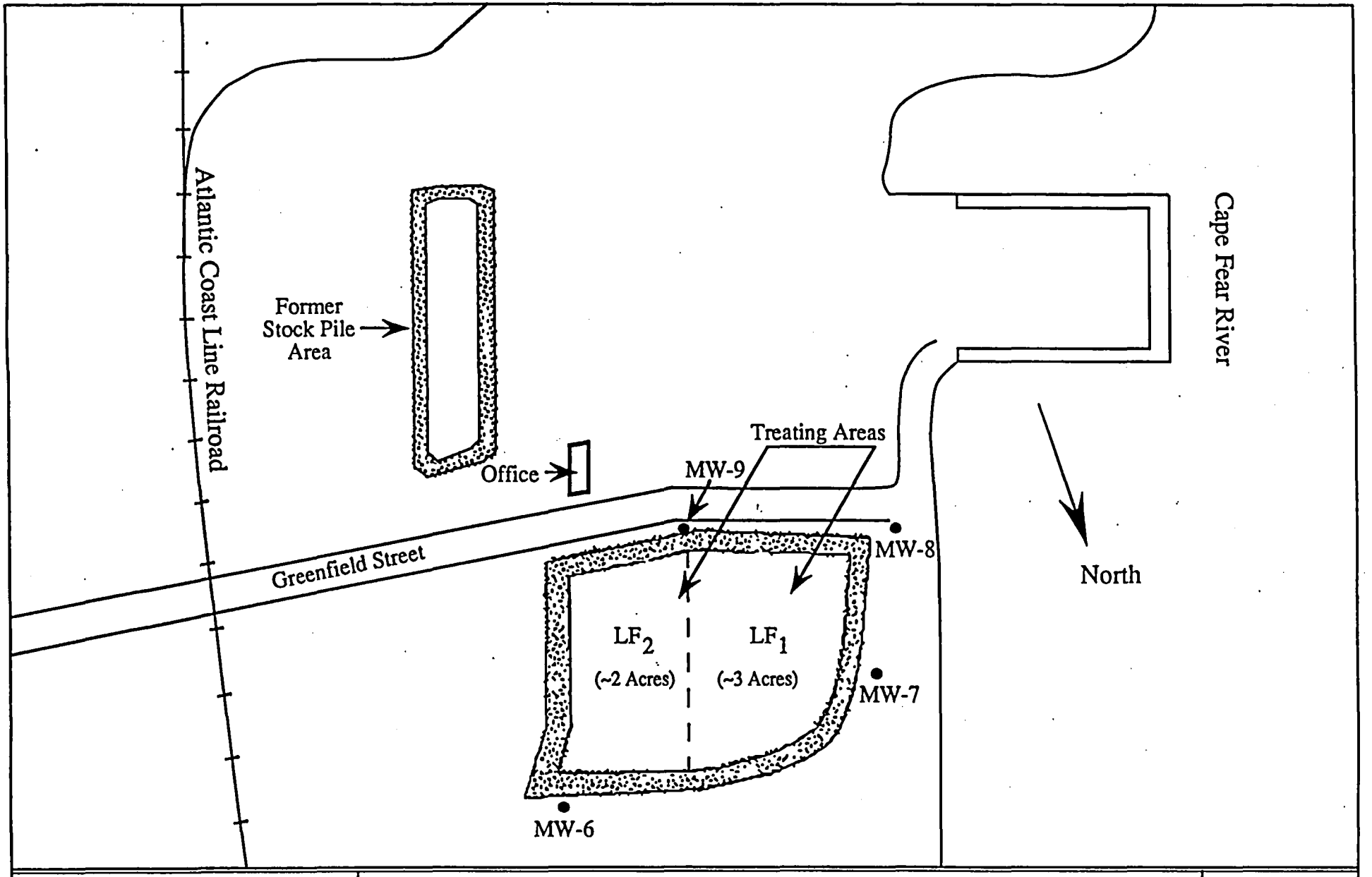
Table 4-6. Data Comparison for Polycyclic Aromatic Hydrocarbons, Landfarms 1 and 2, Southern Wood Piedmont Facility, Wilmington, North Carolina.

# Rings	Constituent	Mean Concnetration (mg/kg) 1990	1991	1990-1991	% Change
2	1,1-Biphenyl	3.77	0.61	3.16	-83.82
2	Naphthalene	5.18	2.94	2.24	-43.24
3	Acenaphthene	6.72	6.1	0.62	-9.23
3	Acenaphthylene	3.77	2.9	0.87	-23.08
3	Anthracene	117.66	80.77	36.89	-31.35
3	Carbazole*	43.19	30.08	13.11	-30.35
3	Dibenzofuran	7.16	4.71	2.45	-34.22
3	Fluorene	15.53	13.44	2.09	-13.46
3	Phenanthrene	37.53	23.74	13.79	-36.74
4	Fluoranthene	71.45	72.52	-1.07	1.50
4	Pyrene	65.76	92.3	-26.54	40.36
	Subtotal	377.72	330.11	47.61	-12.60
	Mean	34.34	30.01	4.33	-12.60
	cPAHs				
2	1-Methylnaphthalene	4.3	0.51	3.79	-88.14
2	2-Methylnaphthalene	6.05	3.21	2.84	-46.94
4	Benzo(a)anthracene	23.57	22.05	1.52	-6.45
4	Chrysene	32.14	26.12	6.02	-18.73
5	Benzo(a)pyrene	20.32	16.06	4.26	-20.96
5	Benzo(b,k)fluoranthene	40.7	44.24	-3.54	8.70
5	Dibenzo(a,h)anthracene	4.37	2.62	1.75	-40.05
6	Benzo(g,h,i)perylene	8.96	5.43	3.53	-39.40
6	Indeno(1,2,3-c,d)pyrene	9.38	7.83	1.55	-16.52
	Total cPAHs	149.79	128.07	21.72	-14.50
	Mean	16.64	14.23	2.41	-14.50
	Without 2-ring PAHs	139.44	124.35	15.09	-10.82
	tPAHs	527.51	458.18	69.33	-13.14

* Carbazole is also a cPAH but was considered separately from the other cPAHs.
cPAHs Carcinogenic polycyclic aromatic hydrocarbons included in the TEF scheme.
mg/kg Milligrams per kilogram.
TEF Toxicity equivalency factor based on benzo(a)pyrene (USEPA, 1989b).
tPAHs Total of all polycyclic aromatic hydrocarbons.

FIGURES

1395sw.p

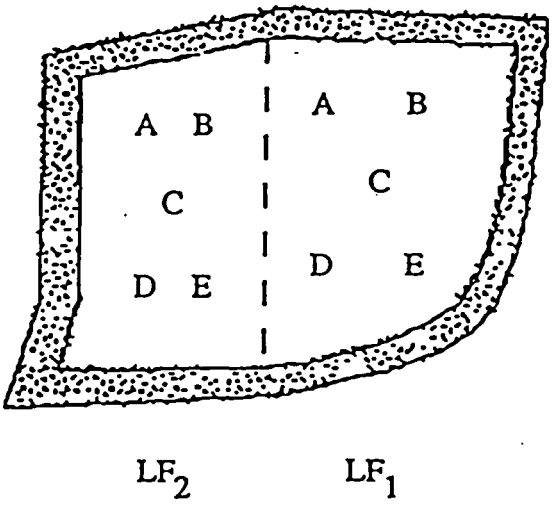


GERAGHTY & MILLER, INC.
Environmental Services

GENERALIZED SITE MAP
Southern Wood Piedmont, Wilmington, North Carolina
(Not to Scale)

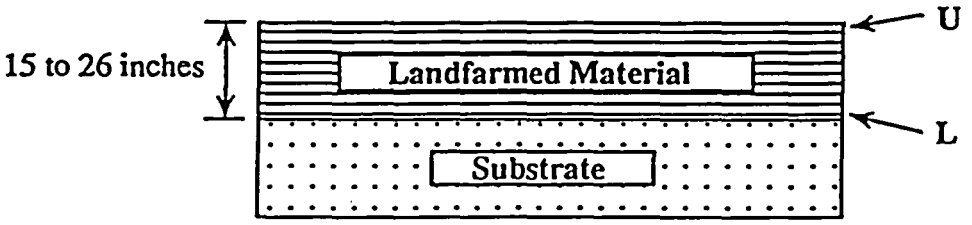
Figure 2-1

Plan View



Soil Sampling Locations in Landfarm Areas 1 and 2 Southern Wood Piedmont, Wilmington

Cross-Sectional View



U Upper soil sample taken approximately 3" below landfarm surface.

L Lower soil sample taken within the bottom 6" of the landfarmed material.

GERAGHTY & MILLER, INC. *Environmental Services*	Soil Sampling Locations within the Landfarm Areas at Southern Wood Piedmont's Former Wood-Treatment Facility - Wilmington, North Carolina (Not to Scale)	Figure 3-1

APPENDIX A
1991 DATA SHEETS
SOUTHERN WOOD PIEDMONT FACILITY, WILMINGTON, NORTH CAROLINA

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

RECEIVED
DEC 13 1991
G & M RALEIGH

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36568-1	MW-6/9673	10-14-91
36568-2	MW-7/9674	10-14-91
36568-3	MW-8/9675	10-14-91

PARAMETER	36568-1	36568-2	36568-3
Semi-Volatiles (8270)			
Naphthalene, ug/l	<10	<10	<10
1-Methylnaphthalene, ug/l	<10	<10	<10
2-Methylnaphthalene, ug/l	<10	<10	<10
1,1-Biphenyl, ug/l	<10	<10	<10
Acenaphthylene, ug/l	<10	<10	<10
Acenaphthene, ug/l	<10	<10	<10
Dibenzofuran, ug/l	<10	<10	<10
Fluorene, ug/l	<10	<10	<10
Phenanthrene, ug/l	<10	<10	<10
Anthracene, ug/l	<10	<10	<10
Carbazole, ug/l	<10	<10	<10
Pyrene, ug/l	<10	<10	<10
Benzo(a)Anthracene, ug/l	<10	<10	<10
Chrysene, ug/l	<10	<10	<10
Benzo(a)pyrene, ug/l	<10	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10	<10
Pentachlorophenol, ug/l	<50	<50	<50
Fluoranthene, ug/l	<10	<10	<10
2-Chlorophenol, ug/l	<10	<10	<10
Phenol, ug/l	<10	<10	<10
2,4-Dimethylphenol, ug/l	<10	<10	<10

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36568-1	MW-6/9673	10-14-91
36568-2	MW-7/9674	10-14-91
36568-3	MW-8/9675	10-14-91

PARAMETER	36568-1	36568-2	36568-3
Trichlorophenols, ug/l	<10	<10	<10
Cresol (ortho), ug/l	<10	<10	<10
Cresol m & p, ug/l	<10	<10	<10
p-Chloro-m-cresol, ug/l	<10	<10	<10
Tetrachlorophenols, ug/l	<10	<10	<10
2,4-Dinitrophenol, ug/l	<50	<50	<50
Benzo(b,k)fluoranthene, ug/l	<10	<10	<10
Indeno(1,2,3-cd)pyrene, ug/l	<10	<10	<10
Dibenzo(a,h)anthracene, ug/l	<10	<10	<10
Surrogate-2FP (CL 21-110)	46 %	38 %	50 %
Surrogate-PHL (CL 10-110)	38 %	30 %	43 %
Surrogate-NBZ (CL 35-114)	84 %	68 %	91 %
Surrogate-TBP (CL 10-123)	34 %	37 %	54 %
Surrogate-TPH (CL 33-141)	78 %	56 %	72 %
Surrogate-FBP (CL 43-116)	72 %	55 %	70 %
Date Extracted	10.18.91	10.18.91	10.18.91
Date Analyzed	10.23.91	10.24.91	10.24.91
Chloride (325.2)			
Chloride (325.2), mg/l	310	200	130
Date Analyzed	10.22.91	10.23.91	10.22.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36568-1	MW-6/9673	10-14-91
36568-2	MW-7/9674	10-14-91
36568-3	MW-8/9675	10-14-91

PARAMETER	36568-1	36568-2	36568-3
Nitrogen Series			
Total Kjeldahl Nitrogen-N, mg/l	11	8.3	9.7
Nitrate + Nitrite-N, mg/l	<0.050	<0.050	<0.050
Total Nitrogen, mg/l	11	8.3	9.7
Date Analyzed	10.23.91	10.23.91	10.23.91
Total Phosphorus (365.1)			
Total Phosphorus, mg/l	2.0	0.72	0.78
Date Analyzed	10.23.91	10.23.91	10.23.91
Total Organic Carbon (415.1)			
Total Organic Carbon , mg/l	16	22	27
Date Analyzed	10.15.91	10.15.91	10.15.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36568-4	MW-9/9676	10-14-91

PARAMETER	36568-4
Semi-Volatiles (8270)	
Naphthalene, ug/l	<10
1-Methylnaphthalene, ug/l	<10
2-Methylnaphthalene, ug/l	<10
1,1-Biphenyl, ug/l	<10
Acenaphthylene, ug/l	<10
Acenaphthene, ug/l	<10
Dibenzofuran, ug/l	<10
Fluorene, ug/l	<10
Phenanthrene, ug/l	<10
Anthracene, ug/l	<10
Carbazole, ug/l	<10
Pyrene, ug/l	<10
Benzo(a)Anthracene, ug/l	<10
Chrysene, ug/l	<10
Benzo(a)pyrene, ug/l	<10
Benzo(g,h,i)perylene, ug/l	<10
Pentachlorophenol, ug/l	<50
Fluoranthene, ug/l	<10
2-Chlorophenol, ug/l	<10
Phenol, ug/l	<10
2,4-Dimethylphenol, ug/l	<10
Trichlorophenols, ug/l	<10
Cresol (ortho), ug/l	<10

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36568-4	MW-9/9676	10-14-91

PARAMETER	36568-4
Cresol m & p, ug/l	<10
p-Chloro-m-cresol, ug/l	<10
Tetrachlorophenols, ug/l	<10
2,4-Dinitrophenol, ug/l	<50
Benzo(b,k)fluoranthene, ug/l	<10
Indeno(1,2,3-cd)pyrene, ug/l	<10
Dibenzo(a,h)anthracene, ug/l	<10
Surrogate-2FP (CL 21-110)	47 %
Surrogate-PHL (CL 10-110)	37 %
Surrogate-NBZ (CL 35-114)	86 %
Surrogate-TBP (CL 10-123)	50 %
Surrogate-TPH (CL 33-141)	68 %
Surrogate-FBP (CL 43-116)	69 %
Date Extracted	10.18.91
Date Analyzed	10.24.91
Suspended Solids (160.2)	
Suspended Solids, mg/l	<5.0
Date Analyzed	10.17.91
Chloride (325.2)	
Chloride (325.2), mg/l	120
Date Analyzed	10.22.91
Nitrogen Series	
Total Kjeldahl Nitrogen-N, mg/l	6.3
Nitrate + Nitrite-N, mg/l	<0.050
Total Nitrogen, mg/l	6.3
Date Analyzed	10.23.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36568-4	MW-9/9676	10-14-91

PARAMETER	36568-4
Total Phosphorus (365.1)	
Total Phosphorus, mg/l	0.89
Date Analyzed	10.23.91
Total Organic Carbon (415.1)	
Total Organic Carbon , mg/l	20
Date Analyzed	10.15.91
Copper (6010)	
Copper, mg/l	<0.025
Date Analyzed	10.23.91
Chromium (6010)	
Chromium, mg/l	<0.010
Date Analyzed	10.23.91
Arsenic (7060)	
Arsenic, mg/l	<0.010
Date Analyzed	10.30.91

Laboratory locations In Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36568-5	RB-1	10-14-91
36568-6	FB-1	10-14-91

PARAMETER	36568-5	36568-6
Semi-Volatiles (8270)		
Naphthalene, ug/l	<10	<10
1-Methylnaphthalene, ug/l	<10	<10
2-Methylnaphthalene, ug/l	<10	<10
1,1-Biphenyl, ug/l	<10	<10
Acenaphthylene, ug/l	<10	<10
Acenaphthene, ug/l	<10	<10
Dibenzofuran, ug/l	<10	<10
Fluorene, ug/l	<10	<10
Phenanthrene, ug/l	<10	<10
Anthracene, ug/l	<10	<10
Carbazole, ug/l	<10	<10
Pyrene, ug/l	<10	<10
Benzo(a)Anthracene, ug/l	<10	<10
Chrysene, ug/l	<10	<10
Benzo(a)pyrene, ug/l	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10
Pentachlorophenol, ug/l	<50	<50
Fluoranthene, ug/l	<10	<10
2-Chlorophenol, ug/l	<10	<10
Phenol, ug/l	<10	<10
2,4-Dimethylphenol, ug/l	<10	<10
Trichlorophenols, ug/l	<10	<10

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.
102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36568-5	RB-1	10-14-91
36568-6	FB-1	10-14-91

PARAMETER	36568-5	36568-6
Cresol (ortho), ug/l	<10	<10
Cresol m & p, ug/l	<10	<10
p-Chloro-m-cresol, ug/l	<10	<10
Tetrachlorophenols, ug/l	<10	<10
2,4-Dinitrophenol, ug/l	<50	<50
Benzo(b,k)fluoranthene, ug/l	<10	<10
Indeno(1,2,3-cd)pyrene, ug/l	<10	<10
Dibenzo(a,h)anthracene, ug/l	<10	<10
Surrogate-2FP (CL 21-110)	37 %	37 %
Surrogate-PHL (CL 10-110)	26 %	26 %
Surrogate-NBZ (CL 35-114)	79 %	81 %
Surrogate-TBP (CL 10-123)	74 %	76 %
Surrogate-TPH (CL 33-141)	82 %	76 %
Surrogate-FBP (CL 43-116)	77 %	78 %
Date Extracted	10.18.91	10.18.91
Date Analyzed	10.24.91	10.24.91
pH (150.1)		
pH, units	5.4	5.0
Date Analyzed	10.15.91	10.15.91
Chloride (325.2)		
Chloride (325.2), mg/l	<1.0	<1.0
Date Analyzed	10.22.91	10.22.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36568-5	RB-1	10-14-91
36568-6	FB-1	10-14-91

PARAMETER	36568-5	36568-6
Nitrogen Series		
Total Kjeldahl Nitrogen-N, mg/l	<0.10	<0.10
Nitrate + Nitrite-N, mg/l	<0.050	<0.050
Total Nitrogen, mg/l	<0.15	<0.15
Date Analyzed	10.24.91	10.24.91
Total Phosphorus (365.1)		
Total Phosphorus, mg/l	<0.10	<0.10
Date Analyzed	10.24.91	10.24.91
Total Organic Carbon (415.1)		
Total Organic Carbon , mg/l	1.8	2.3
Date Analyzed	10.15.91	10.15.91
Copper (6010)		
Copper, mg/l	<0.025	<0.025
Date Analyzed	10.23.91	10.23.91
Chromium (6010)		
Chromium, mg/l	<0.010	<0.010
Date Analyzed	10.23.91	10.23.91
Arsenic (7060)		
Arsenic, mg/l	<0.010	<0.010
Date Analyzed	10.30.91	10.30.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

3102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-7	Detection Limits
36568-8	Method Blank (MB) Results
36568-9	Lab Control Standard (LCS) Result
36568-10	LCS Expected Value
36568-11	LCS % Recovery

PARAMETER	36568-7	36568-8	36568-9	36568-10	36568-11
Semi-Volatiles (8270)					
Naphthalene, ug/l	10	<10	101	100	101 %
1-Methylnaphthalene, ug/l	10	<10	---	---	---
2-Methylnaphthalene, ug/l	10	<10	---	---	---
1,1-Biphenyl, ug/l	10	<10	---	---	---
Acenaphthylene, ug/l	10	<10	114	100	114 %
Acenaphthene, ug/l	10	<10	105	100	105 %
Dibenzofuran, ug/l	10	<10	---	---	---
Fluorene, ug/l	10	<10	---	---	---
Phenanthrene, ug/l	10	<10	92	100	92 %
Anthracene, ug/l	10	<10	96	100	96 %
Carbazole, ug/l	10	<10	---	---	---
Pyrene, ug/l	10	<10	---	---	---
Benzo(a)Anthracene, ug/l	10	<10	87	100	87 %
Chrysene, ug/l	10	<10	83	100	83 %
Benzo(a)pyrene, ug/l	10	<10	79	100	79 %
Benzo(g,h,i)perylene, ug/l	10	<10	---	---	---
Pentachlorophenol, ug/l	50	<50	69	100	69 %
Fluoranthene, ug/l	10	<10	98	100	98 %
2-Chlorophenol, ug/l	10	<10	92	100	92 %

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-7	Detection Limits
36568-8	Method Blank (MB) Results
36568-9	Lab Control Standard (LCS) Result
36568-10	LCS Expected Value
36568-11	LCS % Recovery

PARAMETER	36568-7	36568-8	36568-9	36568-10	36568-11
Phenol, ug/l	10	<10	36	100	36 %
2,4-Dimethylphenol, ug/l	10	<10	90	100	90 %
Trichlorophenols, ug/l	10	<10	83	100	83 %
Cresol (ortho), ug/l	10	<10	---	---	---
Cresol m & p, ug/l	10	<10	---	---	---
p-Chloro-m-cresol, ug/l	10	<10	90	100	90 %
Tetrachlorophenols, ug/l	10	<10	109	100	109 %
2,4-Dinitrophenol, ug/l	50	<50	52	100	52 %
Benzo(b,k)fluoranthene, ug/l	10	<10	82	100	82 %
Indeno(1,2,3-cd)pyrene, ug/l	10	<10	79	100	79 %
Dibenzo(a,h)anthracene, ug/l	10	<10	74	100	74 %
Surrogate-2FP (CL 21-110)	---	57 %	53 %	---	---
Surrogate-PHL (CL 10-110)	---	41 %	39 %	---	---
Surrogate-NBZ (CL 35-114)	---	106 %	99 %	---	---
Surrogate-TBP (CL 10-123)	---	69 %	64 %	---	---
Surrogate-TPH (CL 33-141)	---	101 %	93 %	---	---
Surrogate-FBP (CL 43-116)	---	94 %	89 %	---	---
Date Extracted	---	10.18.91	10.18.91	---	---
Date Analyzed	---	10.23.91	10.28.91	---	---
Suspended Solids (160.2)					
Suspended Solids, mg/l	5.0	<5.0	92	100	92 %
Date Analyzed	---	10.17.91	10.17.91	---	---

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-7	Detection Limits
36568-8	Method Blank (MB) Results
36568-9	Lab Control Standard (LCS) Result
36568-10	LCS Expected Value
36568-11	LCS % Recovery

PARAMETER	36568-7	36568-8	36568-9	36568-10	36568-11
pH (150.1)					
pH, units	---	---	---	---	---
Chloride (325.2)					
Chloride (325.2), mg/l	1.0	<1.0	7.46	7.7	97 %
Date Analyzed	---	10.22.91	10.22.91	---	---
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/l	0.10	<0.10	0.43	0.50	86 %
Nitrate + Nitrite-N, mg/l	0.050	<0.050	0.397	0.375	106 %
Total Nitrogen, mg/l	0.15	<0.15	---	---	---
Date Analyzed	---	10.23.91	10.23.91	---	---
Total Phosphorus (365.1)					
Total Phosphorus, mg/l	0.10	<0.10	0.702	0.75	94 %
Date Analyzed	---	10.23.91	10.23.91	---	---
Total Organic Carbon (415.1)					
Total Organic Carbon , mg/l	1.0	<1.0	22.4	23.0	97 %
Date Analyzed	---	10.15.91	10.15.91	---	---
Copper (6010)					
Copper, mg/l	0.025	<0.025	0.981	1.00	98 %
Date Analyzed	---	10.23.91	10.23.91	---	---
Chromium (6010)					
Chromium, mg/l	0.010	<0.010	0.993	1.01	98 %
Date Analyzed	---	10.23.91	10.23.91	---	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-7	Detection Limits
36568-8	Method Blank (MB) Results
36568-9	Lab Control Standard (LCS) Result
36568-10	LCS Expected Value
36568-11	LCS % Recovery

PARAMETER	36568-7	36568-8	36568-9	36568-10	36568-11
Arsenic (7060)					
Arsenic, mg/l	0.010	<0.010	0.051	50	102 %
Date Analyzed	---	10.30.91	10.30.91	---	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-12	LCS % Recovery Limits
36568-13	Matrix Spike (MS) Result/Duplicate
36568-14	MS Expected Value
36568-15	MS % Recovery/Duplicate
36568-16	MS % Recovery Limits

PARAMETER	36568-12	36568-13	36568-14	36568-15	36568-16
Semi-Volatiles (8270)					
Naphthalene, ug/l	21-133 %	100/100	100	100/100 %	21-133 %
Acenaphthylene, ug/l	33-145 %	108/108	100	108/108 %	33-145 %
Acenaphthene, ug/l	47-145 %	100/100	100	100/100 %	47-145 %
Phenanthrene, ug/l	54-120 %	92/92	100	92/92 %	54-120 %
Anthracene, ug/l	27-133 %	92/92	100	92/92 %	27-133 %
Benzo(a)Anthracene, ug/l	33-143 %	44/44	100	44/44 %	33-143 %
Chrysene, ug/l	17-168 %	80/80	100	80/80 %	17-168 %
Benzo(a)pyrene, ug/l	17-163 %	28/28	100	28/28 %	17-163 %
Pentachlorophenol, ug/l	14-176 %	31/29	100	31/29 %	14-176 %
Fluoranthene, ug/l	26-137 %	88/88	100	88/88 %	26-137 %
2-Chlorophenol, ug/l	23-134 %	32/36	100	32/36 %	23-134 %
Phenol, ug/l	5-112 %	18/11	100	18/11 %	5-112 %
2,4-Dimethylphenol, ug/l	32-119 %	60/48	100	60/48 %	32-119 %
Trichlorophenols, ug/l	37-144 %	128/112	100	128/112 %	37-144 %
p-Chloro-m-cresol, ug/l	22-147 %	56/44	100	56/44 %	22-147 %
Tetrachlorophenols, ug/l	10-130 %	15/19	100	15/19 %	10-130 %
2,4-Dinitrophenol, ug/l	10-191 %	11/10	100	11/10 %	10-191 %
Benzo(b,k)fluoranthene, ug/l	24-159 %	68/68	100	68/68 %	24-159 %
Indeno(1,2,3-cd)pyrene, ug/l	10-171 %	32/32	100	32/32 %	10-171 %

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-12	LCS % Recovery Limits
36568-13	Matrix Spike (MS) Result/Duplicate
36568-14	MS Expected Value
36568-15	MS % Recovery/Duplicate
36568-16	MS % Recovery Limits

PARAMETER	36568-12	36568-13	36568-14	36568-15	36568-16
Dibenzo(a,h)anthracene, ug/l	10-227 %	26/28	100	26/28 %	10-227 %
Surrogate-2FP (CL 21-110)	---	35/21	100	35/21 %	21-110 %
Surrogate-PHL (CL 10-110)	---	23/15	100	23/15 %	10-110 %
Surrogate-NBZ (CL 35-114)	---	51/50	50	102/100 %	35-114 %
Surrogate-TBP (CL 10-123)	---	57/56	100	57/56 %	35-114 %
Surrogate-TPH (CL 33-141)	---	43/44.5	50	86/89 %	33-141 %
Surrogate-FBP (CL 43-116)	---	45/44.5	50	90/89 %	43-116 %
Date Extracted	---	10.18.91	---	---	---
Date Analyzed	---	10.23.91	---	---	---
Suspended Solids (160.2)					
Suspended Solids, mg/l	75-125 %	---	---	---	---
Date Analyzed	---	---	---	---	---
pH (150.1)					
pH, units	---	---	---	---	---
Chloride (325.2)					
Chloride (325.2), mg/l	90-110 %	5.17/5.08	5.0	103/102 %	75-125 %
Date Analyzed	---	10.22.91	---	---	---
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/l	75-125 %	1.14/1.21	1.0	114/121 %	75-125 %
Nitrate + Nitrite-N, mg/l	90-110 %	.208/.204	0.20	104/102 %	75-125 %
Date Analyzed	---	10.23.91	---	---	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1 36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-12	LCS % Recovery Limits
36568-13	Matrix Spike (MS) Result/Duplicate
36568-14	MS Expected Value
36568-15	MS % Recovery/Duplicate
36568-16	MS % Recovery Limits

PARAMETER	36568-12	36568-13	36568-14	36568-15	36568-16
Total Phosphorus (365.1)					
Total Phosphorus, mg/l	60-140 %	0.89/0.92	1.0	89/92 %	60-140 %
Date Analyzed	---	10.23.91	---	---	---
Total Organic Carbon (415.1)					
Total Organic Carbon , mg/l	60-140 %	103/105	100	103/105 %	60-140 %
Date Analyzed	---	10.15.91	---	---	---
Copper (6010)					
Copper, mg/l	75-125 %	.991/.947	1.00	99/95 %	75-125 %
Date Analyzed	---	10.23.91	---	---	---
Chromium (6010)					
Chromium, mg/l	75-125 %	.949/.995	1.01	95/99 %	75-125 %
Date Analyzed	---	10.23.91	---	---	---
Arsenic (7060)					
Arsenic, mg/l	75-125 %	51/51	50	102/102 %	75-125 %
Date Analyzed	---	10.30.91	---	---	---

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-22	CCVS Result
36568-23	CCVS % Recovery

PARAMETER	36568-22	36568-23
Arsenic (7060)		
Arsenic, mg/l	48	96 %
Date Analyzed	10.30.91	---
Chromium (6010)		
Chromium, mg/l	0.989	98 %
Date Analyzed	10.23.91	---
Copper (6010)		
Copper, mg/l	0.969	97 %
Date Analyzed	10.23.91	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1 36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-24	CCVS Result
36568-25	CCVS % Recovery

PARAMETER	36568-24	36568-25
Arsenic (7060)		
Arsenic, mg/l	47.1	94 %
Date Analyzed	10.30.91	---
Chromium (6010)		
Chromium, mg/l	1.01	100 %
Date Analyzed	10.23.91	---
Copper (6010)		
Copper, mg/l	0.998	100 %
Date Analyzed	10.23.91	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-26	CCVS Result
36568-27	CCVS % Recovery
36568-28	CCVS Result
36568-29	CCVS % Recovery
36568-30	CCVS Result

PARAMETER	36568-26	36568-27	36568-28	36568-29	36568-30
Chromium (6010)					
Chromium, mg/l	1.02	101 %	0.991	98 %	0.966
Date Analyzed	10.23.91	---	10.23.91	---	10.23.91
Copper (6010)					
Copper, mg/l	1.00	100 %	0.977	98 %	0.957
Date Analyzed	10.23.91	---	10.23.91	---	10.23.91

Methods: EPA SW-846

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-31	CCVS % Recovery
36568-32	CCVS Result
36568-33	CCVS % Recovery

PARAMETER	36568-31	36568-32	36568-33
Chromium (6010)			
Chromium, mg/l	96 %	0.940	93 %
Date Analyzed	---	10.23.91	---
Copper (6010)			
Copper, mg/l	96 %	0.944	94 %
Date Analyzed	---	10.23.91	---

Methods: EPA SW-846

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36568-34	MS % RPD (Limit)

PARAMETER	36568-34
Chloride (325.2)	
Chloride (325.2)	.97(<30) %
Nitrogen Series	
Total Kjeldahl Nitrogen-N	6.0(<30) %
Nitrate + Nitrite-N	1.9(<30) %
Total Phosphorus (365.1)	
Total Phosphorus	3.3(<40) %
Total Organic Carbon (415.1)	
Total Organic Carbon	1.9(<40) %
Copper (6010)	
Copper	4.1(<20) %
Chromium (6010)	
Chromium	4.1(<20) %
Arsenic (7060)	
Arsenic	0(<20) %

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36568

Received: 15 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

36568-34 MS % RPD (Limit)

PARAMETER	36568-34
Semi-Volatiles (8270)	
Naphthalene	0(<40) %
Acenaphthylene	0(<40) %
Acenaphthene	0(<31) %
Phenanthrene	0(<40) %
Anthracene	0(<40) %
Benzo(a)Anthracene	0(<40) %
Chrysene	0(<48) %
Benzo(a)pyrene	0(<40) %
Pentachlorophenol	6.7(<50) %
Fluoranthene	0(<40) %
2-Chlorophenol	12(<40) %
Phenol	48(<42) %
2,4-Dimethylphenol	22(<40) %
Trichlorophenols	13(<50) %
p-Chloro-m-cresol	24(<40) %
Tetrachlorophenols	24(<50) %
2,4-Dinitrophenol	9.5(<50) %
Benzo(b,k)fluoranthene	0(<40) %
Indeno(1,2,3-cd)pyrene	0(<45) %
Dibenzo(a,h)anthracene	7.4(<70) %

J. W. Andrews

J. W. Andrews, Ph. D.

GEOGHEGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. N/A

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number NC09005

Project Location SWP Wilmington, NC

Laboratory SAVANNAH LABORATORIES

Sampler(s)/Affiliation M. RADECKE (G&M)
P. JACOBS (G&M)

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	1 Liter amber glass Semi volatile Constituents (8270) 4°C	100ml plastic TSS 4°C	100ml plastic pH 4°C	100ml plastic Cl⁻ 4°C	250ml plastic TP TP 4°C	125ml amber glass TOC 4°C H2SO4	250ml plastic Cu/Cr/As metals 4°C HNO3			TOTAL
MW-6/9673	L	10-14-91 17:20		1	X MR		1	1	1				4
MW-7/9674	L	10-14-91 15:38		1			1	1	1				4
MW-8/9675	L	10-14-91 15:18		1			1	1	1				4
MW-9/9676	L	10-14-91 13:10		1	1		1	1	1	1			6
RB-1	L	10-14-91 16:50		1		1	1	1	1	1			6
FB-1	L	10-14-91 16:50		1		1	1	1	1	1			6

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 30

Relinquished by: Mark E. Radecke Organization: Geoghegty & Miller, Inc. Date 10-14-91 Time 19:00
Received by: Organization: Date / / Time

Seal Intact? Yes No N/A

Relinquished by: Organization:
Received by: L. Johnson SC#36568 Organization: SAV LABS Date 10/15/91 Time 9:30

Seal Intact? (Yes) No N/A

Special Instructions/Remarks: MW-9/9676 constituents were sampled at 13:10 with the exception of TSS and Cu, Cr & As which were sampled at 16:10

Delivery Method: ☐ In Person ☒ Common Carrier FEDERAL EXPRESS ☐ Lab Courier ☐ Other SPECIFY

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

RECEIVED
DEC 11 1991
G & M RALEIGH

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-1	LF1AUS/9663A	10-15-91
36592-2	LF1ALS/9663B	10-15-91
36592-3	LF1DUS/9666A	10-15-91
36592-4	LF1DLS/9666B	10-15-91
36592-5	LF1CUS/9665A	10-15-91

PARAMETER	36592-1	36592-2	36592-3	36592-4	36592-5
Semi-Volatiles (8270)					
Naphthalene, mg/kg dw	2.8	0.56J	1.0	0.088J	3.4J
1-Methylnaphthalene, mg/kg dw	0.22J	0.17J	0.14J	0.070J	4.0J
2-Methylnaphthalene, mg/kg dw	2.7	0.29J	1.1	0.067J	6.4J
1,1-Biphenyl, mg/kg dw	0.42	0.092J	0.24J	0.022J	0.90J
Acenaphthylene, mg/kg dw	3.8	0.59J	1.4	0.13J	2.1J
Acenaphthene, mg/kg dw	0.95	1.9J	0.36	0.18J	0.62J
Dibenzofuran, mg/kg dw	2.7	0.89J	1.6	0.21J	5.6J
Fluorene, mg/kg dw	6.9	2.4J	4.9	0.21J	14
Phenanthrene, mg/kg dw	16	15	7.7	3.3	21
Anthracene, mg/kg dw	54	5.7	36	1.0	140
Carbazole, mg/kg dw	23	1.1J	8.2	0.98	38
Pyrene, mg/kg dw	20	69	28	5.7	34
Benzo(a)Anthracene, mg/kg dw	11	24	15	2.1	11
Chrysene, mg/kg dw	12	28	18	3.0	15
Benzo(a)pyrene, mg/kg dw	13	14	11	1.8	14
Benzo(g,h,i)perylene, mg/kg dw	7.4	6.5	2.1	0.70	6.4J
Pentachlorophenol, mg/kg dw	1.2	3.9J	0.79J	<1.8	<39
Fluoranthene, mg/kg dw	22	77	24	4.7	15
2-Chlorophenol, mg/kg dw	<0.38	<3.7	<0.36	<0.35	<7.8

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

3102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-1	LF1AUS/9663A	10-15-91
36592-2	LF1ALS/9663B	10-15-91
36592-3	LF1DUS/9666A	10-15-91
36592-4	LF1DLS/9666B	10-15-91
36592-5	LF1CUS/9665A	10-15-91

PARAMETER	36592-1	36592-2	36592-3	36592-4	36592-5
Phenol, mg/kg dw	<0.38	<3.7	<0.36	<0.35	<7.8
2,4-Dimethylphenol, mg/kg dw	0.06J	<3.7	0.028J	<0.35	0.86J
Trichlorophenols, mg/kg dw	<0.38	<3.7	<0.36	<0.35	<7.8
Cresol (ortho), mg/kg dw	<0.38	<3.7	<0.36	<0.35	0.023J
Cresol m & p, mg/kg dw	0.044J	<3.7	<0.36	<0.35	<7.8
p-Chloro-m-cresol, mg/kg dw	<0.38	<3.7	<0.36	<0.35	<7.8
Tetrachlorophenols, mg/kg dw	0.19J	<3.7	<0.36	<0.35	<7.8
2,4-Dinitrophenol, mg/kg dw	<1.9	<19	<1.8	<1.8	<39
Benzo(b,k)fluoranthene, mg/kg dw	30	36	32	3.4	43
Indeno(1,2,3-cd)pyrene, mg/kg dw	9.6	9.2	4.4	0.74	7.9
Dibenzo(a,h)anthracene, mg/kg dw	3.4	2.9J	1.1	0.26J	<7.8
Surrogate-2FP (CL 25-121)	66 %	*F33	60 %	72 %	64 %
Surrogate-PHL (CL 24-113)	59 %	*F33	54 %	75 %	78 %
Surrogate-NBZ (CL 23-120)	54 %	*F33	60 %	78 %	68 %
Surrogate-TBP (CL 19-122)	70 %	*F33	71 %	58 %	83 %
Surrogate-TPH (CL 18-137)	159 %	*F33	179 %	119 %	120 %
Surrogate-FBP (CL 30-115)	65 %	*F33	65 %	75 %	61 %
Date Extracted	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Date Analyzed	10.21-22	10.23-25	10.21-25	10.21-25	10.21-25
Arsenic (7060)					
Arsenic, mg/kg dw	6.5	23	4.9	15	2.5
Date Analyzed	10.29.91	10.30.91	10.29.91	10.30.91	10.29.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-1	LF1AUS/9663A	10-15-91
36592-2	LF1ALS/9663B	10-15-91
36592-3	LF1DUS/9666A	10-15-91
36592-4	LF1DLS/9666B	10-15-91
36592-5	LF1CUS/9665A	10-15-91

PARAMETER	36592-1	36592-2	36592-3	36592-4	36592-5
Chromium (6010)					
Chromium, mg/kg dw	6.2	14	5.5	1.9	12
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Copper (6010)					
Copper, mg/kg dw	37	70	22	12	39
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	1500	980	1200	290	1100
Nitrate + Nitrite-N, mg/kg dw	<5.8	<5.6	14	6.3	7.0
Total Nitrogen, mg/kg dw	1500	980	1200	300	1100
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Total Phosphorus (365.1)					
Total Phosphorus, mg/kg dw	730	980	700	240	1000
Date Analyzed	10.31.91	10.31.91	10.31.91	10.31.91	10.31.91
Total Organic Carbon (415.1)					
Total Organic Carbon , mg/kg dw	33000	24000	21000	5000	35000
Date Analyzed	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Chloride (325.2)					
Chloride (325.2), mg/kg dw	<23	<22	<22	<22	<24
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-1	LF1AUS/9663A	10-15-91
36592-2	LF1ALS/9663B	10-15-91
36592-3	LF1DUS/9666A	10-15-91
36592-4	LF1DLS/9666B	10-15-91
36592-5	LF1CUS/9665A	10-15-91

PARAMETER	36592-1	36592-2	36592-3	36592-4	36592-5
[illegible] in Soil (9045)					
pH-soil (9045), units	6.3	6.9	6.3	6.7	6.6
Date Analyzed	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Percent Solids, %	86	89	92	94	84

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-6	LF1CLS/9665B	10-15-91
36592-7	LF1EUS/9667A	10-15-91
36592-8	LF1ELS/9667B	10-15-91
36592-9	LF1BUS/9664A	10-15-91
36592-10	LF1BLS/9664B	10-15-91

PARAMETER	36592-6	36592-7	36592-8	36592-9	36592-10
Semi-Volatiles (8270)					
Naphthalene, mg/kg dw	0.23J	4.7J	0.13J	1.1J	0.27J
1-Methylnaphthalene, mg/kg dw	0.097J	0.56J	0.063J	0.27J	0.11J
2-Methylnaphthalene, mg/kg dw	0.14J	7.7	0.11J	0.93J	0.18J
1,1-Biphenyl, mg/kg dw	0.040J	2.1J	0.028J	0.23J	0.066J
Acenaphthylene, mg/kg dw	0.58	1.4J	0.35	1.7J	4.1J
Acenaphthene, mg/kg dw	0.15J	0.78J	0.070J	0.52J	1.1J
Dibenzofuran, mg/kg dw	0.18J	9.3	0.14J	1.2J	0.31J
Fluorene, mg/kg dw	0.20J	25	0.18J	2.6J	1.1J
Phenanthrene, mg/kg dw	1.4	34	0.98	6.4	17
Anthracene, mg/kg dw	2.3	350	1.8	23	16
Carbazole, mg/kg dw	0.97	98	1.1	7.0	5.4J
Pyrene, mg/kg dw	10	25	4.2	18	62
Benzo(a)Anthracene, mg/kg dw	5.7	9.6	2.0	10	31
Chrysene, mg/kg dw	8.9	3.6J	2.9	13	36
Benzo(a)pyrene, mg/kg dw	4.1	11	1.5	11	21
Benzo(g,h,i)perylene, mg/kg dw	1.8	4.3J	0.60	4.6	9.1
Pentachlorophenol, mg/kg dw	1.3J	<37	0.70J	1.6J	4.3J
Fluoranthene, mg/kg dw	12	22	3.7	17	72
2-Chlorophenol, mg/kg dw	<0.36	<7.4	<0.35	<3.7	<7.4

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-6	LF1CLS/9665B	10-15-91
36592-7	LF1EUS/9667A	10-15-91
36592-8	LF1ELS/9667B	10-15-91
36592-9	LF1BUS/9664A	10-15-91
36592-10	LF1BLS/9664B	10-15-91

PARAMETER	36592-6	36592-7	36592-8	36592-9	36592-10
Phenol, mg/kg dw	<0.36	<7.4	<0.35	<3.7	<7.4
2,4-Dimethylphenol, mg/kg dw	0.050J	0.14J	<0.35	<3.7	0.057J
Trichlorophenols, mg/kg dw	<0.36	<7.4	<0.35	<3.7	<7.4
Cresol (ortho), mg/kg dw	<0.36	<7.4	<0.35	<3.7	<7.4
Cresol m & p, mg/kg dw	<0.36	<7.4	<0.35	<3.7	0.047J
p-Chloro-m-cresol, mg/kg dw	<0.36	<7.4	<0.35	<3.7	<7.4
Tetrachlorophenols, mg/kg dw	0.13J	<7.4	0.045J	0.31J	0.44J
2,4-Dinitrophenol, mg/kg dw	<1.8	<37	<1.8	<19	<37
Benzo(b,k)fluoranthene, mg/kg dw	18	30	4.4	31	61
Indeno(1,2,3-cd)pyrene, mg/kg dw	1.9	5.3J	0.70	5.6	12
Dibenzo(a,h)anthracene, mg/kg dw	0.58	<7.4	<0.35	<3.7	2.3J
Surrogate-2FP (CL 25-121)	54 %	72 %	73 %	80 %	48 %
Surrogate-PHL (CL 24-113)	47 %	81 %	54 %	83 %	36 %
Surrogate-NBZ (CL 23-120)	56 %	76 %	66 %	80 %	36 %
Surrogate-TBP (CL 19-122)	64 %	168 %	77 %	99 %	50 %
Surrogate-TPH (CL 18-137)	93 %	127 %	111 %	156 %	137 %
Surrogate-FBP (CL 30-115)	60 %	71 %	87 %	84 %	46 %
Date Extracted	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Date Analyzed	10.22-23	10.22-25	10.22-25	10.22/25	10.21/22
Arsenic (7060)					
Arsenic, mg/kg dw	4.9	6.9	9.9	7.9	13
Date Analyzed	10.30.91	10.29.91	10.30.91	10.31.91	10.30.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-6	LF1CLS/9665B	10-15-91
36592-7	LF1EUS/9667A	10-15-91
36592-8	LF1ELS/9667B	10-15-91
36592-9	LF1BUS/9664A	10-15-91
36592-10	LF1BLS/9664B	10-15-91

PARAMETER	36592-6	36592-7	36592-8	36592-9	36592-10
Chromium (6010)					
Chromium, mg/kg dw	5.4	6.7	2.8	8.2	7.9
Date Analyzed	10.30.91	10.30.91	10.31.91	10.30.91	10.30.91
Copper (6010)					
Copper, mg/kg dw	38	44	17	30	35
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	1000	1600	300	5000	1000
Nitrate + Nitrite-N, mg/kg dw	<5.4	<5.7	<5.3	<5.7	<5.7
Total Nitrogen, mg/kg dw	1000	1600	300	5000	1000
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Total Phosphorus (365.1)					
Total Phosphorus, mg/kg dw	520	1300	270	920	460
Date Analyzed	10.31.91	10.31.91	10.31.91	10.31.91	10.31.91
Total Organic Carbon (415.1)					
Total Organic Carbon , mg/kg dw	16000	31000	5900	27000	22000
Date Analyzed	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Chloride (325.2)					
Chloride (325.2), mg/kg dw	<22	<23	<21	29	<23
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-6	LF1CLS/9665B	10-15-91
36592-7	LF1EUS/9667A	10-15-91
36592-8	LF1ELS/9667B	10-15-91
36592-9	LF1BUS/9664A	10-15-91
36592-10	LF1BLS/9664B	10-15-91

PARAMETER	36592-6	36592-7	36592-8	36592-9	36592-10
pH in Soil (9045)					
pH-soil (9045), units	7.6	7.0	7.4	7.1	7.4
Date Analyzed	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Percent Solids, %	92	88	95	88	88

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-11	LF2BLS/9669B	10-15-91
36592-12	LF2BUS/9669A	10-15-91
36592-13	LF2DUS/9671A	10-15-91
36592-14	LF2DLS/9671B	10-15-91
36592-15	LF2EUS/9672A	10-15-91

PARAMETER	36592-11	36592-12	36592-13	36592-14	36592-15
Semi-Volatiles (8270)					
Naphthalene, mg/kg dw	1.4J	11J	3.4J	14J	3.5J
1-Methylnaphthalene, mg/kg dw	0.29J	0.59J	0.26J	1.6J	0.26J
2-Methylnaphthalene, mg/kg dw	0.88J	16J	4.4J	8.0J	5.1
1,1-Biphenyl, mg/kg dw	0.18J	2.1J	0.64J	2.3J	0.66J
Acenaphthylene, mg/kg dw	2.4J	5.0J	3.7J	5.4J	3.8J
Acenaphthene, mg/kg dw.	1.6J	2.5J	1.3J	92	1.0J
Dibenzofuran, mg/kg dw	1.7J	20	5.0J	21J	5.1
Fluorene, mg/kg dw	2.8J	62	14	59J	13
Phenanthrene, mg/kg dw	13	87	20	91	21
Anthracene, mg/kg dw	19	310	75	170	64
Carbazole, mg/kg dw	6.8	170	34	46J	37
Pyrene, mg/kg dw	25	64	17	980	19
Benzo(a)Anthracene, mg/kg dw	12	25	8.6	130	11
Chrysene, mg/kg dw	15	31	11	150	12
Benzo(a)pyrene, mg/kg dw	9.2	23	12	61J	12
Benzo(g,h,i)perylene, mg/kg dw	5.5	10J	7.0J	6.7J	5.1
Pentachlorophenol, mg/kg dw	10	<98	6.4J	150J	4.1J
Fluoranthene, mg/kg dw	30	78	19	520	20
2-Chlorophenol, mg/kg dw	<3.7	<20	<8.0	<82	<3.9

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
3102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC. Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-11	LF2BLS/9669B	10-15-91
36592-12	LF2BUS/9669A	10-15-91
36592-13	LF2DUS/9671A	10-15-91
36592-14	LF2DLS/9671B	10-15-91
36592-15	LF2EUS/9672A	10-15-91

PARAMETER	36592-11	36592-12	36592-13	36592-14	36592-15
Phenol, mg/kg dw	<3.7	<20	<8.0	2.2J	<3.9
2,4-Dimethylphenol, mg/kg dw	0.037J	<20	<8.0	<82	0.081J
Trichlorophenols, mg/kg dw	0.048J	<20	<8.0	<82	<3.9
Cresol (ortho), mg/kg dw	0.040J	<20	<8.0	<82	0.022J
Cresol m & p, mg/kg dw	<3.7	<20	<8.0	<82	0.087J
p-Chloro-m-cresol, mg/kg dw	<3.7	<20	<8.0	<82	<3.9
Tetrachlorophenols, mg/kg dw	0.52J	<20	0.34J	3.5J	0.47J
2,4-Dinitrophenol, mg/kg dw	<19	<98	<40	<410	<20
Benzo(b,k)fluoranthene, mg/kg dw	21	55	26	190	30
Indeno(1,2,3-cd)pyrene, mg/kg dw	6.8	13J	8.8	18J	7.3
Dibenzo(a,h)anthracene, mg/kg dw	2.6J	3.4J	2.0J	6.6J	2.5J
Surrogate-2FP (CL 25-121)	57 %	63 %	54 %	31 %	59 %
Surrogate-PHL (CL 24-113)	45 %	64 %	48 %	37 %	67 %
Surrogate-NBZ (CL 23-120)	44 %	60 %	50 %	34 %	57 %
Surrogate-TBP (CL 19-122)	59 %	104 %	65 %	164 %	51 %
Surrogate-TPH (CL 18-137)	142 %	210 %	140 %	84 %	127 %
Surrogate-FBP (CL 30-115)	57 %	64 %	56 %	58 %	59 %
Date Extracted	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Date Analyzed	10.21/22	10.21/22	10.21/22	10.23/25	10.21/25
Arsenic (7060)					
Arsenic, mg/kg dw	84	8.3	6.4	22	6.7
Date Analyzed	10.30.91	10.29.91	10.29.91	10.30.91	10.29.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-11	LF2BLS/9669B	10-15-91
36592-12	LF2BUS/9669A	10-15-91
36592-13	LF2DUS/9671A	10-15-91
36592-14	LF2DLS/9671B	10-15-91
36592-15	LF2EUS/9672A	10-15-91

PARAMETER	36592-11	36592-12	36592-13	36592-14	36592-15
Chromium (6010)					
Chromium, mg/kg dw	100	11	7.1	21	7.8
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Copper (6010)					
Copper, mg/kg dw	140	44	35	150	39
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	840	1900	1200	4900	1700
Nitrate + Nitrite-N, mg/kg dw	12	<5.8	<6.0	<6.3	7.2
Total Nitrogen, mg/kg dw	850	1900	1200	4900	1700
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Total Phosphorus (365.1)					
Total Phosphorus, mg/kg dw	440	760	490	610	200
Date Analyzed	10.31.91	10.31.91	10.31.91	10.31.91	10.31.91
Total Organic Carbon (415.1)					
Total Organic Carbon , mg/kg dw	21000	34000	32000	47000	32000
Date Analyzed	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Chloride (325.2)					
Chloride (325.2), mg/kg dw	<23	<23	46	100	<24
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-11	LF2BLS/9669B	10-15-91
36592-12	LF2BUS/9669A	10-15-91
36592-13	LF2DUS/9671A	10-15-91
36592-14	LF2DLS/9671B	10-15-91
36592-15	LF2EUS/9672A	10-15-91

PARAMETER	36592-11	36592-12	36592-13	36592-14	36592-15
pH in Soil (9045)					
pH-soil (9045), units	7.5	6.8	6.9	7.1	6.7
Date Analyzed	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Percent Solids, %	89	86	83	80	85

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-16	LF2ELS/9672B	10-15-91
36592-17	LF2AUS/9668A	10-15-91
36592-18	LF2ALS/9668B	10-15-91
36592-19	LF2CUS/9670A	10-15-91
36592-20	LF2CLS/9670B	10-15-91

PARAMETER	36592-16	36592-17	36592-18	36592-19	36592-20
Semi-Volatiles (8270)					
Naphthalene, mg/kg dw	2.5J	2.2J	0.36J	4.3J	1.9J
1-Methylnaphthalene, mg/kg dw	0.41J	0.22J	0.13J	0.46J	0.34J
2-Methylnaphthalene, mg/kg dw	2.4J	2.1J	0.22J	4.6J	0.85J
1,1-Biphenyl, mg/kg dw	0.59J	0.37J	0.078J	0.91J	0.27J
Acenaphthylene, mg/kg dw	5.0J	5.2	2.4J	4.7J	4.3J
Acenaphthene, mg/kg dw	8.1J	1.0J	0.62J	5.5J	1.7J
Dibenzofuran, mg/kg dw	5.6J	2.6J	0.49J	8.4	2.2J
Fluorene, mg/kg dw	19J	7.1	1.2J	26	7.2J
Phenanthrene, mg/kg dw	45	12	4.1	38	21
Anthracene, mg/kg dw	93	41	9.5	120	84
Carbazole, mg/kg dw	28J	18	3.1J	60	15
Pyrene, mg/kg dw	310	21	25	35	74
Benzo(a)Anthracene, mg/kg dw	63	13	12	17	28
Chrysene, mg/kg dw	69	15	18	20	41
Benzo(a)pyrene, mg/kg dw	29J	16	9.6	20	27
Benzo(g,h,i)perylene, mg/kg dw	8.3J	7.2	3.7J	6.0J	5.6J
Pentachlorophenol, mg/kg dw	19J	3.8J	2.8J	4.6J	22J
Fluoranthene, mg/kg dw	350	20	24	37	83
2-Chlorophenol, mg/kg dw	<37	<4.0	<4.1	<7.6	<9.3

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-16	LF2ELS/9672B	10-15-91
36592-17	LF2AUS/9668A	10-15-91
36592-18	LF2ALS/9668B	10-15-91
36592-19	LF2CUS/9670A	10-15-91
36592-20	LF2CLS/9670B	10-15-91

PARAMETER	36592-16	36592-17	36592-18	36592-19	36592-20
Phenol, mg/kg dw	<37	<4.0	<4.1	<7.6	<9.3
2,4-Dimethylphenol, mg/kg dw	<37	0.092J	0.082J	0.087J	0.12J
Trichlorophenols, mg/kg dw	<37	<4.0	<4.1	<7.6	<9.3
Cresol (ortho), mg/kg dw	<37	0.024J	<4.1	0.028J	0.026J
Cresol m & p, mg/kg dw	<37	0.10J	0.070J	<7.6	<9.3
p-Chloro-m-cresol, mg/kg dw	<37	<4.0	<4.1	<7.6	<9.3
Tetrachlorophenols, mg/kg dw	1.1J	0.48J	0.25J	<7.6	0.85J
2,4-Dinitrophenol, mg/kg dw	<190	<20	<21	<38	<46
Benzo(b,k)fluoranthene, mg/kg dw	90	34	32	37	81
Indeno(1,2,3-cd)pyrene, mg/kg dw	12J	9.2	5.2	9.1	9.8
Dibenzo(a,h)anthracene, mg/kg dw	5.1J	2.0J	1.2J	3.4J	4.0J
Surrogate-2FP (CL 25-121)	57 %	72 %	56 %	65 %	58 %
Surrogate-PHL (CL 24-113)	66 %	74 %	31 %	67 %	54 %
Surrogate-NBZ (CL 23-120)	53 %	65 %	52 %	60 %	60 %
Surrogate-TBP (CL 19-122)	173 %	81 %	57 %	112 %	86 %
Surrogate-TPH (CL 18-137)	199 %	211 %	137 %	195 %	189 %
Surrogate-FBP (CL 30-115)	67 %	79 %	61 %	68 %	62 %
Date Extracted	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Date Analyzed	10.21/23	10.21/25	10.21/25	10.21/25	10.21.91
Arsenic (7060)					
Arsenic, mg/kg dw	9.5	7.9	18	5.6	14
Date Analyzed	10.30.91	10.30.91	10.30.91	10.29.91	10.30.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-16	LF2ELS/9672B	10-15-91
36592-17	LF2AUS/9668A	10-15-91
36592-18	LF2ALS/9668B	10-15-91
36592-19	LF2CUS/9670A	10-15-91
36592-20	LF2CLS/9670B	10-15-91

PARAMETER	36592-16	36592-17	36592-18	36592-19	36592-20
Chromium (6010)					
Chromium, mg/kg dw	15	15	12	6.2	9.8
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Copper (6010)					
Copper, mg/kg dw	51	42	120	41	62
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	1300	1300	1900	1600	1100
Nitrate + Nitrite-N, mg/kg dw	<5.6	6.9	6.1	<5.8	<5.7
Total Nitrogen, mg/kg dw	1300	1300	1900	1600	1100
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91
Total Phosphorus (365.1)					
Total Phosphorus, mg/kg dw	200	580	470	580	280
Date Analyzed	10.31.91	10.31.91	10.31.91	10.31.91	10.31.91
Total Organic Carbon (415.1)					
Total Organic Carbon , mg/kg dw	23000	26000	21000	26000	28000
Date Analyzed	10.17.91	10.17.91	10.17.91	10.18.91	10.18.91
Chloride (325.2)					
Chloride (325.2), mg/kg dw	<22	<24	<24	<23	<22
Date Analyzed	10.30.91	10.30.91	10.30.91	10.30.91	10.30.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
36592-16	LF2ELS/9672B	10-15-91
36592-17	LF2AUS/9668A	10-15-91
36592-18	LF2ALS/9668B	10-15-91
36592-19	LF2CUS/9670A	10-15-91
36592-20	LF2CLS/9670B	10-15-91

PARAMETER	36592-16	36592-17	36592-18	36592-19	36592-20
pH in Soil (9045)					
pH-soil (9045), units	6.9	6.7	6.8	6.4	6.5
Date Analyzed	10.17.91	10.17.91	10.17.91	10.17.91	10.17.91
Percent Solids, %	89	83	82	86	88

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID
36592-21	Detection Limits
36592-22	Method Blank (MB) Result
36592-23	Lab Control Standard (LCS) Result
36592-24	LCS Expected Value
36592-25	LCS % Recovery

PARAMETER	36592-21	36592-22	36592-23	36592-24	36592-25
Semi-Volatiles (8270)					
Naphthalene, mg/kg dw	0.33	<0.33	2.51	3.30	76 %
1-Methylnaphthalene, mg/kg dw	0.33	<0.33	---	---	---
2-Methylnaphthalene, mg/kg dw	0.33	<0.33	---	---	---
1,1-Biphenyl, mg/kg dw	0.33	<0.33	---	---	---
Acenaphthylene, mg/kg dw	0.33	<0.33	2.87	3.30	87 %
Acenaphthene, mg/kg dw	0.33	<0.33	2.41	3.30	73 %
Dibenzofuran, mg/kg dw	0.33	<0.33	---	---	---
Fluorene, mg/kg dw	0.33	<0.33	---	---	---
Phenanthrene, mg/kg dw	0.33	<0.33	2.48	3.30	75 %
Anthracene, mg/kg dw	0.33	<0.33	2.64	3.30	80 %
Carbazole, mg/kg dw	0.33	<0.33	---	---	---
Pyrene, mg/kg dw	0.33	<0.33	---	---	---
Benzo(a)Anthracene, mg/kg dw	0.33	<0.33	2.57	3.30	78 %
Chrysene, mg/kg dw	0.33	<0.33	2.28	3.30	69 %
Benzo(a)pyrene, mg/kg dw	0.33	<0.33	2.77	3.30	84 %
Benzo(g,h,i)perylene, mg/kg dw	0.33	<0.33	---	---	---
Pentachlorophenol, mg/kg dw	1.7	<1.7	1.06	3.30	32 %
Fluoranthene, mg/kg dw	0.33	<0.33	2.41	3.30	73 %
2-Chlorophenol, mg/kg dw	0.33	<0.33	2.87	3.30	87 %

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36592-31	MW-6/9673	10-15-91
36592-32	MW-7/9674	10-15-91
36592-33	MW-8/9675	10-15-91

PARAMETER	36592-31	36592-32	36592-33
Copper (6010)			
Copper, mg/l	<0.025	<0.025	<0.025
Date Analyzed	10.23.91	10.23.91	10.23.91
Chromium (6010)			
Chromium, mg/l	<0.010	<0.010	<0.010
Date Analyzed	10.23.91	10.23.91	10.23.91
Arsenic (7060)			
Arsenic, mg/l	<0.010	<0.010	<0.010
Date Analyzed	10.29.91	10.29.91	10.31.91
Suspended Solids (160.2)			
Suspended Solids, mg/l	34	20	<5.0
Date Analyzed	10.17.91	10.17.91	10.17.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36592-34	RB-2	10-15-91
36592-35	FB-2	10-15-91

PARAMETER	36592-34	36592-35
Chromium (6010)		
Chromium, mg/l	<0.010	<0.010
Date Analyzed	10.23.91	10.23.91
Copper (6010)		
Copper, mg/l	<0.025	<0.025
Date Analyzed	10.24.91	10.23.91
Arsenic (7060)		
Arsenic, mg/l	<0.010	<0.010
Date Analyzed	10.29.91	10.29.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36592-34	RB-2	10-15-91
36592-35	FB-2	10-15-91

PARAMETER	36592-34	36592-35
Semi-Volatiles (8270)		
Naphthalene, ug/l	<10	<10
1-Methylnaphthalene, ug/l	<10	<10
2-Methylnaphthalene, ug/l	<10	<10
1,1-Biphenyl, ug/l	<10	<10
Acenaphthylene, ug/l	<10	<10
Acenaphthene, ug/l	<10	<10
Dibenzofuran, ug/l	<10	<10
Fluorene, ug/l	<10	<10
Phenanthrene, ug/l	<10	<10
Anthracene, ug/l	<10	<10
Carbazole, ug/l	<10	<10
Pyrene, ug/l	<10	<10
Benzo(a)Anthracene, ug/l	<10	<10
Chrysene, ug/l	<10	<10
Benzo(a)pyrene, ug/l	<10	<10
Benzo(g,h,i)perylene, ug/l	<10	<10
Pentachlorophenol, ug/l	<50	<50
Fluoranthene, ug/l	<10	<10
2-Chlorophenol, ug/l	<10	<10
Phenol, ug/l	<10	<10
2,4-Dimethylphenol, ug/l	<10	<10
Trichlorophenols, ug/l	<10	<10

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36592-34	RB-2	10-15-91
36592-35	FB-2	10-15-91

PARAMETER	36592-34	36592-35
Chloride (325.2)		
Chloride (325.2), mg/l	<1.0	<1.0
Date Analyzed	10.22.91	10.22.91
Total Organic Carbon (415.1)		
Total Organic Carbon , mg/l	2.4	2.1
Date Analyzed	10.16.91	10.16.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36592-36	9677	10-15-91

PARAMETER	36592-36
K001 (Method 8270)	
2-Chlorophenol, ug/l	<10
Phenol, ug/l	<10
2,4-Dimethylphenol, ug/l	<10
Trichlorophenols, ug/l	<10
p-Chloro-m-cresol, ug/l	<10
Tetrachlorophenols, ug/l	<10
2,4-Dinitrophenol, ug/l	<50
Pentachlorophenol, ug/l	<50
Naphthalene, ug/l	<10
Acenaphthene, ug/l	<10
Acenaphthylene, ug/l	<10
Phenanthrene, ug/l	<10
Anthracene, ug/l	<10
Fluoranthene, ug/l	<10
Chrysene, ug/l	<10
Benzo(a)Anthracene, ug/l	<10
Benzo(b,k)fluoranthene, ug/l	<10
Benzo(a)pyrene, ug/l	<10
Indeno(1,2,3-cd)pyrene, ug/l	<10
Dibenzo(a,h)anthracene, ug/l	<10
Carbazole, ug/l	<10
Surrogate-2FP (CL 21-110)	55 %
Surrogate-PHL (CL 10-110)	48 %

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
36592-36	9677	10-15-91

PARAMETER	36592-36
Surrogate-NBZ (CL 35-114)	90 %
Surrogate-TBP (CL 10-123)	81 %
Surrogate-TPH (CL 33-141)	79 %
Surrogate-FBP (CL 43-116)	70 %
[illegible]te Extracted	10.22.91
[illegible]te Analyzed	10.28.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-37	Detection Limits
36592-38	Method Blank (MB) Result
36592-39	Lab Control Standard (LCS) Result
36592-40	LCS Expected Value
36592-41	LCS % Recovery

PARAMETER	36592-37	36592-38	36592-39	36592-40	36592-41
per (6010)					
pper, mg/l	0.025	<0.025	0.981	1.00	98 %
Date Analyzed	---	10.23.91	10.23.91	---	---
Chromium (6010)					
Chromium, mg/l	0.010	<0.010	0.993	1.01	98 %
Date Analyzed	---	10.23.91	10.23.91	---	---
Arsenic (7060)					
Arsenic, mg/l	0.010	<0.010	0.057	0.050	114 %
Date Analyzed	---	10.29.91	10.29.91	---	---
Suspended Solids (160.2)					
Suspended Solids, mg/l	5.0	<5.0	92	100	92 %
Date Analyzed	---	10.17.91	10.17.91	---	---

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-37	Detection Limits
36592-38	Method Blank (MB) Result
36592-39	Lab Control Standard (LCS) Result
36592-40	LCS Expected Value
36592-41	LCS % Recovery

PARAMETER	36592-37	36592-38	36592-39	36592-40	36592-41
i-Volatiles (8270)					
phthalene, ug/l	10	<10	101	100	101 %
1-Methylnaphthalene, ug/l	10	<10	---	---	---
2-Methylnaphthalene, ug/l	10	<10	---	---	---
1,1-Biphenyl, ug/l	10	<10	---	---	---
Acenaphthylene, ug/l	10	<10	114	100	114 %
Acenaphthene, ug/l	10	<10	105	100	105 %
Dibenzofuran, ug/l	10	<10	---	---	---
Fluorene, ug/l	10	<10	---	---	---
Phenanthrene, ug/l	10	<10	92	100	92 %
Anthracene, ug/l	10	<10	96	100	96 %
Carbazole, ug/l	10	<10	---	---	---
Pyrene, ug/l	10	<10	---	---	---
Benzo(a)Anthracene, ug/l	10	<10	87	100	87 %
Chrysene, ug/l	10	<10	83	100	83 %
Benzo(a)pyrene, ug/l	10	<10	79	100	79 %
Benzo(g,h,i)perylene, ug/l	10	<10	---	---	---
Pentachlorophenol, ug/l	50	<50	69	100	69 %
Fluoranthene, ug/l	10	<10	98	100	98 %
2-Chlorophenol, ug/l	10	<10	92	100	92 %

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-37	Detection Limits
36592-38	Method Blank (MB) Result
36592-39	Lab Control Standard (LCS) Result
36592-40	LCS Expected Value
36592-41	LCS % Recovery

PARAMETER	36592-37	36592-38	36592-39	36592-40	36592-41
enol, ug/l	10	<10	36	100	36 %
4-Dimethylphenol, ug/l	10	<10	90	100	90 %
Trichlorophenols, ug/l	10	<10	83	100	83 %
Cresol (ortho), ug/l	10	<10	---	---	---
Cresol m & p, ug/l	10	<10	---	---	---
p-Chloro-m-cresol, ug/l	10	<10	90	100	90 %
Tetrachlorophenols, ug/l	10	<10	109	100	109 %
2,4-Dinitrophenol, ug/l	50	<50	52	100	52 %
Benzo(b,k)fluoranthene, ug/l	10	<10	82	100	82 %
Indeno(1,2,3-cd)pyrene, ug/l	10	<10	79	100	79 %
Dibenzo(a,h)anthracene, ug/l	10	<10	74	100	74 %
Surrogate-2FP (CL 21-110)	---	57 %	53 %	---	---
Surrogate-PHL (CL 10-110)	---	41 %	39 %	---	---
Surrogate-NBZ (CL 35-114)	---	106 %	99 %	---	---
Surrogate-TBP (CL 10-123)	---	69 %	64 %	---	---
Surrogate-TPH (CL 33-141)	---	101 %	93 %	---	---
Surrogate-FBP (CL 43-116)	---	94 %	89 %	---	---
Date Extracted	---	10.22.91	10.22.91	---	---
Date Analyzed	---	10.23.91	10.28.91	---	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-37	Detection Limits
36592-38	Method Blank (MB) Result
36592-39	Lab Control Standard (LCS) Result
36592-40	LCS Expected Value
36592-41	LCS % Recovery

PARAMETER	36592-37	36592-38	36592-39	36592-40	36592-41
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/l	0.10	<0.10	0.43	0.50	86 %
Nitrate + Nitrite-N, mg/l	0.050	<0.050	0.397	0.375	106 %
Total Nitrogen, mg/l	0.15	<0.15	---	---	---
Date Analyzed	---	10.23.91	10.23.91	---	---
Total Phosphorus (365.1)					
Total Phosphorus, mg/l	0.10	<0.10	0.702	0.75	94 %
Date Analyzed	---	10.23.91	10.23.91	---	---
Chloride (325.2)					
Chloride (325.2), mg/l	1.0	<1.0	7.46	7.7	97 %
Date Analyzed	---	10.22.91	10.22.91	---	---
Total Organic Carbon (415.1)					
Total Organic Carbon , mg/l	1.0	<1.0	23.2	23.0	101 %
Date Analyzed	---	10.16.91	10.16.91	---	---

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-42	LCS % Recovery Limits
36592-43	Matrix Spike (MS) Result/Duplicate
36592-44	MS Expected Value
36592-45	MS % Recovery/Duplicate
36592-46	MS % Recovery Limits

PARAMETER	36592-42	36592-43	36592-44	36592-45	36592-46
Copper (6010)					
Copper, mg/l	75-125 %	.991/.947	1.00	99/95 %	75-125 %
Date Analyzed	---	10.23.91	---	---	---
Chromium (6010)					
Chromium, mg/l	75-125 %	.995/.949	1.01	99/94 %	75-125 %
Date Analyzed	---	10.23.91	---	---	---
Arsenic (7060)					
Arsenic, mg/l	75-125 %	.058/.059	0.050	116/118 %	75-125 %
Date Analyzed	---	10.31.91	---	---	---
Suspended Solids (160.2)					
Suspended Solids, mg/l	75-125 %	---	---	---	---
Date Analyzed	---	---	---	---	---

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

[illegible]2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-42	LCS % Recovery Limits
36592-43	Matrix Spike (MS) Result/Duplicate
36592-44	MS Expected Value
36592-45	MS % Recovery/Duplicate
36592-46	MS % Recovery Limits

PARAMETER	36592-42	36592-43	36592-44	36592-45	36592-46
[illegible]i-Volatiles (8270)					
Naphthalene, ug/l	21-133 %	100/100	100	100/100 %	21-133 %
Acenaphthylene, ug/l	33-145 %	108/108	100	108/108 %	33-145 %
Acenaphthene, ug/l	47-145 %	100/100	100	100/100 %	47-145 %
Phenanthrene, ug/l	54-120 %	92/92	100	92/92 %	54-120 %
Anthracene, ug/l	27-133 %	92/92	100	92/92 %	27-133 %
Benzo(a)Anthracene, ug/l	33-143 %	44/44	100	44/44 %	33-143 %
Chrysene, ug/l	17-168 %	80/80	100	80/80 %	17-168 %
Benzo(a)pyrene, ug/l	17-163 %	28/28	100	28/28 %	17-163 %
Pentachlorophenol, ug/l	14-176 %	31/29	100	31/29 %	14-176 %
Fluoranthene, ug/l	26-137 %	88/88	100	88/88 %	26-137 %
2-Chlorophenol, ug/l	23-134 %	32/36	100	32/36 %	23-134 %
Phenol, ug/l	5-112 %	18/11	100	18/11 %	5-112 %
2,4-Dimethylphenol, ug/l	32-119 %	60/48	100	60/48 %	32-119 %
Trichlorophenols, ug/l	37-144 %	128/112	100	128/112 %	37-144 %
p-Chloro-m-cresol, ug/l	22-147 %	56/44	100	56/44 %	22-147 %
Tetrachlorophenols, ug/l	10-130 %	15/19	100	15/19 %	10-130 %
2,4-Dinitrophenol, ug/l	10-191 %	11/10	100	11/10 %	10-191 %
Benzo(b,k)fluoranthene, ug/l	24-159 %	68/68	100	68/68 %	24-159 %
Indeno(1,2,3-cd)pyrene, ug/l	10-171 %	32/32	100	32/32 %	10-171 %

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

[illegible]2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-42	LCS % Recovery Limits
36592-43	Matrix Spike (MS) Result/Duplicate
36592-44	MS Expected Value
36592-45	MS % Recovery/Duplicate
36592-46	MS % Recovery Limits

PARAMETER	36592-42	36592-43	36592-44	36592-45	36592-46
[illegible]benzo(a,h)anthracene, %	10-227 %	26/28	100	26/28 %	10-227 %
Surrogate-2FP (CL 21-110)	---	35/21	100	35/21 %	---
Surrogate-PHL (CL 10-110)	---	23/15	100	23/15 %	---
Surrogate-NBZ (CL 35-114)	---	51/50	50	102/100 %	---
Surrogate-TBP (CL 10-123)	---	57/56	100	57/56 %	---
Surrogate-TPH (CL 33-141)	---	43/44.5	50	86/89 %	---
Surrogate-FBP (CL 43-116)	---	45/44.5	50	90/89 %	---
Date Extracted	---	10.22.91	---	---	---
Date Analyzed	---	10.23.91	---	---	---
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/l	75-125 %	0.93/0.90	1.0	93/90 %	75-125 %
Nitrate + Nitrite-N, mg/l	90-110 %	.179/.183	0.20	90/92 %	75-125 %
Date Analyzed	---	10.23.91	---	---	---
Total Phosphorus (365.1)					
Total Phosphorus, mg/l	60-140 %	0.89/0.92	1.0	89/92 %	60-140 %
Date Analyzed	---	10.23.91	---	---	---
Chloride (325.2)					
Chloride (325.2), mg/l	90-110 %	5.17/5.08	5.0	103/102 %	75-125 %
Date Analyzed	---	10.23.91	---	---	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-42	LCS % Recovery Limits
36592-43	Matrix Spike (MS) Result/Duplicate
36592-44	MS Expected Value
36592-45	MS % Recovery/Duplicate
36592-46	MS % Recovery Limits

PARAMETER	36592-42	36592-43	36592-44	36592-45	36592-46
Total Organic Carbon (415.1)					
Total Organic Carbon , mg/l	60-140 %	103/105	100	103/105 %	60-140 %
Date Analyzed	---	10.16.91	---	---	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-47	ICVS/CCVS Control Limits
36592-48	ICVS/CCVS Source Lot
36592-49	ICVS/CCVS Expected Value
36592-50	ICVS Result
36592-51	ICVS % Recovery

PARAMETER	36592-47	36592-48	36592-49	36592-50	36592-51
enic (7060)					
rsenic, mg/l	90-110 %	3-87/SPEX	0.0501	0.050	100 %
Date Analyzed	---	---	---	10.29.91	---
Chromium (6010)					
Chromium, mg/l	90-110 %	3-87/SPEX	1.01	1.02	101 %
Date Analyzed	---	---	---	10.23.91	---
Copper (6010)					
Copper, mg/l	90-110 %	3-87/SPEX	1.00	1.02	102 %
Date Analyzed	---	---	---	10.23.91	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-52	CCVS Result
36592-53	CCVS % Recovery

PARAMETER	36592-52	36592-53
Arsenic (7060)		
Arsenic, mg/l	0.0487	97 %
Date Analyzed	10.29.91	---
Chromium (6010)		
Chromium, mg/l	1.04	103 %
Date Analyzed	10.23.91	---
Copper (6010)		
Copper, mg/l	1.02	102 %
Date Analyzed	10.23.91	---

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-54	CCVS Result
36592-55	CCVS % Recovery
36592-56	CCVS Result
36592-57	CCVS % Recovery
36592-58	CCVS Result

PARAMETER	36592-54	36592-55	36592-56	36592-57	36592-58
Arsenic (7060)					
Arsenic, mg/l	0.0534	107 %	0.0539	108 %	0.0536
Date Analyzed	10.29.91	---	10.29.91	---	10.29.91
Chromium (6010)					
Chromium, mg/l	1.04	103 %	1.05	104 %	1.04
Date Analyzed	10.23.91	---	10.23.91	---	10.23.91
Copper (6010)					
Copper, mg/l	1.01	101 %	1.01	101 %	1.01
Date Analyzed	10.23.91	---	10.23.91	---	10.23.91

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-59	CCVS % Recovery
36592-60	CCVS Result
36592-61	CCVS % Recovery
36592-62	CCVS Result
36592-63	CCVS % Recovery

PARAMETER	36592-59	36592-60	36592-61	36592-62	36592-63
Arsenic (7060)					
Arsenic, mg/l	107 %	0.0491	98 %	0.0504	101 %
Date Analyzed	---	10.29.91	---	10.29.91	---
Chromium (6010)					
Chromium, mg/l	103 %	1.04	103 %	1.03	102 %
Date Analyzed	---	10.23.91	---	10.23.91	---
Copper (6010)					
Copper, mg/l	101 %	1.00	100 %	0.999	100 %
Date Analyzed	---	10.23.91	---	10.23.91	---

Laboratory locations In Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
36592-64	CCVS Result
36592-65	CCVS % Recovery
36592-66	CCVS Result
36592-67	CCVS % Recovery
36592-68	CCVS Result

PARAMETER	36592-64	36592-65	36592-66	36592-67	36592-68
Arsenic (7060)					
Arsenic, mg/l	0.0489	98 %	0.0484	97 %	0.0454
Date Analyzed	10.29.91	---	10.29.91	---	10.29.91
Chromium (6010)					
Chromium, mg/l	1.01	100 %	1.02	101 %	0.997
Date Analyzed	10.23.91	---	10.23.91	---	10.23.91
Copper (6010)					
Copper, mg/l	0.992	99 %	0.992	99 %	0.968
Date Analyzed	10.23.91	---	10.23.91	---	10.23.91

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID

36592-75 MS % RPD (Limit) - Soil

PARAMETER	36592-75
Semi-Volatiles (8270)	
Naphthalene	27(<40) %
Acenaphthylene	18(<40) %
Acenaphthene	80(<19) %
Phenanthrene	*F61
Anthracene	*F61
Benzo(a)Anthracene	*F61
Chrysene	*F61
Benzo(a)pyrene	*F61
Pentachlorophenol	81(<47) %
Fluoranthene	*F61
2-Chlorophenol	4.3(<50) %
Phenol	1.5(<35) %
2,4-Dimethylphenol	10(<26) %
Trichlorophenols	4.7(<40) %
p-Chloro-m-cresol	12(<40) %
Tetrachlorophenols	129(<50) %
2,4-Dinitrophenol	82(<50) %
Benzo(b,k)fluoranthene	*F61
Indeno(1,2,3-cd)pyrene	55(<45) %
Dibenzo(a,h)anthracene	12(<70) %
Arsenic (7060)	
Arsenic	41(<30) %
Copper (6010)	
Copper	5.1(<30) %

Laboratory locations in Savannah, GA • Tallahassee, FL • Mobile, AL • Deerfield Beach, FL • Tampa, FL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-36592

Received: 16 OCT 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID
36592-75	MS % RPD (Limit) - Soil

PARAMETER	36592-75
Chromium (6010)	
Chromium	2.0(<30) %
Nitrogen Series	
Total Kjeldahl Nitrogen-N	38(<30) %
Nitrate + Nitrite-N	2.4(<30) %
Total Phosphorus (365.1)	
Total Phosphorus	40(<40) %
Total Organic Carbon (415.1)	
Total Organic Carbon	---
Chloride (325.2)	
Chloride (325.2)	0(<30) %

J. W. Andrews

J. W. Andrews, Ph. D.

Geraghty & Miller, Inc.
Environmental Services

Laboratory Task Order No. N/A — CHAIN OF CUSTODY RECORD — Page ___

Project Number NC0900S SWP

Project Location Wilmington, NC

Laboratory SAVANNAH LABORATORIES

Sampler(s)/Affiliation M. RADECKE (G&M)
P. JACKS (G&M)

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500ml w/m glass (G20) Semi Volatile contaminants 4°C	1 Liter w/m plastic pH, metals (Cu, Cr, Ni) TOC, TP, TR, Cl⁻ 4°C								TOTAL
LF1AUS/9663A	S	10-15-91 10:34		1	1								2
LF1ALS/9663B	S	10-15-91 10:41		1	1								2
LF1DUS/9666A	S	10-15-91 11:18		1	1								2
LF1DLS/9666B	S	10-15-91 11:21		1	1								2
LF1CUS/9665A	S	10-15-91 12:56		1	1								2
LF1CLS/9665B	S	10-15-91 13:01		1	1								2
LF1EUS/9667A	S	10-15-91 12:18		1	1								2
LF1ELS/9667A	S	10-15-91 12:23		1	1								2

Sample Code: L = Liquid; S = Solid; A = Air

Temp: 5.0

Total No. of Bottles/Containers: 16

Relinquished by: [signature]	Organization: Geraghty & Miller, Inc.	10-15-91 19:00	Seal Intact? (Yes) No N/A
Received by: L. Bonds	Organization: SL 36592	Date 10/16/91 Time 10:00 am	
Relinquished by:	Organization:		Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other ___ (SPECIFY)

G&M Form 09.1.90 — Schedule 90-0128

Environmental Services

Laboratory Task Order No. 1A

Project Number NC09005

Project Location SWP WILMINGTON, NC

Laboratory SAVANNAH LABS

Sampler(s)/Affiliation M. RADECKE (G&M)
P. JACOBS (G&M)

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500 ml w/m Plastic Semivolatile Cooler (3270) 4°C	1 Liter w/m plastic pH, TOC, TSS, TP Cl-, metals (Cu, Cr, Pb) 4°C								TOTAL
LF1BUS/9664A	S	10-15-91 13:27		1	1								2
LF1BLS/9664B	S	10-15-91 13:32		1	1								2
LF2BUS/9669B	S	10-15-91 14:45		1	1								2
LF2BUS/9669A	S	10-15-91 14:39		1	1								2
LF2DUS/9671A	S	10-15-91 15:28		1	1								2
LF2DLS/9671B	S	10-15-91 15:40		1	1								2
LF2EUS/9672A	S	10-15-91 15:05		1	1								2
LF2ELS/9672B	S	10-15-91 15:10		1	1								2

Sample Code: L = Liquid; S = Solid; A = Air

Temp 4.9

Total No. of Bottles/Containers 16

Relinquished by: [signature] Organization: Geraghty & Miller, Inc. 10-15-91 19:00
Received by: [signature] Organization: SL 36592 Date 10/16/91 Time 10:00 am
Seal Intact? (Yes) No N/A

Relinquished by: Organization:
Received by: Organization: Date / / Time
Seal Intact? Yes No N/A

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

G&M Form 09 1-90

Southprint 90-0136

& MULLER, INC.
Environmental Services

Laboratory Task Order No. 31

HAND OF CUSTODY RECORD

Page

Project Number NC09005

Project Location SWP Wilmington, NC

Laboratory Savannah Laboratories

Sampler(s)/Affiliation M. Radecke (G&M)
P. Jacobs (G&M)

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	250ml plastic metals (Cu, Cr, As) 4°C H_2SO_3	100ml plastic TSS 4°C	1 liter amber glass semi volatile compounds (8270) 4°C	1 liter plastic pH NOT SAMPLED HERE 4°C	250ml m/m plastic TN, TP 4°C H_2SO_4	100ml plastic Cl⁻ 4°C	125ml amber glass TOC 4°C H_2SO_4	1 liter amber glass KOOL compounds 4°C	TOTAL
MW-6/9673	L	10-15-91 9120		1	1							2
MW-7/9674	L	10-15-91 9110		1	1							2
MW-8/9675	L	10-15-91 8155		1	1							2
RB-2	L	10-15-91 16135		1		1	* MR	1	1	1		MR ~~8~~ 5
FB-2	L	10-15-91 16135		1		1	* MR	1	1	1		MR ~~8~~ 5
9677	L	10-15-91 17130									1	1

Sample Code: L = Liquid; S = Solid; A = Air

Temp. 4-5

Total No. of Bottles/Containers 17

Relinquished by: Mark E. Radecke Organization: Geraghty & Miller, Inc 10-15-91 19:00
Received by: D. Bonds Organization: SL 36592 Date 10/16/91 Time 10:00 am
Seal Intact? (Yes) No N/A

Relinquished by: Organization:
Received by: Organization: Date / / Time
Seal Intact? Yes No N/A

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

Southprint 90-0138

GEOMATRIX & MILLER, INC.
Environmental Services

Laboratory / Task Order No. N/A

CHAIN OF CUSTODY RECORD

Page ___

Project Number NC09005

Project Location SWP Wilmington, NC

Laboratory SAVANNAH LABS

Sampler(s)/Affiliation M. RAPPUCCI (G&M)
P. JACOBS (G&M)

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500 ml glass semi volatile constituents (8270) 4°C	1 liter w/m plastic pH TOC, TSS, TP Cl, metal (Cu, Cr, Ni) 4°C								TOTAL
LF2AUS/9668A	S	10-15-91 1610Z		1	1								2
LF2ALS/9668B	S	10-15-91 1610		1	1								2
LF2CUS/9670A	S	10-15-91 1614Z		1	1								2
LF2CLS/9670B	S	10-15-91 1615Z		1	1								2

Sample Code: L = Liquid; S = Solid; A = Air

Temp. 9.0

Total No. of Bottles/Containers 8

Relinquished by: Mark E. Radcliffe Organization: Geraghty & Miller, Inc. 10-15-91 19:00
Received by: A. Bond Organization: GL 36592 Date 10/16/91 Time 10:01 am
Seal Intact? (Yes) No N/A

Relinquished by: ___ Organization: ___
Received by: ___ Organization: ___ Date / / Time ___
Seal Intact? Yes No N/A

Special Instructions/Remarks: Refer to other chain of custody forms submitted on 10-15-91 for complete list of semi volatile constituents

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other ___ (SPECIFY)

G&M Form 09 1-90 Southprint 90-0138

1990 ANALYTICAL DATA
SUPPLEMENTAL EXPANDED CONSTITUENT LIST
SOUTHERN WOOD PIEDMONT, WILMINGTON, NORTH CAROLINA

RECEIVED
DEC 16 1991
G & M RALEIGH

12822	-1	-2	-3	-4	-5
	9101C	9101A	9101B	9101D	9104D
2-Chlorophenol	<7.3	<7.4	<7.8	<0.35	<0.34
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<37	<7	<39	<1.8	<1.7
Benzo(b,k)Fluoranthene	27J	43J	19J	<0.35	1.1J
Indeno(1,2,3-cd)pyrene	5.2J	10J	4.9J	↓	<0.34
Dibenzo(a,h)anthracene	2.3J	4.3J	2.7J	↓	↓
o-cresol	<7.3	<7.4	<7.8	↓	↓
m+p-cresol	↓	↓	↓	↓	↓

12822	-6	-7	-8	-9	-10
	9104B	9104C	9104A	9102A	9102B
2-Chlorophenol	<7.4	<7.2	<7.5	<9.4	<7.4
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<37	<36	<38	<47	<37
Benzo(b,k)fluoranthene	120J	9.1J	29J	49J	14J
Indeno(1,2,3-cd)pyrene	14J	2.0J	8.1J	11J	3.3J
Dibenzo(a,h)anthracene	4.2J	0.76J	3.2J	5.0J	1.6J
o-cresol	<7.4	<7.4	<7.5	<9.4	<7.4
m+p-cresol	↓	↓	↓	↓	↓

12822	-11	-12	-13	-14	-15
	9102C	9102D	9100A	9100B	9100C
2-Chlorophenol	<7.5	<0.36	<8.10	<7.3	<7.3
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<38	<1.8	<40	<37	<37
Benzo(b,k)Fluoranthene	68 J	<0.36	35 J	19 J	100 J
Indeno(1,2,3-cd)pyrene	9.3 J	↓	10 J	5.2 J	17 J
Dibenzo(a,h)anthracene	4.7 J	↓	4.2 J	2.2 J	7.5 J
o-cresol	<7.5	↓	<8.10	<7.3	<7.3
m+p-cresol	↓	↓	↓	↓	↓

12822	-16	-17	-18	-19	-20
	9100D	9106A	9106B	9106C	9106D
2-Chlorophenol	<0.35	<7.7	<7.8	<7.6	<0.37
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<1.8	<39	<39	<38	<1.9
Benzo(b,k)Fluoranthene	<0.35	43 J	24 J	17 J	0.78 J
Indeno(1,2,3-cd)pyrene	↓	11 J	<7.8	<7.6	0.18 J
Dibenzo(a,h)anthracene	↓	<7.7	↓	↓	<0.37
o-cresol	↓	↓	↓	↓	↓
m+p-cresol	↓	↓	↓	↓	↓

12822	-21	-22	-23	-24	-25
	9109A	9109B	9109C	9109D	9105A
2-Chlorophenol	<7.4	<7.5	<4.1	<0.36	<7.8
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol					
Trichlorophenols					
p-chloro-m-cresol					
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<37	<38	<21	<1.8	<39
Benzo(b,k)Fluoranthene	35J	32J	31J	<0.36	33J
Indeno(1,2,3-cd)pyrene	9.6J	8.3J	9.4J	↓	8.6J
Dibenzo(a,h)anthracene	4.4J	3.2J	3.9J		3.9J
o-cresol	<7.4	<7.5	<4.1		<7.8
m+p-cresol	↓	↓	↓	↓	↓

12822	-26	-27	-28	-29	-30
	9105B	9105C	9105D	9107B	9107A
2-Chlorophenol	<8.3	<7.1	<0.45	<7.3	<7.6
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<42	<36	<2.8	<37	<38
Benzo(b,k)Fluoranthene	89J	6.2J	2.6J	5.7J	4.3J
Indeno(1,2,3-cd)pyrene	18J	1.1J	<0.45	14J	11J
Dibenzo(a,h)anthracene	<8.3	<7.1	↓	6.2J	5.3J
o-cresol	↓	↓	↓	<7.3	<7.6
m+p cresol	↓	↓	↓	↓	↓

39

	-31	-32	-33	-34	-35
	9107C	9107D	9108D	9108A	9108C
2-Chlorophenol (128)	<7.5	<0.39	<0.42	<0.39	<8.5
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-Chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	1.2J
2,4-Dinitrophenol	<38	<2.0	<2.1	<2.0	<43
Benzo(b,k)fluoranthene	38J	<0.39	2.3J	1.4J	9.9J
Indeno(1,2,3-cd)pyrene	23J	↓	0.53J	<0.39	19J
Dibenzo(a,h)anthracene	15J	↓	0.23J	↓	9.4J
o-cresol	<7.5	↓	<0.42	↓	<8.5
p-cresol	↓	↓	↓	↓	↓

12822	-36	-37	-38	-39	-40
	9108B	9108C	9103A	9103B	9103D
2-Chlorophenol	<7.8	<7.6	<7.6	<7.3	<7.6
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-Chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<39	<38	<38	<37	<38
Benzo(b,k)Fluoranthene	82J	52J	31J	14J	18J
Indeno(1,2,3-cd)pyrene	19J	8.7J	8.0J	4.9J	4.1J
Dibenzo(a,h)anthracene	8.0J	3.9J	4.3J	1.6J	1.8J
o-cresol	<7.8	<7.6	<7.6	<7.3	<7.6
m+p-cresol	↓	↓	↓	↓	↓

	-41	-42	-43		
	RB1	FB11	TB-2		
2-Chlorophenol	<0.010	<0.010	<0.010		
Phenol	↓	↓	↓		
2,4-Dimethylphenol	↓	↓	↓		
Trichlorophenols	↓	↓	↓		
p-chloro-m-cresol	↓	↓	↓		
Tetrachlorophenols	↓	↓	↓		
2,4-Dinitrophenol	<0.050	<0.050	<0.050		
Benzo(b,k)Fluoranthene	<0.010	<0.010	<0.010		
Indeno(1,2,3-cd)pyrene	↓	↓	↓		
Dibenzo(a,h)anthracene	↓	↓	↓		
o-cresol	↓	↓	↓		
m+p-cresol	↓	↓	↓		

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. SWP NC09005 Date 10-14-91
Site Location LF Area SWP Wilmington, NC Site
Site/Well No. MW-6/9673 ~~Rep.~~/Field Blank No. RB-1 & FB-1 Collected prior to Sampling MW-6
Weather Cloudy, Cool & windy Sampling Began _____ Ended _____
Description of Measuring Point (MP) _____
MP Elevation _____ Water Level Elevation _____

Evacuation Data

Height of MP			
Depth of Well Below MP			21.40
Held _____ Depth to Water Below MP		-	2.62
Wet _____ Water Column in Well		=	18.78
Casing Diameter 2"	Gal./ft.	x	0.16
Gallons in Well		=	3.00
Evacuation Volume	x 3	=	9.00

Gallons	3.00	6.00	9.00		*	
pH	6.25	6.15	6.15		6.1	
Spec. Conductance µmhos	700	915	970		800	
Temperature (°C/°F)	20.0	21.0	21.0		21	
	17:05	17:20	17:25		9:20	

Sampling Data/Field Parameters

Color orange brown Odor vague sulfide odor Appearance slightly silty cloudy
Comments: _____
Spec. Cond. (umhos/cm) 1000 pH 6.30 T(°C/°F) 20.0 17:35
Sampling Method DISPOSABLE BAILER

Analyses	Container Type (Lab X G&M ___)	Preservative
TOC / TP, TN	125 ml amber glass / 250 ml m/m plastic	4°C H_2SO_4
TSS / Cl^-	100 ml plastic / 100 ml plastic	4°C
Cu, Cr, As	250 ml plastic	4°C HNO_3
SV	1 liter amber glass	4°C

Remarks: * Readings taken after TSS + metals on 10-15-91 9:20 slightly cloudy

Sampling Personnel: M. RADECKE, P. JACOBS (G&M)

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. SWP NC09005 Date 10-14-91
Site Location SWP LF areas, Wilmington, NC Site -
Site/Well No. MW-7/9674 Rep./Field Blank No. _____
Weather Sunny mid 70's windy Sampling Began _____ Ended _____
Description of Measuring Point (MP) _____
MP Elevation _____ Water Level Elevation _____

Evacuation Data

Height of MP						
Depth of Well Below MP			21.38			
Held _____ Depth to Water Below MP			- 3.95			
Wet _____ Water Column in Well			= 17.43			
Casing Diameter 2" Gal./ft.			x 0.16			
Gallons in Well			= 2.79			
Evacuation Volume	x 3		= 8.40			
Gallons	2.80	5.60	8.40			
pH	6.20	6.35	6.40		6.3	
Spec. Conductance µmhos	780	830	830		760	
Temperature (°C/°F)	22.0	22.0	22.5		22	
	14:39	15:05	15:30		9:10	

Sampling Data/Field Parameters

Color Brown Odor Sulfides Appearance Silty
Comments: _____
Spec. Cond. (umhos/cm) 840 pH 6.45 T (°C/°F) 22.0 15:40
Sampling Method DISPOSABLE BAILER

Analyses	Container Type (Lab X G&M ___)	Preservative
TOC / TP, TN	125 ml amber glass / 250 ml m/m plastic	4°C H_2SO_4
TSS / Cl^-	100 ml plastic / 100 ml plastic	4°C
Cu, Cr, As	250 ml plastic	4°C HNO_3
SV	1 liter amber glass	4°C

Remarks: Well was slow to recharge
Readings were taken after TSS + metals on 10-15-91 slightly cloudy
Sampling Personnel: M. RADECKE P. JACOBS (G&M)

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. SWP NC0900S Date 10-14-91
Site Location LF Areas SWP Wilmington, NC Site
Site/Well No. MW-8/9675 Rep./Field Blank No. _____
Weather Sunny Mid 70's Sampling Began _____ Ended _____
Description of Measuring Point (MP) _____
MP Elevation _____ Water Level Elevation _____

Evacuation Data

Height of MP			_____
Depth of Well Below MP			21.40
Held _____	Depth to Water Below MP	-	4.40
Wet _____	Water Column in Well	=	17
Casing Diameter 2"	Gal./ft.	x	0.16
Gallons in Well		=	2.72
Evacuation Volume	x 3	=	8.16

Gallons	2.75	5.50			* slightly cloudy	
pH	6.00	6.05	6.15		5.7	
Spec. Conductance µmhos	510	510	495		480	
Temperature (°C/°F)	20.05	20.05	20.00		22.0	
	13:50	14:15	15:10		~~1628~~ MER 8:55	

Sampling Data/Field Parameters

Color brown Odor Silty Appearance Silty then clear
Comments: _____
Spec. Cond. (umhos/cm) 485 pH 6.10 T(°C/°F) 20.0 15:22
Sampling Method DISPOSABLE BAILER

Analyses	Container Type (Lab X G&M ___)	Preservative
TOC / TP, TN	125ml amber glass / 250ml m/m plastic	4°C H_2SO_4
TSS / Cl^-	100 ml plastic / 100 ml plastic	4°C
Cu, Cr, As	250 ml plastic	4°C HNO_3
SV	1 liter amber glass	4°C

Remarks: well was slow to recharge.
* Readings taken after TSS & Metals on 10-15-91 8:55 Sample collection
Sampling Personnel: M. RADECKE, P. JACOBS (G&M)

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. SWP NC09005 Date 10-14-91
Site Location LF areas SWP Wilmington, NC Site
Site/Well No. MW-9 | 9676 Rep./Field Blank No. N/A
Weather Sunny 70's Sampling Began 1305 Ended 1310
Description of Measuring Point (MP)
MP Elevation Water Level Elevation

Evacuation Data

Height of MP			
Depth of Well Below MP			21.40
Held ____ Depth to Water Below MP		-	3.98
Wet ____ Water Column in Well		=	17.42
Casing Diameter 2"	Gal./ft.	x	0.16
Gallons in Well		=	2.78
Evacuation Volume	x 3	=	8.36

Gallons	2.75	5.50	8.25		*	
pH	5.95	5.95	5.95		6.40	
Spec. Conductance µmhos	480	465	470		520	
Temperature (°C/°F)	22.0	20.0	20.0		22.0	
	12:36	12:43	13:00		16:10 clear	

Sampling Data/Field Parameters

Color Light-brown Odor Sulfides Appearance Silty - cloudy
Comments:
Spec. Cond. (umhos/cm) 530 pH 6.15 T(°C/°F) 21.0 13:12 Light brown/clear
Sampling Method DISPOSABLE BAILER

Analyses	Container Type (Lab X G&M ___)	Preservative
TOC/TP,TN	125ml amber glass / 250 ml m/m plastic	4°C H_2SO_4
TSS / Cl^-	100 ml plastic / 100ml plastic	4°C
Cu, Cr, As	250 ml plastic	4°C HNO_3
SV	1 liter amber glass	4°C

Remarks: Well was slow to recharge
* readings were taken after TSS + metals on 10-14-91
Sampling Personnel: M. RADECKE P. JACOBS (G&M)

APPENDIX B
DATA REDUCTION TABLES, 1990 AND 1991
SOUTHERN WOOD PIEDMONT FACILITY,
WILMINGTON, NORTH CAROLINA

Table B-1. Total Polycyclic Aromatic Hydrocarbons in Soil in 1990, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	LF1AU (mg/kg)	LF1AM (mg/kg)	LF1AL (mg/kg)	LF1BU (mg/kg)	LF1BM (mg/kg)	LF1BL (mg/kg)	LF1CU (mg/kg)	LF1CM (mg/kg)	LF1CL (mg/kg)	LF1DU (mg/kg)	LF1DM (mg/kg)
PAHs											
Acenaphthene	4	3.65	3.65	3.7	3.9	3.65	4.7	3.7	3.75	3.8	3.65
Acenaphthylene	4	3.65	3.65	3.7	3.9	3.65	4.7	3.7	3.75	3.8	3.65
Anthracene	88	3.4	3.7	230	200	4.6	29	58	6.8	35	4.7
Benzo(a)anthracene	20	5.8	39	19	8.6	10	32	3.7	42	11	3.4
Benzo(a)pyrene	19	7.3	32	20	9.4	10	24	6.5	22	16	7.3
Benzo(b,k)fluoranthene	35	19	100	43	19	27	49	14	68	31	14
Benzo(g,h,i)perylene	8.8	5	16	7.4	3.9	3.9	10	3.7	6.5	6.3	4.8
1,1-Biphenyl	4	3.65	3.65	3.7	3.9	3.65	4.7	3.7	3.75	3.8	3.65
Carbazole	26	3.65	3.65	46	90	3.65	43	9.6	3.75	3.8	3.65
Chrysene	22	9.5	59	27	15	18	42	8.9	59	17	7.3
Dibenzo(a,h)anthracene	4.2	2.2	7.5	4.3	2.7	2.3	5	1.6	4.7	4.3	1.6
Dibenzofuran	5	3.65	3.65	6.7	11	3.65	6.6	3.7	3.75	3.8	3.65
Fluoranthene	58	13	80	19	34	20	140	8.9	120	29	9.5
Fluorene	14	3.65	3.65	4.9	27	3.65	20	5.8	3.75	5	3.65
Indeno(1,2,3-c,d)pyrene	10	5.2	17	10	4.9	5.2	11	3.3	9.3	8	4.9
1-Methylnaphthalene	4	3.65	3.65	3.7	3.9	3.65	4.7	3.7	3.75	3.8	3.65
2-Methylnaphthalene	4	3.65	3.65	5.9	15	3.65	4.7	3.7	3.75	3.8	3.65
Naphthalene	3.8	3.65	3.65	4.4	12	3.65	4.8	3.7	3.75	3.8	3.65
Phenanthrene	25	3.9	6.2	36	41	3.65	130	8.1	13	11	3.65
Pyrene	44	13	80	50	27	20	150	11	110	28	9.5
tPAHs	402.80	120.15	473.25	548.40	536.10	157.50	719.90	169.00	495.05	232.00	103.50

Footnotes appear on page 3.

Table B-1. Total Polycyclic Aromatic Hydrocarbons in Soil in 1990, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	LF1DL (mg/kg)	LF1EU (mg/kg)	LF1EM (mg/kg)	LF1EL (mg/kg)	LF2AU (mg/kg)	LF2AM (mg/kg)	LF2AL (mg/kg)	LF2BU (mg/kg)	LF2BM (mg/kg)	LF2BL (mg/kg)	LF2CU (mg/kg)
PAHs											
Acenaphthene	3.8	3.75	3.7	3.6	3.9	28	3.55	49	3.9	3.8	3.8
Acenaphthylene	3.8	3.75	3.7	3.6	3.9	4.15	3.55	3.85	3.9	3.8	3.8
Anthracene	3.6	70	5	3.6	100	280	3.55	350	400	66	900
Benzo(a)anthracene	18	21	7.4	3.6	20	110	3.55	33	13	21	43
Benzo(a)pyrene	16	18	8.1	3.5	16	46	3.55	24	30	41	41
Benzo(b,k)fluoranthene	52	29	120	9.1	33	89	6.2	43	24	17	43
Benzo(g,h,i)perylene	7.4	3.75	3.7	3.6	7.8	17	3.55	12	3.9	16	17
1,1-Biphenyl	3.8	3.75	3.7	3.6	3.9	4.15	3.55	3.85	3.9	3.8	3.8
Carbazole	3.8	23	3.7	3.6	45	200	3.55	100	160	30	270
Chrysene	40	22	8.1	3.7	21	120	3.6	35	18	31	58
Dibenzo(a,h)anthracene	3.9	3.2	4.2	0.76	3.9	4.15	3.55	3.85	3.9	3.8	5.3
Dibenzofuran	3.8	3.75	3.7	3.6	22	26	3.55	19	20	5.6	3.8
Fluoranthene	71	51	4.4	6.8	35	300	5	92	27	82	110
Fluorene	3.8	6	3.7	3.6	22	91	3.55	42	57	12	12
Indeno(1,2,3-c,d)pyrene	8.7	8.1	14	2	8.6	18	1.1	11	3.9	3.8	11
1-Methylnaphthalene	3.8	3.75	3.7	3.6	3.9	4.15	3.55	3.85	20	3.8	3.8
2-Methylnaphthalene	3.8	3.75	3.7	3.6	3.9	10	3.55	3.85	41	3.8	3.8
Naphthalene	3.8	3.6	3.7	3.6	3.9	4.15	3.55	3.85	30	3.8	3.8
Phenanthrene	14	20	4.6	3.6	34	200	3.55	82	86	24	99
Pyrene	68	41	6	6.5	26	200	4.7	55	23	78	130
tPAHs	336.80	342.15	218.80	79.16	417.70	1,755.75	73.85	970.10	972.40	454.00	1,765.90

Footnotes appear on page 3.

Table B-1. Total Polycyclic Aromatic Hydrocarbons in Soil in 1990, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	LF2CM (mg/kg)	LF2CL (mg/kg)	LF2DU (mg/kg)	LF2DM (mg/kg)	LF2DL (mg/kg)	LF2EU (mg/kg)	LF2EM (mg/kg)	LF2EL (mg/kg)	Mean (mg/kg)	UCL (mg/kg)
PAHs										
Acenaphthene	3.65	3.75	3.95	3.9	24	3.7	3.75	2.05	6.72	9.76
Acenaphthylene	3.65	3.75	3.95	3.9	4.25	3.7	3.75	2.05	3.77	3.89
Anthracene	72	3.75	170	15	290	70	50	14	117.66	175.46
Benzo(a)anthracene	19	18	18	27	100	13	13	11	23.57	31.26
Benzo(a)pyrene	16	11	19	33	65	18	15	12	20.32	24.66
Benzo(b,k)fluoranthene	5.7	38	14	82	99	35	32	31	40.70	50.03
Benzo(g,h,i)perylene	13	4.2	7.9	34	14	8.1	7.1	8.6	8.96	10.96
1,1-Biphenyl	3.65	3.75	3.95	3.9	4.25	3.7	3.75	2.05	3.77	3.89
Carbazole	23	3.75	67	4.6	75	24	17	1.9	43.19	63.18
Chrysene	22	32	22	40	150	18	19	16	32.14	42.10
Dibenzo(a,h)anthracene	6.2	15	0.195	8	9.4	4.4	3.2	3.9	4.37	5.24
Dibenzofuran	3.8	3.75	3.95	3.9	20	3.7	3.75	2.05	7.16	9.25
Fluoranthene	38	47	74	65	500	36	36	32	71.45	102.35
Fluorene	3.65	3.75	37	3.9	54	3.7	6.1	2.05	15.53	22.04
Indeno(1,2,3-c,d)pyrene	14	23	0.195	19	19	9.6	8.3	9.4	9.38	11.15
1-Methylnaphthalene	3.65	3.75	3.95	3.9	4.25	3.7	3.75	2.05	4.30	5.23
2-Methylnaphthalene	3.65	3.75	9.5	3.9	11	3.7	3.75	2.05	6.05	8.27
Naphthalene	5.1	3.75	3.95	3.7	11	3.5	3.75	2.1	5.18	6.76
Phenanthrene	17	6	70	12	130	19	14	5.7	37.53	52.53
Pyrene	36	41	51	66	500	34	34	30	65.76	94.83
tPAHs	312.70	272.70	583.49	436.60	2,084.15	318.50	280.95	191.95	527.51	732.87

mg/kg Milligrams per kilogram.
tPAHs Total polycyclic aromatic hydrocarbons.
UCL 95 percent upper confidence limit of the mean.

Table B-2. Carcinogenic PAHs in Soil in 1990, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	LF1AU (mg/kg)	BAP= LF1AU (mg/kg)	LF1AM (mg/kg)	BAP= LF1AM (mg/kg)	LF1AL (mg/kg)	BAP= LF1AL (mg/kg)	LF1BU (mg/kg)	BAP= LF1BU (mg/kg)	LF1BM (mg/kg)	BAP= LF1BM (mg/kg)	LF1BL (mg/kg)
PAHs												
Benzo(a)anthracene	0.01	20	0.2	5.8	0.058	39	0.39	19	0.19	8.6	0.086	10
Benzo(a)pyrene	1	19	19	7.3	7.3	32	32	20	20	9.4	9.4	10
Benzo(b,k)fluoranthene	0.01	35	0.35	19	0.19	100	1	43	0.43	19	0.19	27
Benzo(g,h,i)perylene	0.01	8.8	0.088	5	0.05	16	0.16	7.4	0.074	3.9	0.039	3.9
Chrysene	0.01	22	0.22	9.5	0.095	59	0.59	27	0.27	15	0.15	18
Dibenzo(a,h)anthracene	1	4.2	4.2	2.2	2.2	7.5	7.5	4.3	4.3	2.7	2.7	2.3
Indeno(1,2,3-c,d)pyrene	0.01	10	0.1	5.2	0.052	17	0.17	10	0.1	4.9	0.049	5.2
1-Methylnaphthalene	0.01	4	0.04	3.65	0.0365	3.65	0.0365	3.7	0.037	3.9	0.039	3.65
2-Methylnaphthalene	0.01	4	0.04	3.65	0.0365	3.65	0.0365	5.9	0.059	15	0.15	3.65
BAP equivalents			24.2		10.0		41.9		25.5		12.8	
Total cPAH		127.0		61.3		277.8		140.3		82.4		83.7
Carbazole		26		3.65		3.65		46		90		3.65

Footnotes appear on page 6.

Table B-2. Carcinogenic PAHs in Soil in 1990, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	BAP= LF1BL (mg/kg)	LF1CU (mg/kg)	BAP= LF1CU (mg/kg)	LF1CM (mg/kg)	BAP= LF1CM (mg/kg)	LF1CL (mg/kg)	BAP= LF1CL (mg/kg)	LF1DU (mg/kg)	BAP= LF1DU (mg/kg)	LF1DM (mg/kg)	BAP= LF1DM (mg/kg)
PAHs												
Benzo(a)anthracene	0.01	0.1	32	0.32	3.7	0.037	42	0.42	11	0.11	3.4	0.034
Benzo(a)pyrene	1	10	24	24	6.5	6.5	22	22	16	16	7.3	7.3
Benzo(b,k)fluoranthene	0.01	0.27	49	0.49	14	0.14	68	0.68	31	0.31	14	0.14
Benzo(g,h,i)perylene	0.01	0.039	10	0.1	3.7	0.037	6.5	0.065	6.3	0.063	4.8	0.048
Chrysene	0.01	0.18	42	0.42	8.9	0.089	59	0.59	17	0.17	7.3	0.073
Dibenzo(a,h)anthracene	1	2.3	5	5	1.6	1.6	4.7	4.7	4.3	4.3	1.6	1.6
Indeno(1,2,3-c,d)pyrene	0.01	0.052	11	0.11	3.3	0.033	9.3	0.093	8	0.08	4.9	0.049
1-Methylnaphthalene	0.01	0.0365	4.7	0.047	3.7	0.037	3.75	0.0375	3.8	0.038	3.65	0.0365
2-Methylnaphthalene	0.01	0.0365	4.7	0.047	3.7	0.037	3.75	0.0375	3.8	0.038	3.65	0.0365
BAP equivalents		13.0		30.5		8.5		28.6		21.1		9.3
Total cPAH			182.4		49.1		219.0		101.2		50.6	
Carbazole			43		9.6		3.75		3.8		3.65	

Footnotes appear on page 6.

Table B-2. Carcinogenic PAHs in Soil in 1990, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	LF1DL (mg/kg)	BAP= LF1DL (mg/kg)	LF1EU (mg/kg)	BAP= LF1EU (mg/kg)	LF1EM (mg/kg)	BAP= LF1EM (mg/kg)	LF1EL (mg/kg)	BAP= LF1EL (mg/kg)	LF2AU (mg/kg)	BAP= LF2AU (mg/kg)	LF2AM (mg/kg)
PAHs												
Benzo(a)anthracene	0.01	18	0.18	21	0.21	7.4	0.074	3.6	0.036	20	0.2	110
Benzo(a)pyrene	1	16	16	18	18	8.1	8.1	3.5	3.5	16	16	46
Benzo(b,k)fluoranthene	0.01	52	0.52	29	0.29	120	1.2	9.1	0.091	33	0.33	89
Benzo(g,h,i)perylene	0.01	7.4	0.074	3.75	0.0375	3.7	0.037	3.6	0.036	7.8	0.078	17
Chrysene	0.01	40	0.4	22	0.22	8.1	0.081	3.7	0.037	21	0.21	120
Dibenzo(a,h)anthracene	1	3.9	3.9	3.2	3.2	4.2	4.2	0.76	0.76	3.9	3.9	4.15
Indeno(1,2,3-c,d)pyrene	0.01	8.7	0.087	8.1	0.081	14	0.14	2	0.02	8.6	0.086	18
1-Methylnaphthalene	0.01	3.8	0.038	3.75	0.0375	3.7	0.037	3.6	0.036	3.9	0.039	4.15
2-Methylnaphthalene	0.01	3.8	0.038	3.75	0.0375	3.7	0.037	3.6	0.036	3.9	0.039	10
BAP equivalents			21.2		22.1		13.9		4.6		20.9	
Total cPAH		153.6		112.6		172.9		33.5		118.1		418.3
Carbazole		3.8		23		3.7		3.6		45		200

Footnotes appear on page 6.

Table B-2. Carcinogenic PAHs in Soil in 1990, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	BAP= LF2AM (mg/kg)	LF2AL (mg/kg)	BAP= LF2AL (mg/kg)	LF2BU (mg/kg)	BAP= LF2BU (mg/kg)	LF2BM (mg/kg)	BAP= LF2BM (mg/kg)	LF2BL (mg/kg)	BAP= LF2BL (mg/kg)	LF2CU (mg/kg)	BAP= LF2CU (mg/kg)
PAHs												
Benzo(a)anthracene	0.01	1.1	3.55	0.0355	33	0.33	13	0.13	21	0.21	43	0.43
Benzo(a)pyrene	1	46	3.55	3.55	24	24	30	30	41	41	41	41
Benzo(b,k)fluoranthene	0.01	0.89	6.2	0.062	43	0.43	24	0.24	17	0.17	43	0.43
Benzo(g,h,i)perylene	0.01	0.17	3.55	0.0355	12	0.12	3.9	0.039	16	0.16	17	0.17
Chrysene	0.01	1.2	3.6	0.036	35	0.35	18	0.18	31	0.31	58	0.58
Dibenzo(a,h)anthracene	1	4.15	3.55	3.55	3.85	3.85	3.9	3.9	3.8	3.8	5.3	5.3
Indeno(1,2,3-c,d)pyrene	0.01	0.18	1.1	0.011	11	0.11	3.9	0.039	3.8	0.038	11	0.11
1-Methylnaphthalene	0.01	0.0415	3.55	0.0355	3.85	0.0385	20	0.2	3.8	0.038	3.8	0.038
2-Methylnaphthalene	0.01	0.1	3.55	0.0355	3.85	0.0385	41	0.41	3.8	0.038	3.8	0.038
BAP equivalents		53.8		7.4		29.3		35.1		45.8		48.1
Total cPAH			32.2		169.6		157.7		141.2		225.9	
Carbazole			3.55		100		160		30		270	

Footnotes appear on page 6.

Table B-2. Carcinogenic PAHs in Soil in 1990, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	LF2CM (mg/kg)	BAP= LF2CM (mg/kg)	LF2CL (mg/kg)	BAP= LF2CL (mg/kg)	LF2DU (mg/kg)	BAP= LF2DU (mg/kg)	LF2DM (mg/kg)	BAP= LF2DM (mg/kg)	LF2DL (mg/kg)	BAP= LF2DL (mg/kg)	LF2EU (mg/kg)
PAHs												
Benzo(a)anthracene	0.01	19	0.19	18	0.18	18	0.18	27	0.27	100	1	13
Benzo(a)pyrene	1	16	16	11	11	19	19	33	33	65	65	18
Benzo(b,k)fluoranthene	0.01	5.7	0.057	38	0.38	14	0.14	82	0.82	99	0.99	35
Benzo(g,h,i)perylene	0.01	13	0.13	4.2	0.042	7.9	0.079	34	0.34	14	0.14	8.1
Chrysene	0.01	22	0.22	32	0.32	22	0.22	40	0.4	150	1.5	18
Dibenzo(a,h)anthracene	1	6.2	6.2	15	15	0.195	0.195	8	8	9.4	9.4	4.4
Indeno(1,2,3-c,d)pyrene	0.01	14	0.14	23	0.23	0.195	0.00195	19	0.19	19	0.19	9.6
1-Methylnaphthalene	0.01	3.65	0.0365	3.75	0.0375	3.95	0.0395	3.9	0.039	4.25	0.0425	3.7
2-Methylnaphthalene	0.01	3.65	0.0365	3.75	0.0375	9.5	0.095	3.9	0.039	11	0.11	3.7
BAP equivalents			23.0		27.2		20.0		43.1		78.4	
Total cPAH		103.2		148.7		94.7		250.8		471.7		113.5
Carbazole		23		3.75		67		4.6		75		24

Footnotes appear on page 6.

Table B-2. Carcinogenic PAHs in Soil in 1990, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	BAP= LF2EU (mg/kg)	LF2EM (mg/kg)	BAP= LF2EM (mg/kg)	LF2EL (mg/kg)	BAP= LF2EL (mg/kg)	Mean (mg/kg)	UCL (mg/kg)
PAHs								
Benzo(a)anthracene	0.01	0.13	13	0.13	11	0.11		
Benzo(a)pyrene	1	18	15	15	12	12		
Benzo(b,k)fluoranthene	0.01	0.35	32	0.32	31	0.31		
Benzo(g,h,i)perylene	0.01	0.081	7.1	0.071	8.6	0.086		
Chrysene	0.01	0.18	19	0.19	16	0.16		
Dibenzo(a,h)anthracene	1	4.4	3.2	3.2	3.9	3.9		
Indeno(1,2,3-c,d)pyrene	0.01	0.096	8.3	0.083	9.4	0.094		
1-Methylnaphthalene	0.01	0.037	3.75	0.0375	2.05	0.0205		
2-Methylnaphthalene	0.01	0.037	3.75	0.0375	2.05	0.0205		
BAP equivalents		23.3		19.1		16.7	25.9	30.9
Total cPAH			105.1		96.0		149.8	181.9
Carbazole			17		1.9		43.2	63.2

BAP Benzo(a)pyrene.
cPAH Carcinogenic polycyclic aromatic hydrocarbon.
mg/kg Milligrams per kilogram.
TEF Toxicity equivalency factor.
UCL 95 percent upper confidence limit of the mean.

Table B-3. Total PAHs in Soil in 1991, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	LF1AU (mg/kg)	LF1AL (mg/kg)	LF1DU (mg/kg)	LF1DL (mg/kg)	LF1CU (mg/kg)	LF1CL (mg/kg)	LF1EU (mg/kg)	LF1EL (mg/kg)	LF1BU (mg/kg)	LF1BL (mg/kg)	LF2BL (mg/kg)
PAHs											
Acenaphthene	0.95	1.9	0.36	0.18	0.62	0.15	0.78	0.07	0.52	1.1	1.6
Acenaphthylene	3.8	0.59	1.4	0.13	2.1	0.58	1.4	0.35	1.7	4.1	2.4
Anthracene	54	5.7	36	1	140	2.3	350	1.8	23	16	19
Benzo(a)anthracene	11	24	15	2.1	11	5.7	9.6	2.0	10	31	12
Benzo(a)pyrene	13	14	11	1.8	14	4.1	11	1.5	11	21	9.2
Benzo(b,k)fluoranthene	30	36	32	3.4	43	18	30	4.4	31	61	21
Benzo(g,h,i)perylene	7.4	6.5	2.1	0.7	6.4	1.8	4.3	0.6	4.6	9.1	5.5
1,1-Biphenyl	0.42	0.092	0.24	0.022	0.9	0.04	2.1	0.028	0.23	0.066	0.18
Carbazole	23	1.1	8.2	0.98	38	0.97	98	1.1	7	5.4	6.8
Chrysene	12	28	18	3.0	15	8.9	3.6	2.9	13	36	15
Dibenzo(a,h)anthracene	3.4	2.9	1.1	0.26	3.9	0.58	3.7	0.175	1.35	2.3	2.6
Dibenzofuran	2.7	0.89	1.6	0.21	5.6	0.18	9.3	0.14	1.2	0.31	1.7
Fluoranthene	22	77	24	4.7	15	12	22	3.7	17	72	30
Fluorene	6.9	2.4	4.9	0.21	14	0.2	25	0.18	2.6	1.1	2.8
Indeno(1,2,3-c,d)pyrene	9.6	9.2	4.4	0.74	7.9	1.9	5.3	0.7	5.6	12	6.8
1,-Methylnaphthalene	0.22	0.17	0.14	0.07	4.0	0.097	0.56	0.063	0.27	0.11	0.29
2-Methylnaphthalene	2.7	0.29	1.1	0.067	6.4	0.14	7.7	0.11	0.93	0.18	0.88
Naphthalene	2.8	0.56	1	0.088	3.4	0.23	4.7	0.13	1.1	0.27	1.4
Phenanthrene	16	15	7.7	3.3	21	1.4	34	0.98	6.4	17	13
Pyrene	20	69	28	5.7	34	10	25	4.2	18	62	25
tPAHs	241.89	295.29	198.24	28.66	386.22	69.27	648.04	25.13	156.50	352.04	177.15

Footnotes appear on page 2.

Table B-3. Total PAHs in Soil in 1991, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	LF2BU (mg/kg)	LF2DU (mg/kg)	LF2DL (mg/kg)	LF2EU (mg/kg)	LF2EL (mg/kg)	LF2AU (mg/kg)	LF2AL (mg/kg)	LF2CU (mg/kg)	LF2CL (mg/kg)	Mean (mg/kg)	UCL (mg/kg)
PAHs											
Acenaphthene	2.5	1.3	92	1	8.1	1	0.62	5.5	1.7	6.10	13.95
Acenaphthylene	5	3.7	5.4	3.8	5	5.2	2.4	4.7	4.3	2.90	3.60
Anthracene	310	75	170	64	93	41	9.5	120	84	80.77	118.77
Benzo(a)anthracene	25	8.6	130	11	63	13	12	17	28	22.05	33.17
Benzo(a)pyrene	23	12	61	12	29	16	9.6	20	27	16.06	21.05
Benzo(b,k)fluoranthene	55	26	190	30	90	34	32	37	81	44.24	59.91
Benzo(g,h,i)perylene	10	7	6.7	5.1	8.3	7.2	3.7	6	5.6	5.43	6.45
1,1-Biphenyl	2.1	0.64	2.3	0.66	0.59	0.37	0.078	0.91	0.27	0.61	0.89
Carbazole	170	34	46	37	28	18	3.1	60	15	30.08	45.99
Chrysene	31	11	150	12	69	15	18	20	41	26.12	38.90
Dibenzo(a,h)anthracene	3.4	2.0	6.6	2.5	5.1	2	1.2	3.4	4	2.62	3.26
Dibenzofuran	20	5	21	5.1	5.6	2.6	0.49	8.4	2.2	4.71	7.05
Fluoranthene	78	19	520	20	350	20	24	37	83	72.52	122.54
Fluorene	62	14	59	13	19	7.1	1.2	26	7.2	13.44	20.39
Indeno(1,2,3-c,d)pyrene	13	8.8	18	7.3	12	9.2	5.2	9.1	9.8	7.83	9.48
1,-Methylnaphthalene	0.59	0.26	1.6	0.26	0.41	0.22	0.13	0.46	0.34	0.51	0.86
2-Methylnaphthalene	16	4.4	8.0	5.1	2.4	2.1	0.22	4.6	0.85	3.21	4.75
Naphthalene	11	3.4	14	3.5	2.5	2.2	0.36	4.3	1.9	2.94	4.34
Phenanthrene	87	20	91	21	45	12	4.1	38	21	23.74	33.52
Pyrene	64	17	980	19	310	21	25	35	74	92.30	176.97
tPAHs	988.59	273.10	2572.60	273.32	1146.00	229.19	152.90	457.37	492.16	458.18	725.81

mg/kg Milligrams per kilogram.
tPAHs Total polycyclic aromatic hydrocarbons.
UCL 95 percent upper confidence limit of the mean.

Table B-4. Carcinogenic PAHs in Soil in 1991, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	LF1AU (mg/kg)	BAP= LF1AU (mg/kg)	LF1AL (mg/kg)	BAP= LF1AL (mg/kg)	LF1DU (mg/kg)	BAP= LF1DU (mg/kg)	LF1DL (mg/kg)	BAP= LF1DL (mg/kg)	LF1CU (mg/kg)	BAP= LF1CU (mg/kg)	LF1CL (mg/kg)
PAHs												
Benzo(a)anthracene	0.01	11	0.11	24	0.24	15	0.15	2.1	0.021	11	0.11	5.7
Benzo(a)pyrene	1.0	13	13	14	14	11	11	1.8	1.8	14	14	4.1
Benzo(b,k)fluoranthene	0.01	30	0.3	36	0.36	32	0.32	3.4	0.034	43	0.43	18
Benzo(g,h,i)perylene	0.01	7.4	0.074	6.5	0.065	2.1	0.021	0.7	0.007	6.4	0.064	1.8
Chrysene	0.01	12	0.12	28	0.28	18	0.18	3.0	0.03	15	0.15	8.9
Dibenzo(a,h)anthracene	1.0	3.4	3.4	2.9	2.9	1.1	1.1	0.26	0.26	3.9	3.9	0.58
Indeno(1,2,3-c,d)pyrene	0.01	9.6	0.096	9.2	0.092	4.4	0.044	0.74	0.0074	7.9	0.079	1.9
1,-Methylnaphthalene	0.01	0.22	0.0022	0.17	0.0017	0.14	0.0014	0.07	0.0007	4.0	0.04	0.097
2-Methylnaphthalene	0.01	2.7	0.027	0.29	0.0029	1.1	0.011	0.067	0.00067	6.4	0.064	0.14
BAP equivalents			17.13		17.94		12.83		2.16		18.84	
Total cPAH		89.32		121.06		84.84		12.14		111.60		41.22
Carbazole		23		1.1		8.2		0.98		38		0.97

Footnotes appear on page 4.

Table B-4. Carcinogenic PAHs in Soil in 1991, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	BAP= LF1CL (mg/kg)	LF1EU (mg/kg)	BAP= LF1EU (mg/kg)	LF1EL (mg/kg)	BAP= LF1EL (mg/kg)	LF1BU (mg/kg)	BAP= LF1BU (mg/kg)	LF1BL (mg/kg)	BAP= LF1BL (mg/kg)	LF2BL (mg/kg)	BAP= LF2BL (mg/kg)
PAHs												
Benzo(a)anthracene	0.01	0.057	9.6	0.096	2.0	0.02	10	0.1	31	0.31	12	0.12
Benzo(a)pyrene	1.0	4.1	11	11	1.5	1.5	11	11	21	21	9.2	9.2
Benzo(b,k)fluoranthene	0.01	0.18	30	0.3	4.4	0.044	31	0.31	61	0.61	21	0.21
Benzo(g,h,i)perylene	0.01	0.018	4.3	0.043	0.6	0.006	4.6	0.046	9.1	0.091	5.5	0.055
Chrysene	0.01	0.089	3.6	0.036	2.9	0.029	13	0.13	36	0.36	15	0.15
Dibenzo(a,h)anthracene	1.0	0.58	3.7	3.7	0.175	0.175	1.35	1.35	2.3	2.3	2.6	2.6
Indeno(1,2,3-c,d)pyrene	0.01	0.019	5.3	0.053	0.7	0.007	5.6	0.056	12	0.12	6.8	0.068
1,-Methylnaphthalene	0.01	0.00097	0.56	0.0056	0.063	0.00063	0.27	0.0027	0.11	0.0011	0.29	0.0029
2-Methylnaphthalene	0.01	0.0014	7.7	0.077	0.11	0.0011	0.93	0.0093	0.18	0.0018	0.88	0.0088
BAP equivalents		5.05		15.31		1.78		13.00		24.79		12.41
Total cPAH			75.76		12.45		77.75		172.69		73.27	
Carbazole			98		1.1		7		5.4		6.8	

Footnotes appear on page 4.

Table B-4. Carcinogenic PAHs in Soil in 1991, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	LF2BU (mg/kg)	BAP= LF2BU (mg/kg)	LF2DU (mg/kg)	BAP= LF2DU (mg/kg)	LF2DL (mg/kg)	BAP= LF2DL (mg/kg)	LF2EU (mg/kg)	BAP= LF2EU (mg/kg)	LF2EL (mg/kg)	BAP= LF2EL (mg/kg)	LF2AU (mg/kg)
PAHs												
Benzo(a)anthracene	0.01	25	0.25	8.6	0.086	130	1.3	11	0.11	63	0.63	13
Benzo(a)pyrene	1.0	23	23	12	12	61	61	12	12	29	29	16
Benzo(b,k)fluoranthene	0.01	55	0.55	26	0.26	190	1.9	30	0.3	90	0.9	34
Benzo(g,h,i)perylene	0.01	10	0.1	7	0.07	6.7	0.067	5.1	0.051	8.3	0.083	7.2
Chrysene	0.01	31	0.31	11	0.11	150	1.5	12	0.12	69	0.69	15
Dibenzo(a,h)anthracene	1.0	3.4	3.4	2.0	2	6.6	6.6	2.5	2.5	5.1	5.1	2
Indeno(1,2,3-c,d)pyrene	0.01	13	0.13	8.8	0.088	18	0.18	7.3	0.073	12	0.12	9.2
1,-Methylnaphthalene	0.01	0.59	0.0059	0.26	0.0026	1.6	0.016	0.26	0.0026	0.41	0.0041	0.22
2-Methylnaphthalene	0.01	16	0.16	4.4	0.044	8.0	0.08	5.1	0.051	2.4	0.024	2.1
BAP equivalents			27.91		14.66		72.64		15.21		36.55	
Total cPAH		176.99		80.06		571.90		85.26		279.21		98.72
Carbazole		170		34		46		37		28		18

Footnotes appear on page 4.

Table B-4. Carcinogenic PAHs in Soil in 1991, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	TEF	BAP= LF2AU (mg/kg)	LF2AL (mg/kg)	BAP= LF2AL (mg/kg)	LF2CU (mg/kg)	BAP= LF2CU (mg/kg)	LF2CL (mg/kg)	BAP= LF2CL (mg/kg)	Mean (mg/kg)	UCL (mg/kg)
PAHs										
Benzo(a)anthracene	0.01	0.13	12	0.12	17	0.17	28	0.28		
Benzo(a)pyrene	1.0	16	9.6	9.6	20	20	27	27		
Benzo(b,k)fluoranthene	0.01	0.34	32	0.32	37	0.37	81	0.81		
Benzo(g,h,i)perylene	0.01	0.072	3.7	0.037	6	0.06	5.6	0.056		
Chrysene	0.01	0.15	18	0.18	20	0.2	41	0.41		
Dibenzo(a,h)anthracene	1.0	2	1.2	1.2	3.4	3.4	4	4		
Indeno(1,2,3-c,d)pyrene	0.01	0.092	5.2	0.052	9.1	0.091	9.8	0.098		
1,-Methylnaphthalene	0.01	0.0022	0.13	0.0013	0.46	0.0046	0.34	0.0034		
2-Methylnaphthalene	0.01	0.021	0.22	0.0022	4.6	0.046	0.85	0.0085		
BAP equivalents		18.81		11.51		24.34		32.67	19.78	25.73
Total cPAH			82.05		117.56		197.59		123.61	175.22
Carbazole			3.1		60		15		30.08	45.99

BAP Benzo(a)pyrene.
cPAH Carcinogenic polycyclic aromatic hydrocarbon.
mg/kg Milligrams per kilogram.
TEF Toxicity equivalency factor.
UCL 95 percent upper confidence limit of the mean.

Table B-5. Total PAHs in Lower Soil Zone in 1991, Land Farms 1 and 2, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	LF1AL (mg/kg)	LF1DL (mg/kg)	LF1CL (mg/kg)	LF1EL (mg/kg)	LF1BL (mg/kg)	LF2BL (mg/kg)	LF2DL (mg/kg)	LF2EL (mg/kg)	LF2AL (mg/kg)	LF2CL (mg/kg)	Mean (mg/kg)	UCL (mg/kg)
PAHs												
Acenaphthene	1.9	0.18	0.15	0.07	1.1	1.6	92	8.1	0.62	1.7	10.74	27.35
Acenaphthylene	0.59	0.13	0.58	0.35	4.1	2.4	5.4	5	2.4	4.3	2.53	3.72
Anthracene	5.7	1	2.3	1.8	16	19	170	93	9.5	84	40.23	73.23
Benzo(a)anthracene	24	2.1	5.7	2.0	31	12	130	63	12	28	30.98	53.78
Benzo(a)pyrene	14	1.8	4.1	1.5	21	9.2	61	29	9.6	27	17.82	28.32
Benzo(b,k)fluoranthene	36	3.4	18	4.4	61	21	190	90	32	81	53.68	86.46
Benzo(g,h,i)perylene	6.5	0.7	1.8	0.6	9.1	5.5	6.7	8.3	3.7	5.6	4.85	6.61
1,1-Biphenyl	0.092	0.022	0.04	0.028	0.066	0.18	2.3	0.59	0.078	0.27	0.37	0.77
Carbazole	1.1	0.98	0.97	1.1	5.4	6.8	46	28	3.1	15	10.85	19.57
Chrysene	28	3.0	8.9	2.9	36	15	150	69	18	41	37.18	62.99
Dibenzo(a,h)anthracene	2.9	0.26	0.58	0.175	2.3	2.6	6.6	5.1	1.2	4	2.57	3.82
Dibenzofuran	0.89	0.21	0.18	0.14	0.31	1.7	21	5.6	0.49	2.2	3.27	7.01
Fluoranthene	77	4.7	12	3.7	72	30	520	350	24	83	117.64	218.81
Fluorene	2.4	0.21	0.2	0.18	1.1	2.8	59	19	1.2	7.2	9.33	19.98
Indeno(1,2,3-c,d)pyrene	9.2	0.74	1.9	0.7	12	6.8	18	12	5.2	9.8	7.63	10.91
1,-Methylnaphthalene	0.17	0.07	0.097	0.063	0.11	0.29	1.6	0.41	0.13	0.34	0.33	0.60
2-Methylnaphthalene	0.29	0.067	0.14	0.11	0.18	0.88	8.0	2.4	0.22	0.85	1.31	2.74
Naphthalene	0.56	0.088	0.23	0.13	0.27	1.4	14	2.5	0.36	1.9	2.14	4.61
Phenanthrene	15	3.3	1.4	0.98	17	13	91	45	4.1	21	21.18	37.32
Pyrene	69	5.7	10	4.2	62	25	980	310	25	74	156.49	332.21
tPAHs	295.29	28.66	69.27	25.13	352.04	177.15	2,572.60	1,146.00	152.90	492.16	531.12	1,000.79

mg/kg Milligrams per kilogram.
tPAHs Total polycyclic aromatic hydrocarbons.
UCL 95 percent upper confidence limit of the mean.

Table B-6. Total PAHs in Upper Soil Zone in 1991, Land Farms 1 and 2, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	LF1AU (mg/kg)	LF1DU (mg/kg)	LF1CU (mg/kg)	LF1EU (mg/kg)	LF1BU (mg/kg)	LF2BU (mg/kg)	LF2DU (mg/kg)	LF2EU (mg/kg)	LF2AU (mg/kg)	LF2CU (mg/kg)	Mean (mg/kg)	UCL (mg/kg)
PAHs												
Acenaphthene	0.95	0.36	0.62	0.78	0.52	2.5	1.3	1	1	5.5	1.45	2.35
Acenaphthylene	3.8	1.4	2.1	1.4	1.7	5	3.7	3.8	5.2	4.7	3.28	4.15
Anthracene	54	36	140	350	23	310	75	64	41	120	121.30	188.68
Benzo(a)anthracene	11	15	11	9.6	10	25	8.6	11	13	17	13.12	15.96
Benzo(a)pyrene	13	11	14	11	11	23	12	12	16	20	14.30	16.71
Benzo(b,k)fluoranthene	30	32	43	30	31	55	26	30	34	37	34.80	39.72
Benzo(g,h,i)perylene	7.4	2.1	6.4	4.3	4.6	10	7	5.1	7.2	6	6.01	7.25
1,1-Biphenyl	0.42	0.24	0.9	2.1	0.23	2.1	0.64	0.66	0.37	0.91	0.86	1.26
Carbazole	23	8.2	38	98	7	170	34	37	18	60	49.32	78.44
Chrysene	12	18	15	3.6	13	31	11	12	15	20	15.06	19.19
Dibenzo(a,h)anthracene	3.4	1.1	3.9	3.7	1.35	3.4	2.0	2.5	2	3.4	2.68	3.26
Dibenzofuran	2.7	1.6	5.6	9.3	1.2	20	5	5.1	2.6	8.4	6.15	9.38
Fluoranthene	22	24	15	22	17	78	19	20	20	37	27.40	38.27
Fluorene	6.9	4.9	14	25	2.6	62	14	13	7.1	26	17.55	27.69
Indeno(1,2,3-c,d)pyrene	9.6	4.4	7.9	5.3	5.6	13	8.8	7.3	9.2	9.1	8.02	9.48
1,-Methylnaphthalene	0.22	0.14	4.0	0.56	0.27	0.59	0.26	0.26	0.22	0.46	0.70	1.38
2-Methylnaphthalene	2.7	1.1	6.4	7.7	0.93	16	4.4	5.1	2.1	4.6	5.10	7.67
Naphthalene	2.8	1	3.4	4.7	1.1	11	3.4	3.5	2.2	4.3	3.74	5.38
Phenanthrene	16	7.7	21	34	6.4	87	20	21	12	38	26.31	40.01
Pyrene	20	28	34	25	18	64	17	19	21	35	28.10	36.31
tPAHs	241.89	198.24	386.22	648.04	156.50	988.59	273.10	273.32	229.19	457.37	385.25	552.55

mg/kg Milligrams per kilogram.
tPAHs Total polycyclic aromatic hydrocarbons.
UCL 95 percent upper confidence limit of the mean.

Table B-7. 1991 Soil Data Summary by Sample Number, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	LF1AU (mg/kg)	LF1AL (mg/kg)	LF1DU (mg/kg)	LF1DL (mg/kg)	LF1CU (mg/kg)	LF1CL (mg/kg)	LF1EU (mg/kg)	LF1EL (mg/kg)	LF1BU (mg/kg)	LF1BL (mg/kg)	LF2BL (mg/kg)	LF2BU (mg/kg)
Phenols and Cresols												
o-Cresol	.04U	.04U	.04U	.04U	0.023	.04U	.04U	.04U	.04U	.04U	0.04	.04U
m,p-Cresol	0.044	.1U	.1U	.1U	.1U	.1U	.1U	.1U	.1U	0.047	.1U	.1U
2,4-Dimethylphenol	0.06	.86U	0.028	0.175U	0.86	0.05	0.14	0.175U	.86U	0.057	0.037	.86U
Pentachlorophenol	1.2	3.9	0.79	.9U	19.5U	1.3	18.5U	0.7	1.6	4.3	10	49U
Phenol	0.19U	1.85U	0.18U	0.175U	2.2U	0.18U	2.2U	0.175U	1.85U	2.2U	1.85U	2.2U
Tetrachlorophenols	0.19U	1.85U	0.18U	0.175U	3.9U	0.13	3.7U	0.045	0.31	0.44	0.52	10U
Trichlorophenols	.048U	.048U	.048U	.048U	.048U	.048U	.048U	.048U	.048U	.048U	0.048	.048U
PAHs												
tPAHs	241.89	295.292	198.24	28.657	386.22	69.267	648.04	25.126	156.5	352.036	177.15	988.59
cPAHs	17.13	17.94	12.83	2.16	18.84	5.05	15.31	1.78	13.00	24.79	12.41	27.91
Carbazole	23	1.1	8.2	0.98	38	0.97	98	1.1	7	5.4	6.8	170
Inorganics												
Arsenic	6.5	23	4.9	15	2.5	4.9	6.9	9.9	7.9	13	84	8.3
Chromium	6.2	14	5.5	1.9	12	5.4	6.7	2.8	8.2	7.9	100	11
Copper	37	70	22	12	39	38	44	17	30	35	140	44

Footnotes appear on page 2.

Table B-7. 1991 Soil Data Summary by Sample Number, Southern Wood Piedmont Facility, Wilmington, North Carolina.

Constituent	LF2DU (mg/kg)	LF2DL (mg/kg)	LF2EU (mg/kg)	LF2EL (mg/kg)	LF2AU (mg/kg)	LF2AL (mg/kg)	LF2CU (mg/kg)	LF2CL (mg/kg)	Mean (mg/kg)	UCL (mg/kg)
Phenols and Cresols										
o-Cresol	.04U	.04U	0.022	.04U	0.024	.04U	0.028	0.026	0.04	0.04
m,p-Cresol	.1U	.1U	0.087	.1U	0.1	0.07	.1U	.1U	0.1	0.1
2,4-Dimethylphenol	.86U	.86U	0.081	.86U	0.092	0.082	0.087	0.12	0.36	0.51
Pentachlorophenol	6.4	150	4.1	19	3.8	2.8	4.6	22	16.22	29.21
Phenol	2.2U	2.2	1.95U	2.2U	2U	2.05U	2.2U	2.2U	1.61	1.94
Tetrachlorophenols	0.34	3.5	0.47	1.1	0.48	0.25	3.8U	0.85	1.61	2.54
Trichlorophenols	.048U	.048U	.048U	.048U	.048U	.048U	.048U	.048U	0.048	0.048
PAHs										
tPAHs	273.1	2572.6	273.32	1146	229.19	152.898	457.37	492.16	458.18	681.28
cPAHs	14.66	72.64	15.21	36.55	18.81	11.51	24.34	32.67	19.78	25.73
Carbazole	34	46	37	28	18	3.1	60	15	30.08	45.99
Inorganics										
Arsenic	6.4	22	6.7	9.5	7.9	18	5.6	14	13.85	20.60
Chromium	7.1	21	7.8	15	15	12	6.2	9.8	13.78	21.82
Copper	35	150	39	51	42	120	41	62	53.40	68.31

mg/kg Milligrams per kilogram.
cPAHs Carcinogenic polycyclic aromatic hydrocarbons.
tPAHs Total polycyclic aromatic hydrocarbons.
U Value is one half the practical quantitation limit.
UCL 95 percent upper confidence limit of the mean.

REFERENCE 69

Ref. 69

DATA SUMMARY REPORT FOR THE TREATED AND NON-TREATED WOOD STORAGE AREAS SOIL INVESTIGATION SOUTHERN WOOD PIEDMONT COMPANY, WILMINGTON, NORTH CAROLINA

December 9, 1993

NC009006

Prepared for:

SOUTHERN WOOD PIEDMONT COMPANY
Spartanburg, South Carolina

Prepared by:

GERAGHTY & MILLER, INC.
Environmental Services
2840 Plaza Place - Suite 350
Raleigh, North Carolina 27612
(919) 571-1662

1623swp

DATA SUMMARY REPORT FOR THE TREATED AND NON-TREATED WOOD STORAGE AREA SOIL INVESTIGATION SOUTHERN WOOD PIEDMONT COMPANY, WILMINGTON, NORTH CAROLINA

December 9, 1993

Geraghty & Miller, Inc., is submitting this report to Southern Wood Piedmont Company for work performed at the treated and non-treated wood storage areas in Wilmington, North Carolina. The report was prepared in conformance with Geraghty & Miller's strict quality assurance/quality control procedures to ensure that the report meets industry standards in terms of the methods used and the information presented. If you have any questions or comments concerning this report, please contact one of the individuals listed below.

Respectfully submitted,

GERAGHTY & MILLER, INC.

Mark E. Radecke
Staff Scientist/Quality Assurance Manager

Christopher W. Lovdahl
Project Scientist/Project Manager

William H. Doucette, Jr., Ph.D., P.G.
Associate/ Senior Technical Consultant
South Region

CONTENTS

Page

1.0 INTRODUCTION 1-1

2.0 SITE HISTORY AND ENVIRONMENTAL SETTING 2-1
- 2.1 Site History 2-1
- 2.2 Surrounding Land Use 2-1
- 2.3 Regional and Site Geology and Hydrology 2-2

3.0 INVESTIGATIVE METHODS 3-1
- 3.1 Soil Borings and Sampling Program 3-1
- 3.2 Chain of Custody 3-2
- 3.3 Sample Analysis 3-3
- 3.4 Data Validation 3-3

4.0 SAMPLING RESULTS 4-1
- 4.1 Soil Sample Results 4-1
  - 4.1.1 Semi-Volatile Constituents 4-1
  - 4.1.2 Inorganic Constituents 4-2
- 4.2 Visual Soil Assessment Results 4-3

5.0 REFERENCES 5-1

TABLES

3-1. Wood-Preserving Constituents Analyzed for in Soil Samples, Southern Wood Piedmont, Wilmington, North Carolina.

3-2. Field Quality Control Sample Results, Southern Wood Piedmont, Wilmington, North Carolina.

4-1. Semi-Volatile Organic and Inorganic Constituents Detected in the 0- to 6-Inch Soil Samples Collected in the Former Non-Treated Wood Storage Area NTA, Southern Wood Piedmont, Wilmington, North Carolina.

4-2. Semi-Volatile Organic and Inorganic Constituents Detected in the 0- to 6-Inch Soil Samples Collected in the Former Non-Treated Wood Storage Area NTB, Southern Wood Piedmont, Wilmington, North Carolina.

4-3. Semi-Volatile Organic and Inorganic Constituents Detected in 0- to 6-Inch and 12- to 18-Inch Soil Samples Collected in the Former Treated Wood Storage Area TWS, Southern Wood Piedmont, Wilmington, North Carolina.

FIGURES

3-1. Locations of the Former Treated (TWS) and Non-Treated (NTA and NTB) Wood Storage Areas, Southern Wood Piedmont, Wilmington, North Carolina..

4-1. Total Detected K001, Arsenic, Chromium, and Copper Measured in Soil Samples Collected in the Former Non-Treated Wood Storage Area NTA, Southern Wood Piedmont, Wilmington, North Carolina..

4-2. Total Detected K001, Arsenic, Chromium, and Copper Measured in Soil Samples Collected in the Former Non-Treated Wood Storage Area NTB, Southern Wood Piedmont, Wilmington, North Carolina.

4-3. Total Detected K001, Arsenic, Chromium, and Copper Measured in Soil Samples Collected in the Former Treated Wood Storage Area TWS, Southern Wood Piedmont, Wilmington, North Carolina.

4-4. Soil Boring Investigation Observations at Locations in the Former Non-Treated Wood Storage Area NTA, Southern Wood Piedmont, Wilmington, North Carolina.

4-5. Soil Boring Investigation Observations at Locations in the Former Non-Treated Wood Storage Area NTB, Southern Wood Piedmont, Wilmington, North Carolina.

4-6. Soil Boring Investigation Observations at Locations in the Former Treated Wood Storage Area TWS, Southern Wood Piedmont, Wilmington, North Carolina.

APPENDICES

A. Field Logs
B. Analytical Laboratory Reports and Chain-of-Custody Forms

1.0 INTRODUCTION

Geraghty & Miller, Inc., was retained by the Southern Wood Piedmont Company (SWP) to sample the soils in the former treated wood storage (TWS) and former non-treated wood storage areas (NTA, north of Greenfield Street, and NTB, south of Greenfield Street). The purpose of the sampling was to determine whether the surficial soils within these areas had been impacted by wood-treating constituents. A grid system on 100-foot (ft) centers was laid out over the areas to be sampled, and hand-augered soil samples collected from one-third of the grid points were submitted to Savannah Laboratories and Environmental Services, Inc., (SL) for chemical analysis. Two depths (0 to 6 inches and 12 to 18 inches) were sampled. The samples for laboratory analysis were selected using random number tables. Hand-augered borings also were advanced at all remaining grid points. The soils at these locations were examined visually for evidence of wood-treating constituents. All observations, including odor, were recorded.

1623swp

2.0 SITE HISTORY AND ENVIRONMENTAL SETTING

This section describes the site history. Land use for the surrounding area and regional/local geology and hydrogeology also are discussed.

2.1 SITE HISTORY

The site was operated as a wood-treatment facility in Wilmington, North Carolina, from approximately 1930 to 1983. In 1930 the North State Treating Company leased the property previously operated by Liberty Shipyards. In 1935, the Taylor Colquitt Company leased the property formerly owned and operated by North State Treating Company. SWP acquired the company in 1969. SWP added chromated copper arsenate (CCA) to the wood-treatment process in the early 1970s, and PCP was added in the late 1970s. Each of the three preservatives (creosote, PCP, and CCA) were stored on-site in tanks adjacent to the wood-treating facility. Additional creosote storage was in the southwestern property corner. In 1983, the SWP facility ceased its wood-treatment operations and began closure procedures.

2.2 SURROUNDING LAND USE

The SWP facility, which measures approximately 1,000 ft east to west by 1,600 ft north to south, lies within an industrialized area of Wilmington, North Carolina. Industry in the vicinity includes the Hess Fuel Tank Farms, separated from the SWP property by a ditch on the north side, and the Poctank, Inc., plant separated by an undeveloped lot on the south side of the SWP property. The major roads in the vicinity of the plant are Greenfield and Surrey Streets. Greenfield Street runs in an east-west direction and dead ends into the center of the facility. The NTB area, included in this investigation, lies on the south side of Greenfield Street. Surrey Street runs in a north-south direction and is situated east of the property. The Cape Fear River borders the property on the west.

2.3 REGIONAL AND SITE GEOLOGY AND HYDROLOGY

The Wilmington site is in the Coastal Plain physiographic province of North Carolina, a region underlain by Cretaceous and Cenozoic marine and non-marine sedimentary sequences. Approximately 1,500 feet of Coastal Plain sediments overlie pre-Mesozoic crystalline basement rock in the Wilmington area (USGS, 1985). The site is directly underlain by the Cretaceous-age Pee Dee Formation (USGS, 1985), which consists predominantly of unconsolidated, dark green to gray, clay-rich, marine sand and which may contain calcareous sandstone ledges (Sohl and Owens, 1991).

Five soil borings were advanced at the site to a maximum depth of approximately 50 ft by Soil and Material Engineers, Inc., during 1981, and an additional four borings (to a maximum depth of 20 ft) were drilled by Law Environmental in 1985. Lithologic logs (Soil and Material Engineers, 1981; Law Environmental, 1985) indicate that a surficial layer of sandy fill material or sand is present at the site, which varies from less than 1 ft to 18 ft in thickness. This layer, which appears to be thickest in the northern part of the site, is described as consisting of fine to medium sand, with wood, roots, or other material occasionally found. Below this sandy material is a layer consisting of dark brown, organic-rich silt or peat, which may contain traces of fine sand, roots, and wood fragments. This layer ranges in thickness from 5 to 19 ft in the soil boring locations and apparently increases in thickness toward the Cape Fear River to the west. Fine to medium sands extend from below the organic-rich layers to a depth of 42 to 45.5 ft, below which a gray marl is encountered (Soil and Material Engineers, Inc., 1981).

Based on their observations, Soil and Material Engineers (1981) concluded that the dominant direction of shallow groundwater flow at the site is to the south, parallel to the Cape Fear River. Water-table maps prepared by Law Environmental (1985) indicate westward to southwestward flow (toward the river) near the landfarm areas and generally southward flow at the eastern part of the site. Tidal influences may cause temporary alterations or reversals in

these flow directions. Hydraulic conductivities ranging from 3×10^{-5} centimeters/second (cm/sec) to 1×10^{-6} cm/sec were determined based on in-situ monitor well tests, and an average groundwater flow velocity of 0.10 ft/year was calculated (Law Environmental, 1985).

1623swp

3.0 INVESTIGATIVE METHODS

The soil sampling program was designed to determine whether the surficial soils within the treated and non-treated wood storage areas have been impacted by wood-treating constituents and to define the lateral and, to the extent possible, vertical extent of any impacts. Selected samples were analyzed by U.S. Environmental Protection Agency (USEPA) methodologies for wood-preserving constituents. All field records and analytical data were reviewed and validated by a Geraghty & Miller Quality Assurance Manager.

3.1 SOIL BORINGS AND SAMPLING PROGRAM

Hand-operated bucket auger soil borings were advanced at a total of 92 locations in the three former wood storage areas. A total of 48 samples were collected from 35 locations for laboratory analysis. Soils from the remaining 57 locations were examined visually.

- NTA - 9 shallow (0 to 6 inches) soil samples were collected for analysis from 9 boring locations, and visual observations only were recorded at 12 boring locations;

- NTB - 13 shallow (0 to 6 inches) soil samples were collected for analysis from 13 boring locations, and visual observations only were recorded at 21 boring locations; and

- TWS - 13 shallow (0 to 6 inches) and 13 deeper (12 to 18 inches) soil samples were collected for analysis from 13 boring locations for a total of 26 samples, and visual observations only were recorded at 24 boring locations.

The samples were collected based on a grid system on 100-ft centers laid out over the three former wood storage areas. Figure 3-1 shows the locations of the three areas. Soil samples

from only one depth (0 to 6 inches) were collected in the former non-treated wood storage areas (NTA and NTB). Samples from two depths were collected from the former TWS area to determine whether wood-preserving constituents have migrated vertically through the soil profile. Visual evidence of creosote in the form of staining and weathered material was observed on the soil surface in the TWS but not in the NTA or NTB.

The soil investigation was conducted as two separate sampling events. During the first event, conducted on February 26-28, 1991, hand-augered soil samples were collected for laboratory analysis from one-third of the grid points analysis. The results of this sampling event indicated that additional characterization was required. Therefore, on April 3, 1991, hand-augered soil borings were advanced at remaining grid points for visual assessment only. The borehole depths were identical to those of the first sampling event.

A small-diameter (<4-inch), stainless steel, hand-held bucket auger was used to collect soil samples. The samples were thoroughly mixed in a stainless steel bowl and stored in pre-cleaned sample containers on ice at 4°C. The auger and bowl were decontaminated between samples with a laboratory-grade soap solution and rinsed three times with distilled water.

3.2 CHAIN OF CUSTODY

Samples collected in the field remained in the presence of a project representative at all times until they were shipped to the analytical laboratory. The transfer of the samples to the laboratory was accomplished by means of chain-of-custody forms. Activity documentation logs completed during this investigation are presented in Appendix A, and chain-of-custody forms are included in Appendix B. The placement of the custody seals ensured the integrity of the samples and prevented potential tampering.

3.3 SAMPLE ANALYSIS

All samples collected for laboratory analysis were packed with ice in insulated coolers and shipped by overnight carrier to SL in Savannah, Georgia. All samples were analyzed for the list of wood-preserving constituents shown in Table 3-1. The USEPA analytical methods also are shown on Table 3-1.

3.4 DATA VALIDATION

The purpose of this section is to evaluate the field data for adherence to the sampling plan and to ensure the completion of required documentation. Additionally, the analytical laboratory data were reviewed for the completeness of the data package deliverables and the achievement of project-specific data quality objectives.

All field activities were appropriately documented, as illustrated by the sampling logs presented in Appendix A. Field (FB) and rinsate blanks (RB) for nutrient and wood-preserving constituent analysis were taken at a frequency of 1 for every 20 samples collected. Field and rinsate blank sample results are shown in Table 3-1.

All soil and quality control samples collected were analyzed within the required holding times. All quality control samples were found to be within established control limits.

4.0 SAMPLING RESULTS

4.1 SOIL SAMPLE RESULTS

The wood-preserving constituent results for soil samples collected from NTA, NTB, and TWS are presented in Tables 4-1 through 4-3, respectively. Figures 4-1 through 4-3 show the analytical results for the organic wood-preserving constituents (summed and identified as K001) and inorganic constituents (arsenic, chromium, copper) plotted on maps for the NTA, NTB, and TWS areas.

4.1.1 Semi-Volatile Constituents

A total of 14 semi-volatile organic compounds (semi-VOCs) were detected above their respective practical quantitation limits (PQLs) in the samples. Twelve are PAHs: naphthalene, acenaphthene, acenaphthylene, phenanthrene, anthracene, benzo(a)anthracene, chrysene, benzo(a)pyrene, benzo(b,k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene, and fluoranthene. The PAHs are characteristic components of creosote. One constituent is a heterocyclic, nitrogen-containing organic (carbazole), and one is a phenolic compound (trichlorophenol isomers).

The semi-VOC concentrations were summed as total K001 compounds for comparison purposes. Semi-volatile wood-treating constituents were detected in 18 of 26 samples collected in the former TWS area. Soil samples collected from the TWS area generally had the highest concentrations of K001 compounds, with the maximum occurring in sample TWS-10. Samples from this boring, on the north side of area TWS near the Cape Fear River, had total K001 concentrations of 200 and 15,000 milligrams per kilogram dry weight (mg/kg dw) for 0- to 6-inch and 12- to 18-inch deep samples, respectively. Two other samples, the 0- to 6-inch sample from boring TWS-1 (110 mg/kg dw) and the 12- to 18-inch sample from boring TWS-13 (470

mg/kg dw) had total K001 concentrations exceeding 100 mg/kg dw. The rest of the samples from area TWS had total K001 concentrations below 100 mg/kg dw.

In 10 of 13 area TWS borings, total K001 concentrations decreased with increasing depth from the 0- to 6-inch interval to the 12- to 18-inch interval. Total K001 concentrations in the 12- to 18-inch samples from borings TWS-10 (15,000 mg/kg dw), TWS-12 (100 mg/kg dw), and TWS-3 (470 mg/kg dw) were higher than the corresponding 0- to 6-inch samples (200, ND, and 22 mg/kg dw, respectively). This vertical distribution indicates that downward migration of constituents originally released to the surficial soils has occurred. Natural biotic and abiotic degradation of the PAHs in the surficial soil (0- to 6-inch interval) may account for the differences in concentrations with depth. In each of these three borings, concentrations of PAHs having more than three aromatic rings in their molecular structures were proportionately greater in the 12- to 18-inch samples than in the 0- to 6-inch samples. PAHs with more than three rings are more resistant to aerobic biodegradation than those containing two or three rings (USEPA, 1990). Aerobic biodegradation occurs more rapidly in the 0- to 6-inch soil interval than at greater depths due to higher oxygen levels and higher daytime temperatures.

Semi-volatile wood-treating constituents were detected in 23 of 24 samples collected in the former non-treated wood storage areas (NTA and NTB). The maximum total K001 concentration for samples collected from areas NTA and NTB was 390 mg/kg dw, detected in the sample from boring NTB-4. The rest of the samples collected in areas NTA and NTB had less than 100 mg/kg total K001 compounds.

4.1.2 Inorganic Constituents

Arsenic, chromium, and copper were detected at a frequency of 20, 26, and 16 samples, respectively, from a total of 26 samples collected in area TWS. Maximum concentrations of arsenic, chromium, and copper in area TWS samples were 41, 29, and 100 mg/kg dw,

respectively. These maximum concentrations are within observed ranges for these elements in soils of the eastern United States (USGS, 1984).

Frequencies of detection and concentrations of the metals were generally greater for samples collected in areas NTA and NTB than in area TWS. Arsenic, chromium, and copper were detected in all 9 samples collected in area NTA, and in 12, 13, and 12 samples, respectively, of a total of 13 samples collected in area NTB. Maximum concentrations of arsenic, chromium, and copper were 63, 15, and 300 mg/kg dw, respectively, in area NTA samples and 13, 22, and 130 mg/kg dw, respectively, in area NTB samples. These maximum concentrations are also within observed ranges for these elements in soils of the eastern United States (USGS, 1984).

4.2 VISUAL SOIL ASSESSMENT RESULTS

The results of the visual soil assessment for areas NTA, NTB, and TWS are shown on Figures 4-4 through 4-6, respectively. Odors and/or discolored soils were observed in 2 of 12 locations during the visual assessment at area NTA, on the northern edge of the area bordering an intermittent stream. Observations of odors and/or discolored soils were made at 6 of 21 locations during the assessment in area NTB, and these locations were distributed throughout the area (not concentrated near one location). In area TWS, observations of odors and/or discolored soils were made at 8 of 23 locations, and these observations also were distributed throughout the area.

5.0 REFERENCES

Geraghty & Miller, Inc., 1990. Work Plan for the Assessment of Landfarmed Areas at the Former Southern Wood Piedmont Facility, Wilmington, North Carolina. October. Consultant's report prepared for Southern Wood Piedmont Company.

Law Environmental, 1985. Monitoring Well Installation and Hydrogeologic Report, Wilmington, North Carolina Plant. Consultant's report prepared for Southern Wood Piedmont Company.

North Carolina Geological Survey (NCGS), 1985. Geologic Map of North Carolina. The North Carolina Geological Survey, Raleigh, NC.

North Carolina Department of Human Resources (NCDHR), 1985. Southern Wood Piedmont Company: NCD058517 467, Administrative Order of Consent.

Sohl, N.F., and J.P. Owens, 1991. Cretaceous Stratigraphy of the Carolina Coastal Plain: In The Geology of the Carolinas. The University of Tennessee Press, Knoxville, TN.

Soil and Material Engineers, Inc., 1981. Geotechnical Investigation Report, City of Wilmington Property Leased by Southern Wood Piedmont Company, Wilmington, North Carolina. Consultant's report prepared for Southern Wood Piedmont Company.

U.S. Environmental Protection Agency (USEPA), 1989. On-Site Treatment of Creosote and Pentrachlorophenol Sludges and Contaminated Soil. Office of Research and Development. State College, MS. EPA 600/52-88/055.

U.S. Environmental Protection Agency (USEPA), 1990. Fate of PAH Compounds in Two Soil Types: Influence of Volatilization, Abiotic Loss and Biological Activity. Robert S, Kerr Environmental Lab., Ada, OK.

U.S. Geological Survey (USGS), 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. Professional Paper 1270.

1623wp

TABLES

1623ewp

Table 3-1. Wood-Preserving Constituents Analyzed for in Soil Samples, Southern Wood Piedmont Company, Wilmington, North Carolina.

Constituents	Analytical Method (1)
Semi-Volatile Organics	
2-Chlorophenol	8270
Phenol	8270
2,4-Dimethylphenol	8270
Trichlorophenols	8270
p-Chloro-m-cresol	8270
Tetrachlorophenols	8270
2,4-Dinitrophenol	8270
Pentachlorophenol	8270
Naphthalene	8270
Acenaphthene	8270
Acenaphthylene	8270
Phenanthrene	8270
Anthracene	8270
Fluoranthene	8270
Chrysene	8270
Benzo(a)anthracene	8270
Benzo(b,k)fluoranthene	8270
Benzo(a)pyrene	8270
Indene(1,2,3-c,d)pyrene	8270
Dibenzo(a,h)anthracene	8270
Carbazole	8270
Inorganics	
Arsenic	7060
Chromium	6010
Copper	6010

(1) USEPA, 1987.

Table 3-2. Field Quality Control Sample Results, Southern Wood Piedmont, Wilmington, North Carolina.

CONSTITUENTS (mg/L)	RB-1 [1]	FB-1 [1]	RB-2 [2]	FB-2 [2]	RB-3 [3]	FB-3 [3]
Semi-Volatile Organics (8270)						
2-Chlorophenol	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND
Benzo(b,k)fluoranthene	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	ND	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND	ND	ND
Inorganics						
Arsenic (7060)	ND	ND	ND	ND	ND	ND
Chromium (6010)	ND	ND	ND	ND	ND	ND
Copper (6010)	ND	ND	ND	ND	ND	ND

ND Constituent was not detected.
RB Rinsate blank (rinsate of bucket auger soil sampler).
FB Field blank.
1 Collected in association with soil samples collected in area NTA.
2 Collected in association with soil samples collected in area TWS.
3 Collected in association with soil samples collected in area NTB.
mg/L Milligrams per liter.

Table 4-1. Semi-Volatile Organic and Inorganic Constituents Detected in 0- to 6-Inch Soil Samples Collected in the Former Non-Treated Wood Storage Area NTA, Southern Wood Piedmont, Wilmington, North Carolina.

CONSTITUENTS (mg/kg dw)	NTA-1/ 9329	NTA-2/ 9330	NTA-3/ 9331	NTA-4/ 9332	NTA-5/ 9333	NTA-6/ 9334	NTA-7/ 9335	NTA-8/ 9336	NTA-9/ 9337
Semi-Volatile Organics (8270)									
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	0.66	ND	ND	ND	0.99	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	0.48	ND
Phenanthrene	0.82	ND	1.0	ND	0.42	0.44	1.1	0.47	ND
Anthracene	0.77	ND	0.79	ND	0.36	0.55	1.1	0.95	ND
Fluoranthene	2.5	4.0	2.4	0.52	1.5	1.3	1.7	2.0	ND
Chrysene	1.7	2.7	1.7	ND	0.93	0.93	1.5	1.7	ND
Benzo(a)anthracene	1.2	1.6	1.1	ND	0.57	0.47	0.97	1.5	ND
Benzo(b,k)fluoranthene	4.1	5.9	4.1	0.80	2.2	ND	1.7	2.9	ND
Benzo(a)pyrene	1.0	1.1	1.0	ND	0.41	ND	0.77	1.3	ND
Indeno(1,2,3-c,d)pyrene	0.68	0.66	0.85	ND	ND	ND	ND	0.58	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	ND	0.54	0.49	ND	ND	ND	1.1	1.0	ND
Inorganics									
Arsenic (7060)	11	1.8	30	2.8	7.1	25	63	10	54
Chromium (6010)	8.4	3.8	15	5.1	4.7	4.3	13	5.9	8.9
Copper (6010)	72	11	300	4.5	56	51	240	7.8	8.8
Percent Solids, %	73	75	76	83	82	82	62	78	82

ND Constituent was not detected.
mg/kg dw Milligrams per kilogram dry weight.

Table 4-2. Semi-Volatile Organic and Inorganic Constituents Detected in the 0- to 6-Inch Soil Samples Collected in the Former Non-Treated Wood Storage Area NTB, Southern Wood Piedmont, Wilmington, North Carolina.

CONSTITUENTS (mg/kg dw)	NTB-1/ 9370	NTB-2/ 9367	NTB-3/ 9364	NTB-4/ 9369	NTB-5/ 9368	NTB-6/ 9365	NTB-7/ 9366	NTB-8/ 9371	NTB-9/ 9372	NTB-10/ 9374	NTB-11/ 9373	NTB-12/ 9375	NTB-13/ 9376
Semi-Volatile Organics (8270)													
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	0.93	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	2.0	1.0	ND	54	ND	ND	ND	ND	ND	3.0	ND	ND	ND
Anthracene	7.6	3.7	ND	84	ND	ND	ND	ND	ND	1.3	ND	ND	ND
Fluoranthene	7.5	1.3	0.39	97	0.70	0.91	0.83	0.68	1.0	5.8	0.63	0.58	0.86
Chrysene	4.6	0.74	0.40	52	0.49	0.82	0.75	0.79	1.2	4.5	0.76	0.59	0.93
Benzo(a)anthracene	3.1	0.56	ND	25	ND	0.38	ND	ND	ND	3.1	0.50	ND	0.69
Benzo(b,k)fluoranthene	11	1.0	0.45	50	ND	1.7	1.5	1.2	2.0	5.5	1.7	1.2	1.3
Benzo(a)pyrene	4.3	ND	ND	17	ND	0.39	ND	ND	ND	1.2	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	3.8	ND	ND	ND	ND	ND	ND	ND	ND	0.57	ND	ND	ND
Dibenzo(a,h)anthracene	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	1.6	2.2	ND	11	ND	ND	ND	ND	ND	0.51	ND	ND	ND
Inorganics													
Arsenic (7060)	7.0	ND	4.8	1.7	1.8	5.0	9.4	5.3	12	4.7	8.1	3.2	13
Chromium (6010)	8.0	1.8	9.1	2.0	3.2	2.3	2.7	5.6	5.7	2.2	4.6	1.4	22
Copper (6010)	30	ND	4.3	9.7	3.9	11	2.8	90	130	8.6	81	3.1	20
Percent Solids, %	68	91	88	87	78	87	79	78	71	71	89	72	51

ND Constituent was not detected.
mg/kg dw Milligrams per kilogram dry weight.

Table 4-3. Semi-Volatile Organic and Inorganic Constituents Detected in 0- to 6-Inch and 12- to 18-Inch Soil Samples Collected in the Former Treated Wood Storage Area TWS, Southern Wood Piedmont, Wilmington, North Carolina.

CONSTITUENTS (mg/kg dw)	TWS-1A/ 9362 0-6"	TWS-1B/ 9363 12-18"	TWS-2A/ 9360 0-6"	TWS-2B/ 9361 12-18"	TWS-3A/ 9358 0-6"	TWS-3B/ 9359 12-18"	TWS-4A/ 9356 0-6"	TWS-4B/ 9357 12-18"	TWS-5A/ 9354 0-6"	TWS-5B/ 9355 12-18"	TWS-6A/ 9352 0-6"	TWS-6B/ 9353 12-18"
Semi-Volatile Organics (8270)												
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	0.60	ND	0.48	ND	ND	ND	0.66	ND
Phenanthrene	13	ND	ND	ND	0.75	220	0.75	ND	0.64	ND	2.4	ND
Anthracene	36	ND	0.68	ND	1.7	51	1.4	ND	1.1	ND	2.3	ND
Fluoranthene	25	ND	3.4	1.0	3.9	150	5.9	0.95	1.2	ND	16	ND
Chrysene	8.0	ND	3.5	0.73	3.2	13	4.8	ND	0.95	ND	8.1	ND
Benzo(a)anthracene	6.2	ND	2.2	0.66	1.7	17	2.6	ND	0.88	ND	5.0	ND
Benzo(b,k)fluoranthene	12	ND	6.7	ND	7.0	20	8.2	ND	0.73	ND	13	ND
Benzo(a)pyrene	5.1	ND	1.3	ND	1.4	ND	1.4	ND	0.58	ND	3.5	ND
Indeno(1,2,3-c,d)pyrene	ND	ND	0.53	ND	0.84	ND	0.63	ND	ND	ND	1.9	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.49	ND
Carbazole	7.1	ND	ND	ND	0.77	ND	1.0	ND	ND	ND	1.8	ND
Inorganics												
Arsenic (7060)	6.8	2.0	13	4.3	6.4	3.5	26	13	41	1.6	8.7	6.1
Chromium (6010)	6.5	4.8	7.0	3.8	8.8	6.1	8.4	29	19	4.1	13	27
Copper (6010)	88	12	8.2	ND	ND	ND	7.3	16	71	ND	7.2	3.9
Percent Solids, %	89	79	72	72	71	55	74	56	70	79	83	55

ND Constituent was not detected.
mg/kg dw Milligrams per kilogram dry weight.

Table 4-3. Semi-Volatile Organic and Inorganic Constituents Detected in 0- to 6-Inch and 12- to 18-Inch Soil Samples Collected in the Former Treated Wood Storage Area TWS, Southern Wood Piedmont, Wilmington, North Carolina.

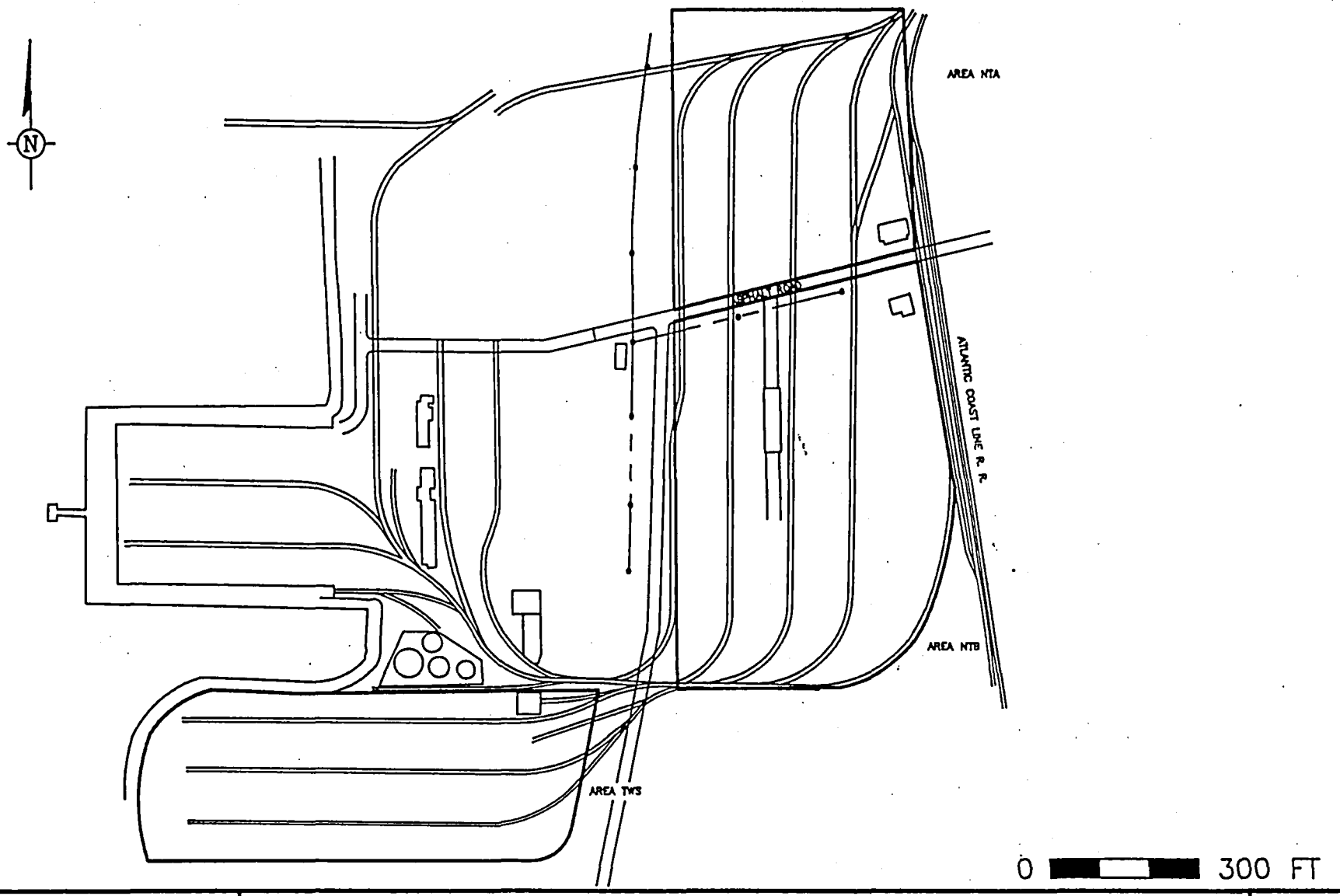
CONSTITUENTS (mg/kg dw)	TWS-7A/ 9350 0-6"	TWS-7B/ 9351 12-18"	TWS-8A/ 9346 0-6"	TWS-8B/ 9347 12-18"	TWS-9A/ 9348 0-6"	TWS-9B/ 9349 12-18"	TWS-10A/ 9344 0-6"	TWS-10B/ 9345 12-18"	TWS-11A/ 9342 0-6"	TWS-11B/ 9343 12-18"	TWS-12A/ 9338 0-6"	TWS-12B/ 9339 12-18"	TWS-13A/ 9340 0-6"	TWS-13B/ 9341 12-18"
Semi-Volatile Organics (8270)														
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND	ND	ND	2.8	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	0.87	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	0.93	2000	ND	ND	ND	ND	ND	ND
Acenaphthylene	0.50	ND	ND	ND	ND	ND	2.5	ND	0.46	ND	ND	ND	ND	ND
Phenanthrene	0.73	ND	0.74	ND	ND	ND	4.2	4000	0.43	ND	ND	ND	ND	ND
Anthracene	1.2	ND	1.2	ND	ND	ND	14	2200	1.2	ND	ND	ND	ND	ND
Fluoranthene	4.2	ND	3.6	ND	1.3	ND	33	3700	4.9	0.43	ND	42	0.66	ND
Chrysene	3.6	ND	2.5	ND	0.89	ND	27	740	4.0	0.49	ND	19	ND	ND
Benzo(a)anthracene	2.4	ND	1.2	ND	ND	ND	23	800	2.9	ND	ND	12	ND	ND
Benzo(b,k)fluoranthene	7.4	ND	4.9	ND	2.0	ND	60	690	2.7	1.0	ND	30	ND	ND
Benzo(a)pyrene	1.6	ND	0.89	ND	ND	ND	17	290	1.6	ND	ND	ND	ND	ND
Indeno(1,2,3-c,d)pyrene	1.0	ND	0.64	ND	ND	ND	7.2	88	0.68	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND
Carbazole	0.90	ND	0.74	ND	ND	ND	3.4	390	0.93	ND	ND	ND	ND	ND
Inorganics														
Arsenic (7060)	2.7	ND	1.9	ND	ND	ND	1.3	6.1	31	2.2	ND	1.6	1.8	ND
Chromium (6010)	5.3	3.2	3.4	1.2	4.1	2.2	2.7	4.2	11	3.7	2.7	6.0	5.2	1.8
Copper (6010)	3.8	ND	4.4	ND	3.3	4.4	17	110	15	ND	ND	4.2	ND	ND
Percent Solids, %	75	77	79	85	80	80	80	50	78	79	92	87	77	81

ND Constituent was not detected.
mg/kg dw Milligrams per kilogram dry weight.

FIGURES

1623swp

DWG D[illegible]2 OCT 93 | PRJCT NO.: NC0090.006 | FILE NO.: SWP-WILM | DRAWING: NC[illegible] | CHECKED: C. LOVDAHL | APPROVED: C. LOVDAHL | DRAFTER: [illegible]HNSON

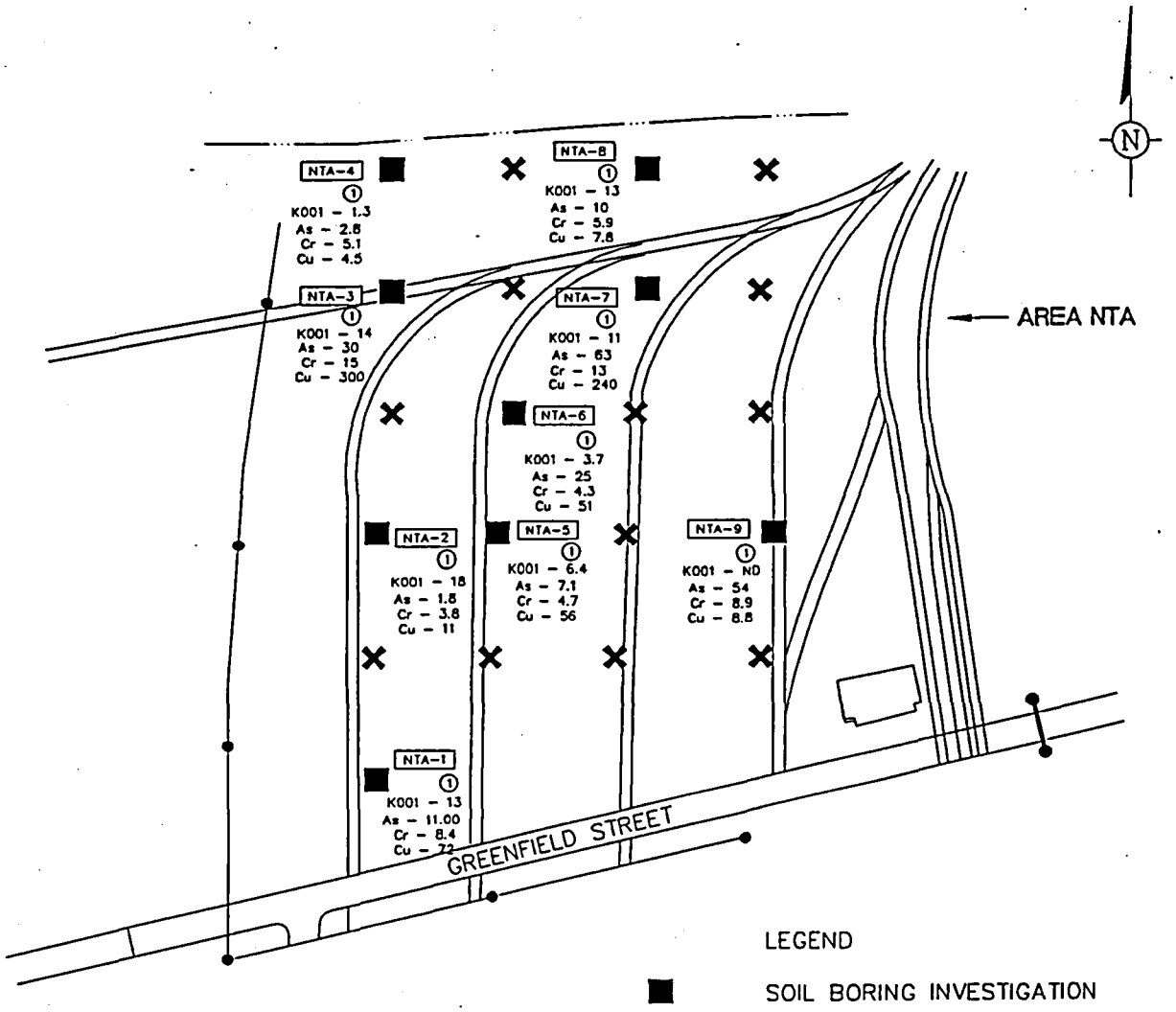


GERAGHTY & MILLER, INC.
Environmental Services

LOCATIONS OF THE FORMER TREATED (TWS) AND NON-TREATED (NTA AND NTB) WOOD STORAGE AREAS

SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

FIGURE 3-1



LEGEND

■ SOIL BORING INVESTIGATION

THE FOLLOWING DESIGNATIONS APPLY FOR ALL NTA SAMPLING LOCATIONS:

(1) DENOTES DEPTH AT 0"–6"

K001 – TOTAL DETECTABLE K001 (mg/kg dw)
As – TOTAL ARSENIC (mg/kg dw)
Cr – TOTAL CHROMIUM (mg/kg dw)
Cu – TOTAL COPPER (mg/kg dw)
ND – NOT DETECTED

✕ SOIL BORING INVESTIGATION LOCATION (NOT SAMPLED FOR CHEMICAL ANALYSIS)

—●— OVERHEAD ELEC. AND POLE

—··— DRAINAGE DITCH

0 ▬▬▬ 150 FT

GERAGHTY & MILLER, INC.
Environmental Services

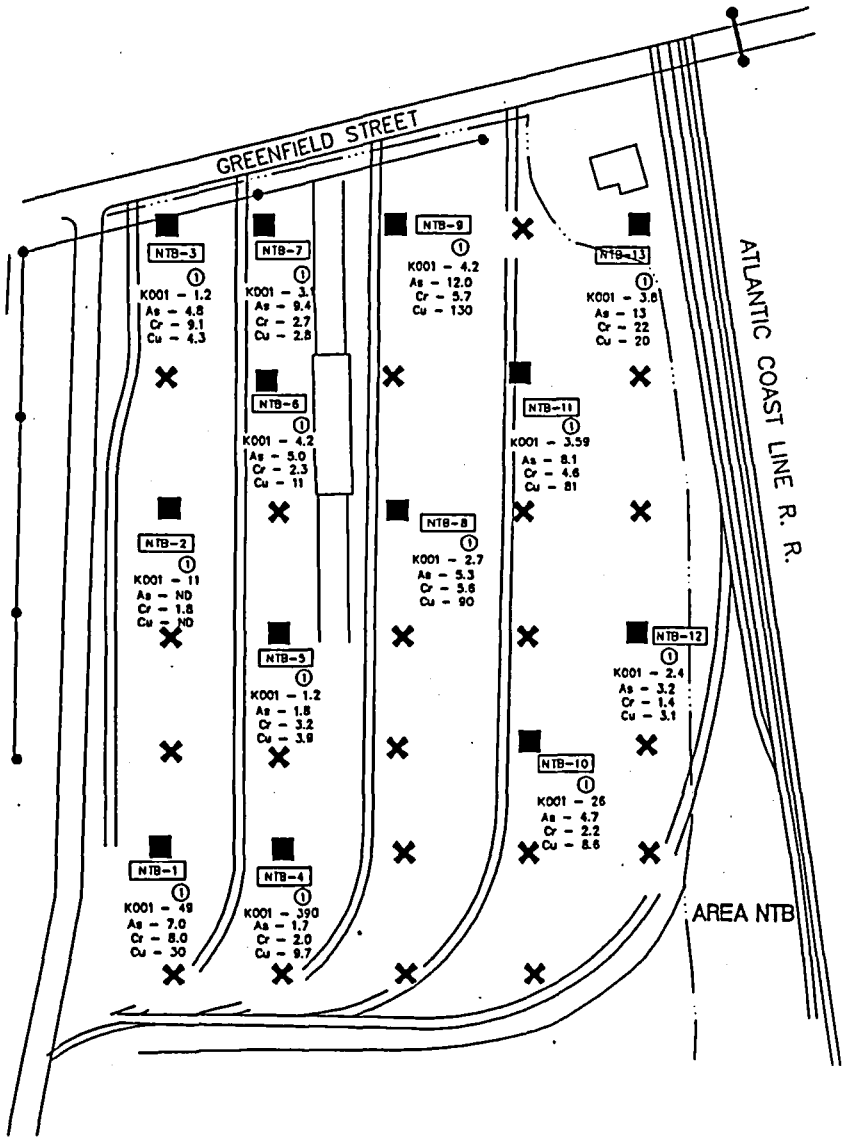
TOTAL DETECTED K001, ARSENIC, CHROMIUM, AND COPPER MEASURED IN SOIL SAMPLES COLLECTED IN THE FORMER NON-TREATED WOOD STORAGE AREA NTA

SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

FIGURE 4-1

DWG DATE: 11 OCT 93 | PRJCT NO.: NC009.006 | FILE NO.: SWP-WILM | DRAWING: NC09003J | CHECKED: C. LOVDAHL | APPROVED: C. LOVDAHL | DRAFTER: N. JOHNSON

DWG DATE: 12 OCT 93	PRJCT NO.: NC0090.006	FILE NO.: SWP-WILM	DRAWING: NC09003D	CHECKED: C. LOVEDAHL	APPROVED: C. LOVEDAHL	DRAFTER: N. JOHNSON



LEGEND

■ SOIL SAMPLING LOCATION

THE FOLLOWING DESIGNATIONS APPLY FOR ALL NTB SAMPLING LOCATIONS:

① DENOTES DEPTH AT 0"–6"

K001 – TOTAL DETECTABLE K001 (mg/kg dw)
As – TOTAL ARSENIC (mg/kg dw)
Cr – TOTAL CHROMIUM (mg/kg dw)
Cu – TOTAL COPPER (mg/kg dw)

✕ SOIL BORING INVESTIGATION LOCATION (NOT SAMPLED FOR CHEMICAL ANALYSIS)

ND – NOT DETECTED

DRAINAGE DITCH

OVERHEAD ELEC. AND POLE

0 175 FT

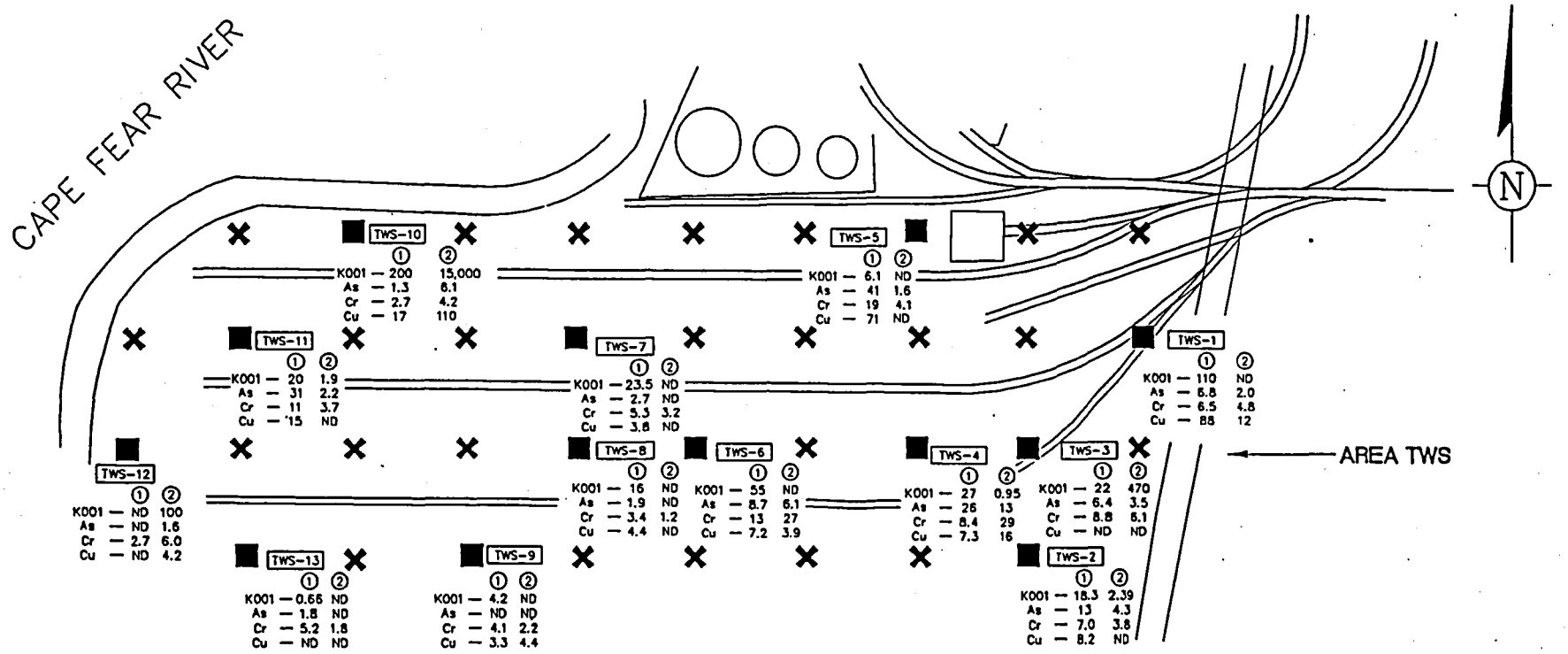
GERAGHTY & MILLER, INC.
Environmental Services

TOTAL DETECTED K001, ARSENIC, CHROMIUM, AND COPPER MEASURED IN SOIL SAMPLES COLLECTED IN THE FORMER NON-TREATED WOOD STORAGE AREA NTB

SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

FIGURE 4-2

DWG DATE: 12 OCT 93 | PRJCT NO.: NC0090.006 | FILE NO.: SWP-WILM | DRAWING: NC09003E | CHECKED: C. LOVDAHL | APPROVED: C. LOVDAHL | DRAFTER: N. JOHNSON



LEGEND

■ SOIL SAMPLING LOCATION

THE FOLLOWING DESIGNATIONS APPLY FOR ALL TWS SAMPLING LOCATIONS

① DENOTES DEPTH AT 0"–6"

② DENOTES DEPTH AT 12"–18"

K001 – TOTAL DETECTABLE K001 (mg/kg dw)
As – TOTAL ARSENIC (mg/kg dw)
Cr – TOTAL CHROMIUM (mg/kg dw)
Cu – TOTAL COPPER (mg/kg dw)
ND – NOT DETECTED
✖ – SOIL BORING INVESTIGATION LOCATION (NOT SAMPLED FOR CHEMICAL ANALYSIS)

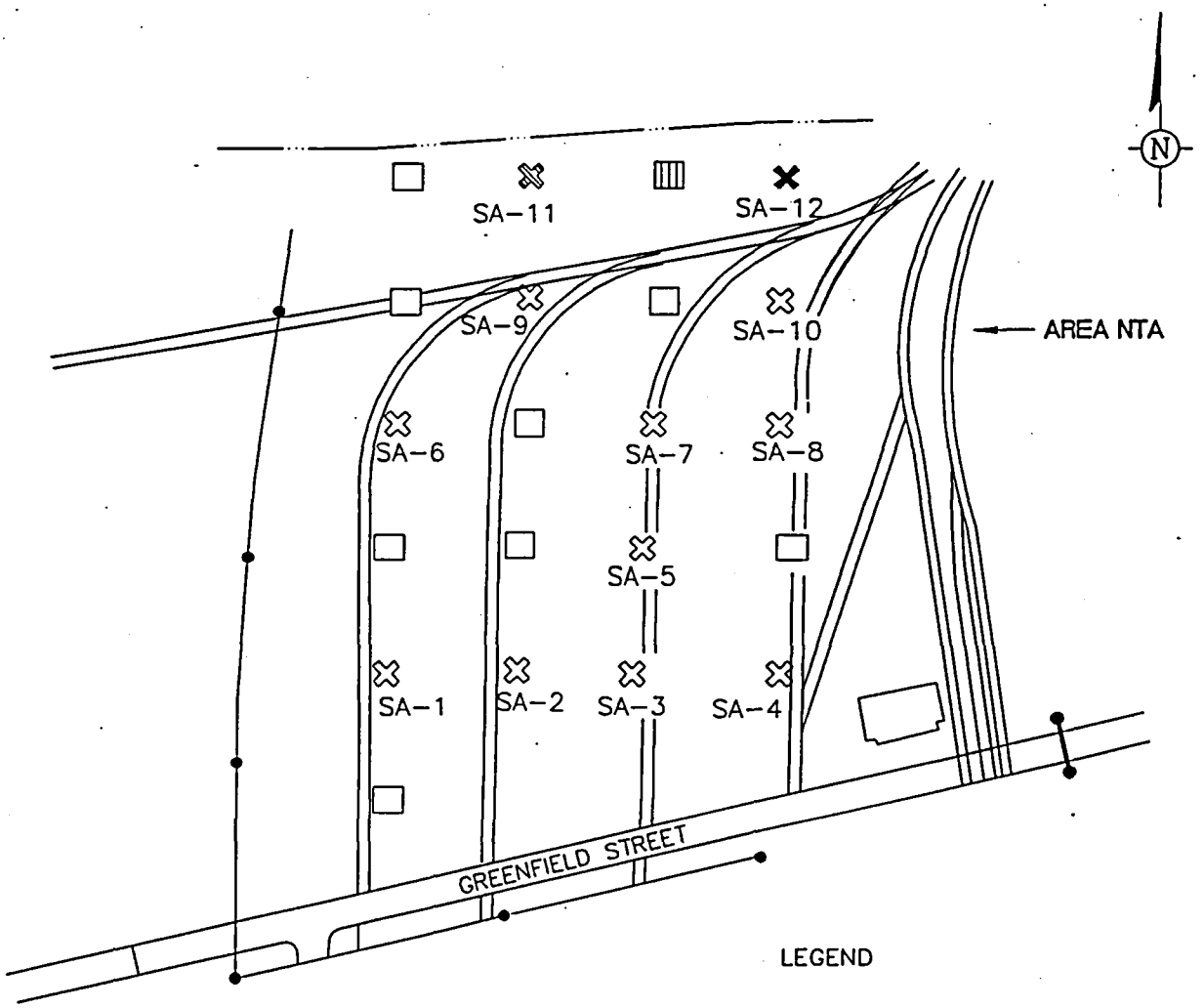
0 150 FT

GERAGHTY & MILLER, INC.
Environmental Services

TOTAL DETECTED K001, ARSENIC, CHROMIUM, AND COPPER MEASURED IN SOIL SAMPLES COLLECTED IN THE FORMER TREATED WOOD STORAGE AREA TWS

SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

FIGURE 4-3



LEGEND

SOIL BORING INVESTIGATION

- NO ODOR
- FAINT ODOR
- DISCOLORED SOIL, ODOR

SOIL SAMPLING LOCATION

- NO ODOR
- FAINT ODOR
- DISCOLORED SOIL, ODOR

- OVERHEAD ELEC. AND POLE
- DRAINAGE DITCH

0 150 FT

GERAGHTY & MILLER, INC.
Environmental Services

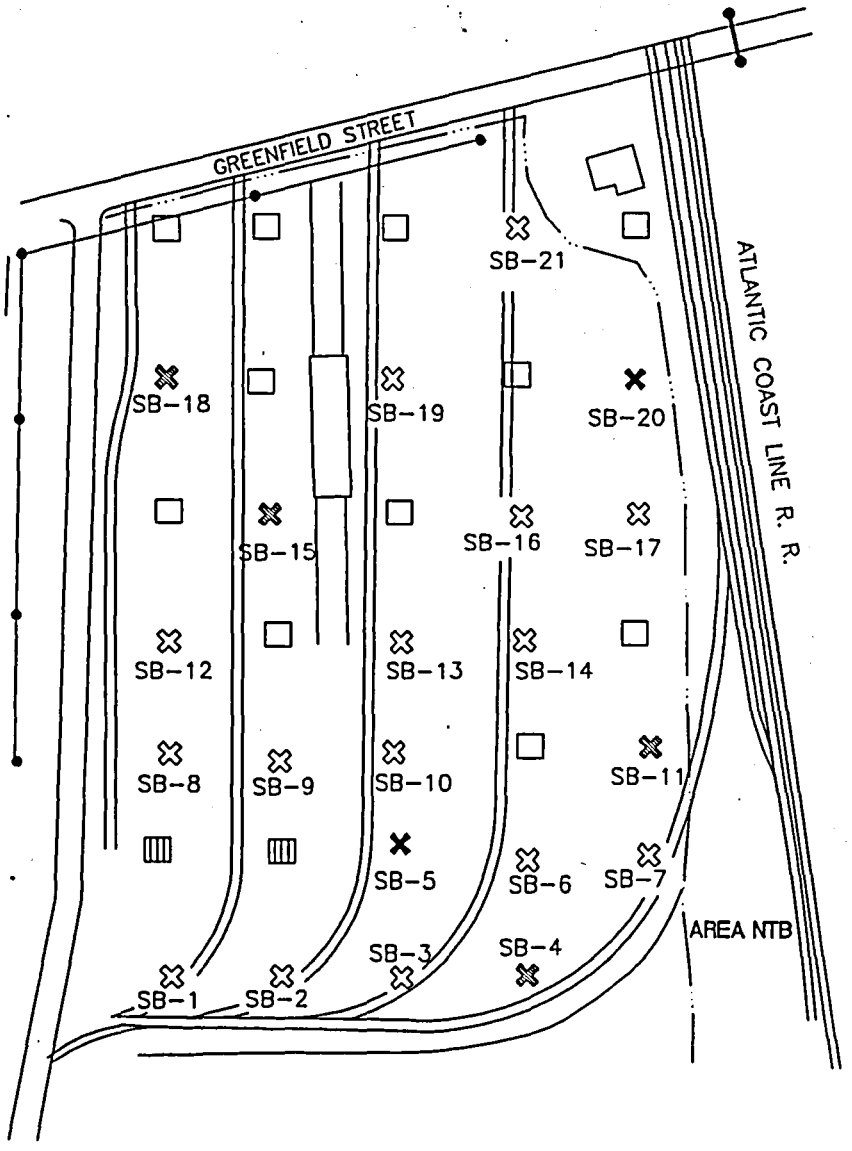
SOIL BORING INVESTIGATION OBSERVATIONS FOR THE FORMER NON-TREATED WOOD STORAGE AREA NTA

SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

FIGURE 4-4

DRAFTER: N. JOHNSON | APPROVED: C. LOVDAHL | CHECKED: C. LOVDAHL | DRAWING: NC09003C | FILE NO.: SWP-WILM | PRJCT NO.: NC0090.006 | DWG DATE: 15 JUN 92

DWG DATE: 12 OCT 93	PRJCT NO.: NC0090.006	FILE NO.: SWP-WILM	DRAWING: NC09003G	CHECKED: C. LOVDAHL	APPROVED: C. LOVDAHL	DRAFTER: N. JOHNSON



LEGEND

SOIL BORING INVESTIGATION

- NO ODOR
- FAINT ODOR
- DISCOLORED SOIL, ODOR

SOIL SAMPLING LOCATION

- NO ODOR
- FAINT ODOR
- DISCOLORED SOIL, ODOR

- OVERHEAD ELEC. AND POLE
- DRAINAGE DITCH

0 175 FT

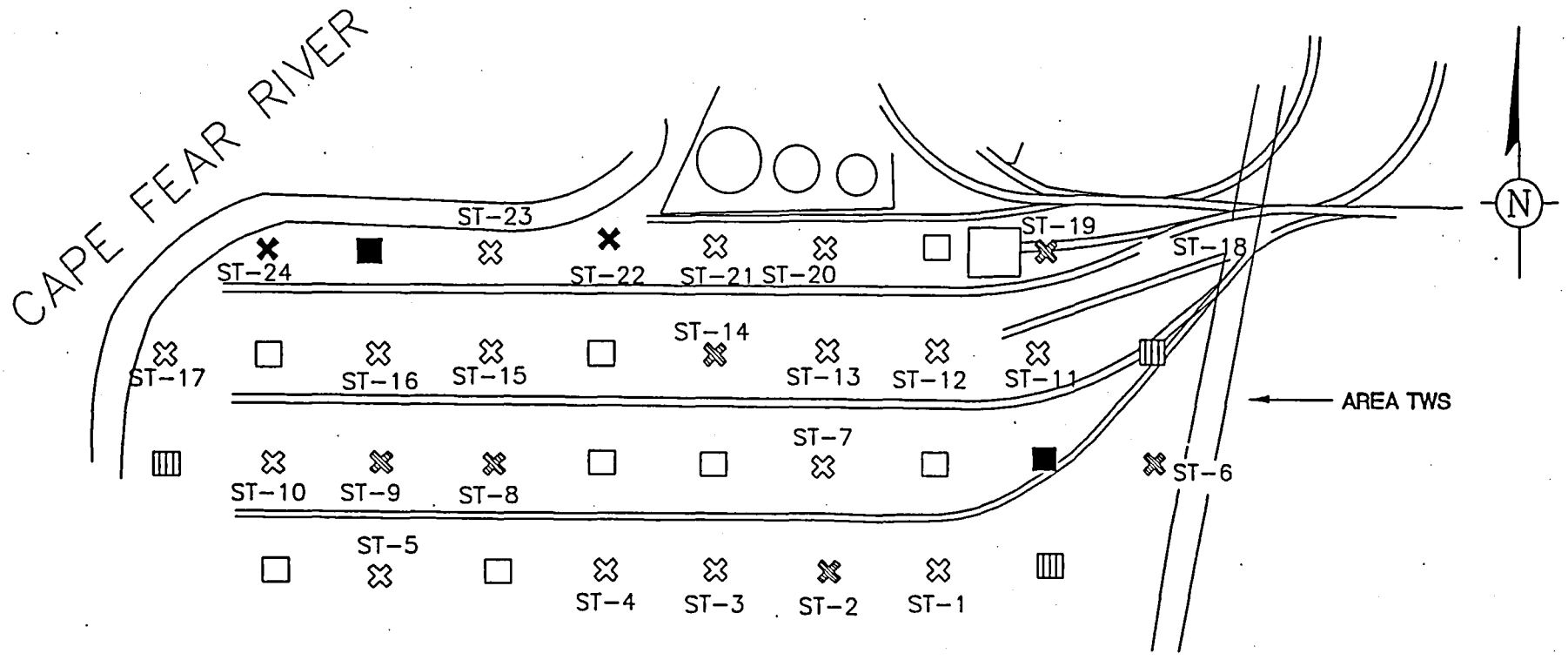
GERAGHTY & MILLER, INC.
Environmental Services

SOIL BORING INVESTIGATION OBSERVATIONS FOR THE FORMER NON-TREATED WOOD STORAGE AREA NTB

SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

FIGURE
4-5

DWG DATE: 12 OCT 93	PRJCT NO.: NC0090.006	FILE NO.: SWP-WILM	DRAWING: NC09003H	CHECKED: C. LOVDAHL	APPROVED: C. LOVDAHL	DRAFTER: N. JOHNSON



LEGEND

SOIL BORING INVESTIGATION

- NO ODOR
- FAINT ODOR
- DISCOLORED SOIL, ODOR

SOIL SAMPLING LOCATION

- NO ODOR
- FAINT ODOR
- DISCOLORED SOIL, ODOR

0 150 FT

GERAGHTY & MILLER, INC.
Environmental Services

SOIL BORING INVESTIGATION OBSERVATIONS FOR THE FORMER TREATED WOOD STORAGE AREA TWS

SOUTHERN WOOD PIEDMONT COMPANY
WILMINGTON, NORTH CAROLINA

FIGURE 4-6

APPENDIX A

Field Logs

1623wp

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number TWS-1A/9362 TWS-1B/9363

Site Location Former treated wood storage area. Area A South of Production Area, NC Port Authority Area

Weather Conditions Sunny & Cool, Windy

Date 2-28-91 Time Sampling Began 13:05 Time Sampling Completed 13:15

Site Description Near dirt road leading to wooded area. ~7' from the road.

SAMPLING DATA

Depth Sample Collected 0-6" (A) and 12-18" (B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 1A - light Brown to black - stoney, large stones - difficult to dig
1B - Grey to Dark grey Sand - some stones. Water observed in borehole.

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	X FROM LAB	FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
K001	500ml w/m glass	

Remarks Sampling equipment cleaned w/ distilled water w/ micro soap & rinsed w/ distilled water prior to collecting 1A & 1B & the removal of the 6-12" layer

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number TWS-2A/9360 TWS-2B/9361

Site Location Former treated wood storage area, Area A South of Production Area. NC Port Auth. Area

Weather Conditions Sunny and Cool, Windy

Date 2-28-91 Time Sampling Began 12:15 Time Sampling Completed 12:25

Site Description Vegetation. Adjacent to tree line and (un-named) road.

SAMPLING DATA

Depth Sample Collected 0-6" (2A) 12-18" (2B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 2A - Several holes. Dark Brown to Black Sand. Sheen but no odor. Buried wood or large roots. Near trees and wooded area. Randomly selected location. 2B - light green to Dark grey clay with some sand. Some mottles brown-orange. Water observed in borehole.

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION: [X] FROM LAB	[ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KOD1	500ml w/m glass	

Remarks Sampling equipment cleaned w/ distilled water & microsoap, rinsed w/ distilled water prior to collecting samples @ A & B and the removal of the 6-12" layer.

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC 09003 Site/Sample Number TWS-3A / 9358 TWS-3B / 9359

Site Location Former treated wood storage Area, Area A South of Production Area, NC Port Authority Area

Weather Conditions Sunny and Cool

Date 2-28-91 Time Sampling Began 11:10 Time Sampling Completed 11:15

Site Description Vegetation. Adjacent to R.R. tracks and (un-named) road.

SAMPLING DATA

Depth Sample Collected 0-6" (3A) 12-18" (3B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/Sediment Description 3A - Dark Brown black sand. Very moist
3B - Black Sand - moist - saturated. Creosote observed (Sheen)

Odor: Creosote (3B) pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic
KOOI	500ml w/m glass

Remarks Sampling equipment cleaned w/ distilled water and microscop & rinsed w/ distilled water prior to collecting samples 3A/3B and the removal of the 6-12" layer

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number TWS-4A/9356 TWS-4B/9357

Site Location Former treated wood storage area Area A South of Production Area NC Port Authorities Area

Weather Conditions Sunny and Cool

Date 2-28-91 Time Sampling Began 10:10 Time Sampling Completed 10:15

Site Description Vegetation. South of Concrete foundation. Between R.R. tracks in middle of field. Wet Area on surface - 2" to 2½"

SAMPLING DATA

Depth Sample Collected 0-6" (4A) 12-18" (4B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 4A - Tan to Dark Brown roots - Very moist to saturated
4B - Dark Brown to Dark grey clay - Some sand. Wood observed.

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	X FROM LAB	FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
K001	500ml w/m glass	

Remarks Sampling equipment was cleaned with distilled water + microsoap rinsed w/ distilled water prior to collecting samples 4A + 4B and the removal of the 6-12" layer.

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NIC 09003 Site/Sample Number TWS-5A/9354 TWS-5B/9355

Site Location Former treated wood storage area. Area A South of Production Area. NC Port Authorities Area

Weather Conditions Sunny & Cool

Date 2-28-91 Time Sampling Began 9:15 Time Sampling Completed 9:20

Site Description Vegetation. Adjacent to Concrete foundation and R.R. tracks

SAMPLING DATA

Depth Sample Collected 0-6" (5A) 12-18" (5B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 5A - Moist black roots, stoney-gravelly, hard layer to dig through
5B - Dark grey sand saturated with water

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION ☒ FROM LAB	☐ FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KOO1	500ml w/m glass	

Remarks Sampling equipment cleaned w/ distilled water & microsoap & rinsed w/ distilled water prior to collecting samples 5A & 5B and the removal of the 6-12" layer

Sampling Personnel P. Jacobs M. Rudecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number TWS-6A/9352 TWS-6B/9353

Site Location Former treated wood storage Area. Area A South of Production Area. NC Port Authorities Area

Weather Conditions Sunny and Cool

Date 2-28-91 Time Sampling Began 8:35 Time Sampling Completed 8:45

Site Description Vegetation. Adjacent to #8, between R.R. tracks in center of field

SAMPLING DATA

Depth Sample Collected 0-6" (6A) 12-18" (6B)

Sampling Method and Equipment Stainless Steel Bucket Augers

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 6A: Tan to Dark Brown Moist. Some wood + roots. Water in the borehole. 6B - Grey clay. Tan sand - Very moist

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic
K001	500ml w/m glass

Remarks Sampling equipment cleaned w/ distilled water + Alconox soap + rinsed w/ distilled water prior to collecting 6A + 6B and the removal of the 6-12" layer.

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number TWS-7A/ 9350 TWS-7B/ 9351

Site Location Former treated wood storage Area. Area A South of Production Area. NC Port Authorities Area

Weather Conditions Sunny and Cool

Date 2-27-91 Time Sampling Began 17:05 Time Sampling Completed 17:15

Site Description Vegetation. South of Production Area. Between R.R tracks in middle of field.

SAMPLING DATA

Depth Sample Collected 0-6" (7A) 12-18" (7B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 7A - Light brown to Black sand. Moist
7B - Light Brown sand. - Saturated w/ water. Water observed within one inch of the surface.

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml wlm plastic
K001	500ml wlm glass

Remarks Sampling equipment was cleaned w/ distilled water + microsoap + rinsed w/ distilled water prior to collecting samples 7A + 7B and the removal of the 6-12" layer.

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NJC09003 Site/Sample Number TWS-8A/9346 TWS-8B/9347

Site Location Former treated wood Storage Area, Area A South of Production Area, NJC Port Authorities Area

Weather Conditions Sunny and Cool

Date 2-27-91 Time Sampling Began 16:15 Time Sampling Completed 16:20

Site Description Vegetation. South of wet spot-sample area. Between R. R. tracks in middle of field

SAMPLING DATA

Depth Sample Collected 0-6" (8A) 12-18" (8B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 8A-Upper Soil-Brown to Black, 5-6" Coarse light brown to tan sand. Moist. 8B-Tan to Brown very granular sand-Saturated w/ water

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	X FROM LAB	FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
K001	500ml w/m glass	

Remarks Sampling equipment was cleaned w/ distilled water, microsoapt rinsed w/ distilled water prior to collecting samples 8A+8B and the removal of the 6-12" layer.

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number TWS-9A/9348 TWS-9B/9349

Site Location Former treated wood storage area. Area A. South of Production Area. NC Port Authorities Area

Weather Conditions Sunny and Cool

Date 2-27-91 Time Sampling Began 15:45 Time Sampling Completed 15:55

Site Description Vegetation. Adjacent to tree line & RR.

SAMPLING DATA

Depth Sample Collected 0-6" (9A) 12-18" (9B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 9A - Greyish Brown Sand - Moist, Water Observed
9B - Light Brown Sand - Saturated w/ water. Adjacent to a wet area.

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION: [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic
K001	500ml w/m glass

Remarks Sampling equipment was cleaned w/ distilled water & microsoapt rinsed w/ distilled water prior to collecting samples 9A & 9B and the removal of the 6-12" layer

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NJC09003 Site/Sample Number TWS-10A/9344 TWS-10B/9345

Site Location Former treated wood storage area, Area A South of Production Area. NC Port Authorities Area

Weather Conditions Sunny and Cool

Date 2-27-91 Time Sampling Began 13:45 Time Sampling Completed 13:50

Site Description Adjacent to River on North Side and R.R. tracks. Vegetation

SAMPLING DATA

Depth Sample Collected 0-6" (10A) 12-18" (10B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 10A - Dark Brown, Some Sand
10B - Black, Very Moist, Odor - Creosote, (lumber) wood observed removed wood from sample

Odor: Creosote (10B) pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	X FROM LAB	FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KOOI	500ml w/m glass	

Remarks Sampling equipment was cleaned w/ distilled water & micro soap and rinsed w/ distilled water prior to collecting samples 10A + 10B and the removal of the 6-12" layer.

Sampling Personnel P. Jacobs M. Rodecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number TWS-11A/9342 TWS-11B/9343

Site Location Former treated wood storage area. Area A. South of Production Area. NC Port Authorities Area

Weather Conditions Sunny and Cool

Date 2-27-91 Time Sampling Began 12:25 Time Sampling Completed 12:30

Site Description Adjacent to River and RR. Vegetation

SAMPLING DATA

Depth Sample Collected 0-6" (11A) 12-18" (11B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/Sediment Description 11A - Brown Sand. Water was observed at 6".
11B - Dark grey Sand

Odor: N/A. pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION ☑ FROM LAB ☐ FROM G&M
metals Cu, Cr, As	500ml w/m plastic
KOD1	500ml w/m glass

Remarks Sampling equipment was cleaned w/ distilled water & microsoap and rinsed w/ distilled water prior to collecting samples 11A & 11B and the removal of the 6-12" layer

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number TWS-13A/9340 TWS-13B/9341

Site Location Former treated wood storage area, Area A South of Production Area, NC Port Authorities Area

Weather Conditions Sunny and Cool

Date 2-27-91 Time Sampling Began 11:30 Time Sampling Completed 11:35

Site Description Adjacent to treeline and RR tracks. Vegetation Near River End.

SAMPLING DATA

Depth Sample Collected 0-6" (13A) 12-18" (13B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 13A - Brown greyish sand with roots, Moist
13B - Brown greyish, coarse Sand - Saturated, water in bottom of borehole

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500 ml w/m plastic
K001	500 ml w/m glass

Remarks Sampling equipment was cleaned w/ distilled water & microsoap & rinsed w/ distilled water prior to collecting samples 13A & 13B and the removal of the 6-12" layer

Sampling Personnel P. Jacobs M. Ryderke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number TWS-12A/9338 TWS-12B/9339

Site Location Former treated wood storage area. Area A. South of Production Area NC Port Authorities Area

Weather Conditions Sunny and Cool

Date 2-27-91 Time Sampling Began 11:00 Time Sampling Completed 11:10

Site Description Near Cape Fear River. Vegetation

SAMPLING DATA

Depth Sample Collected 0-6" (12A) 12-18" (12B)

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description 12A-Light Brown Sand. Moist
12B-Black sand. Water Observed at bottom of borehole

Odor: faint-possibly creosote (12B) pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	X FROM LAB	FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KOC01	500ml w/m glass	

Remarks Sampling equipment was cleaned w/ distilled water & microsoap & rinsed w/ distilled water prior to collecting samples 12A+12B and the removal of the 6-12" layer.

Sampling Personnel P. Jacobs M. Rodecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTA-1 / 9329

Site Location Former non treated wood storage area - Area C North of Greenfield St.

Weather Conditions cloudy cool & windy

Date 2-26-91 Time Sampling Began _____ Time Sampling Completed 13:40

Site Description vacant lot - grass vegetation. Adjacent to tracks (RR) & greenfield ST. In proximity of land farm areas

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment stainless steel bucket auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description granular, black coloration - roots were observed

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION ☒ FROM LAB ☐ FROM G&M
metals (Cu, Cr, As)	500 ml w/m plastic
K001	500 ml w/m glass

Remarks _____

Sampling Personnel P. JACOBS M. RADECKE

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NJC09003 Site/Sample Number NTA-2/9330

Site Location Former non-treated wood storage area - Area C North of Greenfield Street

Weather Conditions Cloudy, Cool and Windy

Date 2-26-91 Time Sampling Began _____ Time Sampling Completed 13:50

Site Description Vacant lot - grass vegetation - Adjacent to RR tracks and Greenfield Street. In proximity of landfill areas.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Upper inch - Black, Grey, brown coarse sand, moist

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500 ml w/m plastic
K001	500 ml w/m glass

Remarks _____

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTA-3/9331

Site Location Former non-treated wood storage area - Area C North of Greenfield Street

Weather Conditions Cloudy, Cool and Windy

Date 2-26-91 Time Sampling Began _____ Time Sampling Completed 14:35

Site Description Vacant lot - grass vegetation. Adjacent to RR tracks. In proximity of landfarm areas.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Roots and coal were observed, Granular, Black Gravel

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500 ml w/m plastic
Kool	500 ml w/m glass

Remarks _____

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTA-4/9332

Site Location Former non-treated wood storage area - Area C North of Greenfield Street

Weather Conditions Cloudy, Cool and Windy

Date 2-26-91 Time Sampling Began _____ Time Sampling Completed 14:40

Site Description Vacant lot - Grass Vegetation - Water on Surface, Adjacent to Hess Oil's property line and RR tracks.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Black surface layer, Grey to light brown coarse sand. Very moist. Water was observed in the borehole.

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	[X] FROM LAB	[ ] FROM G&M
metals Cu, Cr, As	500ml. w/m plastic	
KOD1	500ml. w/m glass	

Remarks Sample was taken ~ 21' from Hess Oil's property line

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTA-5/9333

Site Location Former non-treated wood storage area - Area C North of Greenfield Street

Weather Conditions Cloudy, Cool and Windy

Date 2-26-91 Time Sampling Began _____ Time Sampling Completed 15:10

Site Description Vacant lot - Grass Vegetation. Adjacent to RR tracks in middle of field

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Surface - Black and Granular, lower soil - light brown and sandy. Moist

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
Metals Cu, Cr, As	500ml w/m plastic
KOD1	500ml w/m glass

Remarks _____

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTH-6/9334

Site Location Former non-treated wood storage area - Area C North of Greenfield Street

Weather Conditions Cloudy, Cool and Windy

Date 2-26-91 Time Sampling Began _____ Time Sampling Completed 15:10

Site Description Vacant lot - Grass Vegetation, Adjacent to RR tracks in middle of field

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/Sediment Description Surface - Black Granular, lower depth was Grey and Sandy. Moist

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	X FROM LAB	FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KOD1	500ml w/m glass	

Remarks

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NJC09003 Site/Sample Number NTA-7/9335

Site Location Former non-treated wood storage area - Area C North of Greenfield Street

Weather Conditions Cloudy, Cool and Windy

Date 2-26-91 Time Sampling Began _____ Time Sampling Completed 16:05

Site Description Vacant lot - Grass Vegetation. Adjacent to tracks (RR) in middle at the North End

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Coal, Unidentified hard material that appears to be pieces of rock. Orange gravel, Grey to Black, Granular, Very Moist

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	[X] FROM LAB	[ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KOD1	500ml w/m glass	

Remarks

Sampling Personnel P. Jacobs M. Rudecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTA-8/9336

Site Location Former non-treated wood storage area - Area C. North of Greenfield Street

Weather Conditions Cloudy, Cool and Windy

Date 2-26-91 Time Sampling Began _____ Time Sampling Completed 16:05

Site Description Vacant lot - Grass Vegetation - Very wet Area. Adjacent to Hess Oil's property line.

SAMPLING DATA

Depth Sample Collected 0--6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Observed roots, Grey to Black friable and Sandy

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	[X] FROM LAB	[ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
K001	500ml w/m glass	

Remarks

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTA-91 9337

Site Location Former non-treated wood storage Area - Area C. North of Greenfield Street

Weather Conditions Cloudy, Cool and Windy

Date 2.26.91 Time Sampling Began _____ Time Sampling Completed 16:35

Site Description Vacant lot - Grass Vegetation. Adjacent to RR tracks and near Greenfield Street on NE side of sampling area

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bicket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Coarse light brown sand. Very moist. Brown to Black hard material. Coal was observed on the surface

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic
K001	500ml w/m glass

Remarks

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-1/9:370

Site Location Former non-treated wood storage area- Area B. South of Greenfield Street

Weather Conditions Sunny, windy and cool

Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 9:40

Site Description Grass Vegetation. SW corner of Area B next to un-named road and RR track.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Dark brown organic matter, roots, some sand.

Odor: faint pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	X FROM LAB	FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KOO1	500ml w/m glass	

Remarks _____

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-10/9374

Site Location Former non-treated wood storage area, Area B South of Greenfield Street

Weather Conditions Sunny, Windy and Cool

Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 10:45

Site Description Wet Area, Vegetation, Adjacent to RR track. North and West of Ditch.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Black Surface layer, Brown to Tan lower soil layer. Sandy. Water Saturated layer. Roots observed.

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml n/m plastic
KOOI	500ml w/m glass

Remarks Water observed in Borehole

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NJ C09003 Site/Sample Number NTB-12/9375 NTB-12A/9375

Site Location Former non-treated wood storage area Area B, South of Greenfield St.

Weather Conditions Sunny, Windy and Cool

Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 11:15

Site Description Water on Surface greater than 1' (High tide) Vegetation. SE corner West of Ditch

SAMPLING DATA

Depth Sample Collected 0 - 6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Clayey Brown to Black roots - Very Saturated

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	X FROM LAB	FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KOD1	500ml w/m glass	

Remarks Several attempts made to sample. Both samples placed in one container

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-11/9373

Site Location Former non-treated wood storage area - Area B South of Greenfield Street.

Weather Conditions Sunny, Windy and Cool

Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 10:50

Site Description Vegetation. Direction East of Abandoned Bldg. Adjacent to RR tracks

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Tan, Brown ~~to~~ pdj and Black moist sand

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml n/m plastic
K001	500ml w/m glass

Remarks

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-9/9372

Site Location Former non-treated wood storage area- Area B South of Greenfield Street

Weather Conditions Sunny, Windy and Cool

Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 10:15

Site Description Grass Vegetation. Adjacent to Greenfield Street and RR track. ~~middle of field~~ (East Side of Bldg.)

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/Sediment Description Many Stones. Brown to Grey. Moist. Hard layer to dig through

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	X FROM LAB	FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
K001	500ml w/m glass	

Remarks _____

Sampling Personnel R. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NJC09003 Site/Sample Number NTB-819371

Site Location Former non-treated wood storage area - Area B South of Greenfield Street

Weather Conditions Sunny, Windy and Cool

Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 10:15

Site Description Grass Vegetation. Adjacent to East side of Abandoned Bldg and RR tracks.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/Composite

Soil/Sediment Description Moist dark brown, orange to grey layer ~4" deep. Grey gravel and soil. Roots and stones observed

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	[X] FROM LAB	[ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
K001	500ml w/m glass	

Remarks

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-4/9369
Site Location Former non-treated wood Storage area-Area B South of Greenfield Street
Weather Conditions Sunny, windy and Cool
Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 9:35

Site Description Grass Vegetation Adjacent to RR tracks. East of Production Area and North of Ditch.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Dark Brown organic matter. Moist. Sandy. Sandy layer below 6"

Odor: faint pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	[X] FROM LAB	[ ] FROM G&M
Metals Cu, Cr, As	500ml w/m plastic	
K001	500ml w/m glass	

Remarks possible creosote

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-619365
Site Location Former non-treated wood storage area - Area B South of Greenfield Street
Weather Conditions Sunny, Warm and Windy
Date 2-28-91 Time Sampling Began _____ Time Sampling Completed 17:30

Site Description Sample taken on West side of building adjacent to RR tracks. Grass Vegetation.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Brown Sandy soil Moist

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	[X] FROM LAB	[ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KO01	500ml w/m glass	

Remarks

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-7/9.366
Site Location Former non-treated wood storage area-Area B South of Greenfield Street
Weather Conditions Sunny, Warm and Windy
Date 2-28-91 Time Sampling Began _____ Time Sampling Completed 17:30

Site Description Grass Vegetation, Adjacent to Greenfield St. and RR tracks (West side of bldg.)

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Upper Soil Tan with some black (upper inch) Sandy and Moist

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION ☒ FROM LAB ☐ FROM G&M
metals Cu, Cr, As	500ml w/m plastic
K001	500ml w/m glass

Remarks

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-13/9376

Site Location Former non-treated wood storage area - Area B. South of Greenfield Street

Weather Conditions Sunny, windy and cool

Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 11:40

Site Description Vegetation. Water on Surface, less than 1". Behind (South) of house. North of Ditch. West of Atlantic Coast Line RR.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Brown to Grey clay - orange and brown spots - Saturated.

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml n/m plastic
KEOI	500ml w/m glass

Remarks Two attempts were made to collect Sample

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-319364

Site Location Former non-treated wood storage Area - Area B South of Greenfield Street

Weather Conditions Sunny, warm and windy

Date 2-28-91 Time Sampling Began _____ Time Sampling Completed 17:10

Site Description Lot has 1 abandoned building. Plowed. Adjacent to RR tracks and Greenfield Street

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/Composite

Soil/~~Sediment~~ Description Soil was clayey with some sand. Greenish brown with grey. Moist

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic
KOO1	500ml w/m glass

Remarks

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-219367

Site Location Former non-treated wood storage area-Area B South of Greenfield Street

Weather Conditions Sunny, windy and cool

Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 9:15

Site Description Grass Vegetation. Adjacent to road (un-named) and RR tracks. West of Bldg.

SAMPLING DATA

Depth Sample Collected 0-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Tan to Dark Brown slightly moist sand Some roots and wood were observed

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION [X] FROM LAB [ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic
KOC1	500ml w/m glass

Remarks _____

Sampling Personnel P. Jacobs M. Radecke

GERAGHTY & MILLER
SOIL/SEDIMENT SAMPLING LOG

Project/Number NC09003 Site/Sample Number NTB-519368

Site Location Former non-treated wood storage area - Area B South of Greenfield Street

Weather Conditions Sunny, windy and cool

Date 3-1-91 Time Sampling Began _____ Time Sampling Completed 9:15

Site Description Grass Vegetation. Adjacent to RR, In middle of field, S.W. direction from abandoned bldg.

SAMPLING DATA

Depth Sample Collected 12-6"

Sampling Method and Equipment Stainless Steel Bucket Auger

Collection Mode: Grab/~~Composite~~

Soil/~~Sediment~~ Description Organic matter on surface - roots Tan to light Brown Sand, Moist

Odor: N/A pH: N/A

Sample Monitoring (TIP, OVA, HNU, etc) N/A

ANALYSES REQUIRED	CONTAINER DESCRIPTION	
	[X] FROM LAB	[ ] FROM G&M
metals Cu, Cr, As	500ml w/m plastic	
KOD1	500ml w/m glass	

Remarks _____

Sampling Personnel P. Jacobs M. Radecke

APPENDIX B

Analytical Laboratory Reports and Chain-of-Custody Forms

1623swp

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

mark

RECEIVED
MAR 14 1991
G & M RALEIGH

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30896-1	NTA-1 (# 9329) 2-26-91	Client
30896-2	NTA-2 (# 9330) 2-26-91	
30896-3	NTA-3 (# 9331) 2-26-91	
30896-4	NTA-4 (# 9332) 2-26-91	
30896-5	NTA-5 (# 9333) 2-26-91	

PARAMETER	30896-1	30896-2	30896-3	30896-4	30896-5
K001 (Method 8270)					
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	ND	0.66	ND	ND
Acenaphthene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthylene, mg/kg dw	ND	ND	ND	ND	ND
Phenanthrene, mg/kg dw	0.82	ND	1.0	ND	0.42
Anthracene, mg/kg dw	0.77	ND	0.79	ND	0.36
Fluoranthene, mg/kg dw	2.5	4.0	2.4	0.52	1.5
Chrysene, mg/kg dw	1.7	2.7	1.7	ND	0.93
Benzo(a)Anthracene, mg/kg dw	1.2	1.6	1.1	ND	0.57
Benzo(b,k)fluoranthene, mg/kg dw	4.1	5.9	4.1	0.80	2.2
Benzo(a)pyrene, mg/kg dw	1.0	1.1	1.0	ND	0.41
Indeno(1,2,3-cd)pyrene, mg/kg dw	0.68	0.66	0.85	ND	ND
Dibenzo(a,h)anthracene, mg/kg dw	ND	ND	ND	ND	ND
Carbazole, mg/kg dw	ND	0.54	0.49	ND	ND
Dilution factor	1	1	1	1	1

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30896-1	NTA-1 (# 9329) 2-26-91	Client
30896-2	NTA-2 (# 9330) 2-26-91	
30896-3	NTA-3 (# 9331) 2-26-91	
30896-4	NTA-4 (# 9332) 2-26-91	
30896-5	NTA-5 (# 9333) 2-26-91	

PARAMETER	30896-1	30896-2	30896-3	30896-4	30896-5
Arsenic, mg/kg dw	11	1.8	30	2.8	7.1
Chromium, mg/kg dw	8.4	3.8	15	5.1	4.7
Copper, mg/kg dw	72	11	300	4.5	56
Percent Solids, %	73	75	76	83	82

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30896-6	NTA-6 (# 9334) 2-26-91	Client
30896-7	NTA-7 (# 9335) 2-26-91	
30896-8	NTA-8 (# 9336) 2-26-91	
30896-9	NTA-9 (# 9337) 2-26-91	

PARAMETER	30896-6	30896-7	30896-8	30896-9
1 (Method 8270)				
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	0.99	ND	ND
Acenaphthene, mg/kg dw	ND	ND	ND	ND
Acenaphthylene, mg/kg dw	ND	ND	0.48	ND
Phenanthrene, mg/kg dw	0.44	1.1	0.47	ND
Anthracene, mg/kg dw	0.55	1.1	0.95	ND
Fluoranthene, mg/kg dw	1.3	1.7	2.0	ND
Chrysene, mg/kg dw	0.93	1.5	1.7	ND
Benzo(a)Anthracene, mg/kg dw	0.47	0.97	1.5	ND
Benzo(b,k)fluoranthene, mg/kg dw	ND	1.7	2.9	ND
Benzo(a)pyrene, mg/kg dw	ND	0.77	1.3	ND
Indeno(1,2,3-cd)pyrene, mg/kg dw	ND	ND	0.58	ND
Dibenzo(a,h)anthracene, mg/kg dw	ND	ND	ND	ND
Carbazole, mg/kg dw	ND	1.1	1.0	ND
Dilution factor	1	1	1	1

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30896-6	NTA-6 (# 9334) 2-26-91	Client
30896-7	NTA-7 (# 9335) 2-26-91	
30896-8	NTA-8 (# 9336) 2-26-91	
30896-9	NTA-9 (# 9337) 2-26-91	

PARAMETER	30896-6	30896-7	30896-8	30896-9
Arsenic, mg/kg dw	25	63	10	54
Chromium, mg/kg dw	4.3	13	5.9	8.9
Copper, mg/kg dw	51	240	7.8	8.8
Percent Solids, %	82	62	78	82

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
30896-10	Rinse Blank (2-26-91)	Client
30896-11	Field Blank (2-26-91)	

PARAMETER	30896-10	30896-11
7001 (Method 8270)		
Chlorophenol, mg/l	ND	ND
Phenol, mg/l	ND	ND
2,4-Dimethylphenol, mg/l	ND	ND
Trichlorophenols, mg/l	ND	ND
p-Chloro-m-cresol, mg/l	ND	ND
Tetrachlorophenols, mg/l	ND	ND
2,4-Dinitrophenol, mg/l	ND	ND
Pentachlorophenol, mg/l	ND	ND
Naphthalene, mg/l	ND	ND
Acenaphthene, mg/l	ND	ND
Acenaphthylene, mg/l	ND	ND
Phenanthrene, mg/l	ND	ND
Anthracene, mg/l	ND	ND
Fluoranthene, mg/l	ND	ND
Chrysene, mg/l	ND	ND
Benzo(a)Anthracene, mg/l	ND	ND
Benzo(b,k)fluoranthene, mg/l	ND	ND
Benzo(a)pyrene, mg/l	ND	ND
Indeno(1,2,3-cd)pyrene, mg/l	ND	ND
Dibenzo(a,h)anthracene, mg/l	ND	ND
Carbazole, mg/l	ND	ND
Dilution factor	1	1
Arsenic, mg/l	ND	ND
Chromium, mg/l	ND	ND

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
30896-10	Rinse Blank (2-26-91)	Client
30896-11	Field Blank (2-26-91)	

PARAMETER	30896-10	30896-11
Copper, mg/l	ND	ND

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
30896-12	Detection Limits - Soil	Client
30896-13	Accuracy (mean % recovery) - Soil	
30896-14	Precision (% RPD) - Soil	

PARAMETER	30896-12	30896-13	30896-14
01 (Method 8270)			
Chlorophenol, mg/kg dw	0.33	87 %	15 %
Phenol, mg/kg dw	0.33	86 %	14 %
2,4-Dimethylphenol, mg/kg dw	0.33	91 %	19 %
Trichlorophenols, mg/kg dw	0.33	91 %	18 %
p-Chloro-m-cresol, mg/kg dw	0.33	91 %	19 %
Tetrachlorophenols, mg/kg dw	0.33	102 %	15 %
2,4-Dinitrophenol, mg/kg dw	1.7	43 %	12 %
Pentachlorophenol, mg/kg dw	1.7	67 %	7.5 %
Naphthalene, mg/kg dw	0.33	87 %	15 %
Acenaphthene, mg/kg dw	0.33	76 %	16 %
Acenaphthylene, mg/kg dw	0.33	85 %	15 %
Phenanthrene, mg/kg dw	0.33	80 %	13 %
Anthracene, mg/kg dw	0.33	80 %	13 %
Fluoranthene, mg/kg dw	0.33	89 %	17 %
Chrysene, mg/kg dw	0.33	70 %	11 %
Benzo(a)Anthracene, mg/kg dw	0.33	75 %	13 %
Benzo(b,k)fluoranthene, mg/kg dw	0.33	77 %	18 %
Benzo(a)pyrene, mg/kg dw	0.33	85 %	19 %
Indeno(1,2,3-cd)pyrene, mg/kg dw	0.33	102 %	15 %
Dibenzo(a,h)anthracene, mg/kg dw	0.33	106 %	17 %
Carbazole, mg/kg dw	0.33	115 %	17 %
Arsenic, mg/kg dw	1.0	106 %	1.9 %
Chromium, mg/kg dw	1.0	82 %	2.4 %

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
30896-12	Detection Limits - Soil	Client
30896-13	Accuracy (mean % recovery) - Soil	
30896-14	Precision (% RPD) - Soil	

PARAMETER	30896-12	30896-13	30896-14
per, mg/kg dw	2.5	85 %	2.4 %

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
30896-15	Detection Limits	Client

PARAMETER	30896-15
K001 (Method 8270)	
2-Chlorophenol, mg/l	0.010
Phenol, mg/l	0.010
2,4-Dimethylphenol, mg/l	0.010
Trichlorophenols, mg/l	0.010
p-Chloro-m-cresol, mg/l	0.010
Tetrachlorophenols, mg/l	0.010
2,4-Dinitrophenol, mg/l	0.050
Pentachlorophenol, mg/l	0.050
Naphthalene, mg/l	0.010
Acenaphthene, mg/l	0.010
Acenaphthylene, mg/l	0.010
Phenanthrene, mg/l	0.010
Anthracene, mg/l	0.010
Fluoranthene, mg/l	0.010
Chrysene, mg/l	0.010
Benzo(a)Anthracene, mg/l	0.010
Benzo(b,k)fluoranthene, mg/l	0.010
Benzo(a)pyrene, mg/l	0.010
Indeno(1,2,3-cd)pyrene, mg/l	0.010
Dibenzo(a,h)anthracene, mg/l	0.010
Carbazole, mg/l	0.010

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30896

Received: 27 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
30896-16	Report Completion Date	Client

PARAMETER	30896-16
Date Reported	03.08.91

Methods: EPA SW-846
ND = Not Detected

J. W. Andrews, Ph. D.

CAL Y
& IV ER, INC.
Environ al Services

Laboratory Task Order No. N/A

CHAIN OF CUSTODY RECORD

Page 1 of 1

Project Number NC09003

Project Location Wilmington, NC

Laboratory Savannah Laboratories

Sampler(s)/Affiliation P. JACOBS (G&M)
M. RADECKE (G&M)

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500 ml w/m glass K001 4°C	500 ml w/m plastic metals (w/ Cr, As) 4°C	1 liter amber glass K001 4°C	500 ml plastic metals (w/ Cr, As) 4°C HNO3						TOTAL
NTA-1/9329	S	2-26-91 13:40		1	1								2
NTA-2/9330	S	2-26-91 13:50		1	1								2
NTA-3/9331	S	2-26-91 14:35		1	1								2
NTA-4/9332	S	2-26-91 14:40		1	1								2
NTA-5/9333	S	2-26-91 15:10		1	1								2
NTA-6/9334	S	2-26-91 15:10		1	1								2
NTA-7/9335	S	2-26-91 16:05		1	1								2
NTA-8/9336	S	2-26-91 16:05		1	1								2
NTA-9/9337	S	2-26-91 16:35		1	1								2
RB-1	L	2-26-91 15:45				1	1						2
FB-1	L	2-26-91 15:45				1	1						2
30896													

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 22

Relinquished by: [signature] Organization: Geraghty & Miller, Inc. 2-26-91 19:00
Received by: Sandra Johnson Organization: SAVANNAH LABS Date 2/27/91 Time 9:30
Seal Intact? (Yes) No N/A

Relinquished by: Organization:
Received by: Organization: Date / / Time
Seal Intact? Yes No N/A

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express ☐ Lab Courier ☐ Other

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

RECEIVED
MAR 13 1991
G&M

LOG NO: S1-30925
Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30925-1	TWS-9B (# 9349) 2-27-91	Client
30925-2	TWS-9A (# 9348) 2-27-91	
30925-3	TWS-8B (# 9347) 2-27-91	
30925-4	TWS-8A (# 9346) 2-27-91	
30925-5	TWS-7B (# 9351) 2-27-91	

PARAMETER	30925-1	30925-2	30925-3	30925-4	30925-5
K001 (Method 8270)					
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthylene, mg/kg dw	ND	ND	ND	ND	ND
Phenanthrene, mg/kg dw	ND	ND	ND	0.74	ND
Anthracene, mg/kg dw	ND	ND	ND	1.2	ND
Fluoranthene, mg/kg dw	ND	1.3	ND	3.6	ND
Chrysene, mg/kg dw	ND	0.89	ND	2.5	ND
Benzo(a)Anthracene, mg/kg dw	ND	ND	ND	1.2	ND
Benzo(b,k)fluoranthene, mg/kg dw	ND	2.0	ND	4.9	ND
Benzo(a)pyrene, mg/kg dw	ND	ND	ND	0.89	ND
Indeno(1,2,3-cd)pyrene, mg/kg dw	ND	ND	ND	0.64	ND
Dibenzo(a,h)anthracene, mg/kg dw	ND	ND	ND	ND	ND
Carbazole, mg/kg dw	ND	ND	ND	0.74	ND
Dilution factor	1	1	1	1	1

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30925-1	TWS-9B (# 9349) 2-27-91	Client
30925-2	TWS-9A (# 9348) 2-27-91	
30925-3	TWS-8B (# 9347) 2-27-91	
30925-4	TWS-8A (# 9346) 2-27-91	
30925-5	TWS-7B (# 9351) 2-27-91	

PARAMETER	30925-1	30925-2	30925-3	30925-4	30925-5
Arsenic, mg/kg dw	ND	ND	ND	1.9	ND
Chromium, mg/kg dw	2.2	4.1	1.2	3.4	3.2
Copper, mg/kg dw	4.4	3.3	ND	4.4	ND
Percent Solids, %	80	80	85	79	77

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
_0925-6	TWS-7A (# 9350) 2-27-91	Client
30925-7	TWS-10A (# 9344) 2-27-91	
0925-8	TWS-10B (# 9345) 2-27-91	
0925-9	TWS-11A (# 9342) 2-27-91	
30925-10	TWS-11B (# 9343) 2-27-91	

METER	30925-6	30925-7	30925-8	30925-9	30925-10
K001 (Method 8270)					
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	2.8	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	0.87	ND	ND	ND
Acenaphthene, mg/kg dw	ND	0.93	2000	ND	ND
Acenaphthylene, mg/kg dw	0.50	2.5	ND	0.46	ND
Phenanthrene, mg/kg dw	0.73	4.2	4000	0.43	ND
Anthracene, mg/kg dw	1.2	14	2200	1.2	ND
Fluoranthene, mg/kg dw	4.2	33	3700	4.9	0.43
Chrysene, mg/kg dw	3.6	27	740	4.0	0.49
Benzo(a)Anthracene, mg/kg dw	2.4	23	800	2.9	ND
Benzo(b,k)fluoranthene, mg/kg dw	7.4	60	690	2.7	1.0
Benzo(a)pyrene, mg/kg dw	1.6	17	290	1.6	ND
Indeno(1,2,3-cd)pyrene, mg/kg dw	1.0	7.2	88	0.68	ND
Dibenzo(a,h)anthracene, mg/kg dw	ND	2.4	ND	ND	ND
Carbazole, mg/kg dw	0.90	3.4	390	0.93	ND
Dilution factor	1	5	200	1	1

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30925-6	TWS-7A (# 9350) 2-27-91	Client
30925-7	TWS-10A (# 9344) 2-27-91	
30925-8	TWS-10B (# 9345) 2-27-91	
30925-9	TWS-11A (# 9342) 2-27-91	
30925-10	TWS-11B (# 9343) 2-27-91	

AMETER	30925-6	30925-7	30925-8	30925-9	30925-10
Arsenic, mg/kg dw	2.7	1.3	6.1	31	2.2
Chromium, mg/kg dw	5.3	2.7	4.2	11	3.7
Copper, mg/kg dw	3.8	17	110	15	ND
Percent Solids, %	75	80	50	78	79

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30925-11	TWS-12A (# 9338) 2-27-91	Client
30925-12	TWS-12B (# 9339) 2-27-91	
30925-13	TWS-13A (# 9340) 2-27-91	
30925-14	TWS-13B (# 9341) 2-27-91	

PARAMETER	30925-11	30925-12	30925-13	30925-14
K001 (Method 8270)				
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	ND	ND	ND
Acenaphthene, mg/kg dw	ND	ND	ND	ND
Acenaphthylene, mg/kg dw	ND	ND	ND	ND
Phenanthrene, mg/kg dw	ND	ND	ND	ND
Anthracene, mg/kg dw	ND	ND	ND	ND
Fluoranthene, mg/kg dw	ND	42	0.66	ND
Chrysene, mg/kg dw	ND	19	ND	ND
Benzo(a)Anthracene, mg/kg dw	ND	12	ND	ND
Benzo(b,k)fluoranthene, mg/kg dw	ND	30	ND	ND
Benzo(a)pyrene, mg/kg dw	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene, mg/kg dw	ND	ND	ND	ND
Dibenzo(a,h)anthracene, mg/kg dw	ND	ND	ND	ND
Carbazole, mg/kg dw	ND	ND	ND	ND
Dilution factor	1	1	1	1

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30925-11	TWS-12A (# 9338) 2-27-91	Client
30925-12	TWS-12B (# 9339) 2-27-91	
30925-13	TWS-13A (# 9340) 2-27-91	
30925-14	TWS-13B (# 9341) 2-27-91	

PARAMETER	30925-11	30925-12	30925-13	30925-14
Arsenic, mg/kg dw	ND	1.6	1.8	ND
Chromium, mg/kg dw	2.7	6.0	5.2	1.8
Copper, mg/kg dw	ND	4.2	ND	ND
Percent Solids, %	92	87	77	81

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
30925-15	Rinse Blank (2-27-91)	Client
30925-16	Field Blank (2-27-91)	

PARAMETER	30925-15	30925-16
K001 (Method 8270)		
Chlorophenol, mg/l	ND	ND
Phenol, mg/l	ND	ND
2,4-Dimethylphenol, mg/l	ND	ND
Trichlorophenols, mg/l	ND	ND
p-Chloro-m-cresol, mg/l	ND	ND
Tetrachlorophenols, mg/l	ND	ND
2,4-Dinitrophenol, mg/l	ND	ND
Pentachlorophenol, mg/l	ND	ND
Naphthalene, mg/l	ND	ND
Acenaphthene, mg/l	ND	ND
Acenaphthylene, mg/l	ND	ND
Phenanthrene, mg/l	ND	ND
Anthracene, mg/l	ND	ND
Fluoranthene, mg/l	ND	ND
Chrysene, mg/l	ND	ND
Benzo(a)Anthracene, mg/l	ND	ND
Benzo(b,k)fluoranthene, mg/l	ND	ND
Benzo(a)pyrene, mg/l	ND	ND
Indeno(1,2,3-cd)pyrene, mg/l	ND	ND
Dibenzo(a,h)anthracene, mg/l	ND	ND
Carbazole, mg/l	ND	ND
Dilution factor	1	1
Arsenic, mg/l	ND	ND
Chromium, mg/l	ND	ND

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
30925-15	Rinse Blank (2-27-91)	Client
30925-16	Field Blank (2-27-91)	

PARAMETER	30925-15	30925-16
Copper, mg/l	ND	ND

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
30925-17	Detection Limits - Soil	Client
30925-18	Accuracy (mean % recovery) - Soil	
30925-19	Precision (% RPD) - Soil	

PARAMETER	30925-17	30925-18	30925-19
1 (Method 8270)			
2-Chlorophenol, mg/kg dw	0.33	94 %	4.3 %
Phenol, mg/kg dw	0.33	89 %	5.1 %
2,4-Dimethylphenol, mg/kg dw	0.33	81 %	11 %
Trichlorophenols, mg/kg dw	0.33	87 %	4.6 %
p-Chloro-m-cresol, mg/kg dw	0.33	101 %	2.0 %
Tetrachlorophenols, mg/kg dw	0.33	111 %	0.9 %
2,4-Dinitrophenol, mg/kg dw	1.7	78 %	1.3 %
Pentachlorophenol, mg/kg dw	1.7	26 %	7.7 %
Naphthalene, mg/kg dw	0.33	92 %	1.1 %
Acenaphthene, mg/kg dw	0.33	79 %	0 %
Acenaphthylene, mg/kg dw	0.33	88 %	1.1 %
Phenanthrene, mg/kg dw	0.33	87 %	2.3 %
Anthracene, mg/kg dw	0.33	86 %	2.3 %
Fluoranthene, mg/kg dw	0.33	98 %	0 %
Chrysene, mg/kg dw	0.33	78 %	1.3 %
Benzo(a)Anthracene, mg/kg dw	0.33	81 %	0 %
Benzo(b,k)fluoranthene, mg/kg dw	0.33	85 %	2.4 %
Benzo(a)pyrene, mg/kg dw	0.33	90 %	4.4 %
Indeno(1,2,3-cd)pyrene, mg/kg dw	0.33	111 %	4.5 %
Dibenzo(a,h)anthracene, mg/kg dw	0.33	113 %	3.5 %
Carbazole, mg/kg dw	0.33	123 %	0.8 %
Arsenic, mg/kg dw	1.0	124 %	8.5 %
Chromium, mg/kg dw	1.0	101 %	13 %

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
30925-17	Detection Limits - Soil	Client
30925-18	Accuracy (mean % recovery) - Soil	
30925-19	Precision (% RPD) - Soil	

PARAMETER	30925-17	30925-18	30925-19
Copper, mg/kg dw	2.5	86 %	7.0

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
30925-20	Detection Limits	Client

PARAMETER	30925-20
K001 (Method 8270)	
2-Chlorophenol, mg/l	0.010
[illegible]nol, mg/l	0.010
2,4-Dimethylphenol, mg/l	0.010
Trichlorophenols, mg/l	0.010
p-Chloro-m-cresol, mg/l	0.010
Tetrachlorophenols, mg/l	0.010
2,4-Dinitrophenol, mg/l	0.050
Pentachlorophenol, mg/l	0.050
Naphthalene, mg/l	0.010
Acenaphthene, mg/l	0.010
Acenaphthylene, mg/l	0.010
Phenanthrene, mg/l	0.010
Anthracene, mg/l	0.010
Fluoranthene, mg/l	0.010
Chrysene, mg/l	0.010
Benzo(a)Anthracene, mg/l	0.010
Benzo(b,k)fluoranthene, mg/l	0.010
Benzo(a)pyrene, mg/l	0.010
Indeno(1,2,3-cd)pyrene, mg/l	0.010
Dibenzo(a,h)anthracene, mg/l	0.010
Carbazole, mg/l	0.010

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30925

Received: 28 FEB 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
30925-21	Report Completion Date	Client

PARAMETER	30925-21
Date Reported	03.07.91

Methods: EPA SW-846
ND = Not Detected

J. W. Andrews

J. W. Andrews, Ph. D.

E&... L.., .NC.
Environ... al Services

abor_ , Task er N 11 HA OF ST / R OR ge_ , d_

Project Number NC09203

Project Location Wilmington, N.C.

Laboratory Savannah Labs

Sampler(s)/Affiliation P. Jacobs (6/19)
M. Bodecke (6/19)

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500mL w/m plastic metals (Cu, Cr, As) 4oC	500mL w/m glass KOD1 4oC								TOTAL
TWS-9B/9349	S	2-27-91 15:55		1	1								2
TWS-9A/9348	S	2-27-91 15:45		1	1								2
TWS-8B/9347	S	2-27-91 16:20		1	1								2
TWS-8A/9346	S	2-27-91 16:10		1	1								2
TWS-7B/9351	S	2-27-91 17:15		1	1								2
TWS-7A/9350	S	2-27-91 17:05		1	1								2
30925													

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 12

Relinquished by: P. Jacobs Organization: Geraghty & Miller, Inc. Date 2-27-91 Time 19:00
Received by: Tamara Johnson Organization: SAVANNAH LABS Date 2/28/91 Time 9:45
Seal Intact? (Yes) No N/A

Relinquished by: Organization:
Received by: Organization: Date / / Time
Seal Intact? Yes No N/A

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express ☐ Lab Courier ☐ Other

E&... INC.
Environmental Services

Laboratory Task Order No. N/A

CHAIN OF CUSTODY RECORD

Page ___ of ___

Project Number N.C 09003

Project Location Wilmington, N.C.

Laboratory Savannah Labs

Sampler(s)/Affiliation P. Jacobs (G+M)
M. Radecke (G+M)

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500ml w/m plastic metals (Cu, Cr, As) 4°C	500ml w/m glass Kool 4°C	500ml plastic metals (Cu, Cr, As) HNO3 4°C	1L Amber glass Kool 4°C						TOTAL
TWS-10A/9344	S	2-27-91 13:45		1	1								2
TWS-10B/9345	S	2-27-91 13:55		1	1								2
TWS-11A/9342	S	2-27-91 12:25		1	1								2
TWS-11B/9343	S	2-27-91 12:30		1	1								2
TWS-12A/9338	S	2-27-91 11:00		1	1								2
TWS-12B/9339	S	2-27-91 11:10		1	1								2
TWS-13A/9340	S	2-27-91 11:30		1	1								2
TWS-13B/9341	S	2-27-91 11:35		1	1								2
FB-2	L	2-27-91 15:30				1	1						2
RB-2	L	2-27-91 15:25				1	1						2
30925													

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 20

Relinquished by: P. Jacobs Organization: Geraghty & Miller, Inc. Date 2-27-91 Time 19:00
Received by: Janova Johnson Organization: SAVH J-LABS Date 2/28/91 Time 9:45
Seal Intact? (Yes) No N/A

Relinquished by: ___ Organization: ___
Received by: ___ Organization: ___ Date / / Time ___
Seal Intact? Yes No N/A

Special Instructions/Remarks: ___

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express ☐ Lab Courier ☐ Other ___

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

RECEIVED
MAR 1 5 1991
G & M RALEIGH

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

)G NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30948-1	TWS-6A (# 9352) 2-28-91	Client
)948-2	TWS-6B (# 9353) 2-28-91	
)948-3	TWS-5A (# 9354) 2-28-91	
30948-4	TWS-5B (# 9355) 2-28-91	
30948-5	TWS-4A (# 9356) 2-28-91	

PARAMETER	30948-1	30948-2	30948-3	30948-4	30948-5
)01 (Method 8270)					
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthylene, mg/kg dw	0.66	ND	ND	ND	0.48
Phenanthrene, mg/kg dw	2.4	ND	0.64	ND	0.75
Anthracene, mg/kg dw	2.3	ND	1.1	ND	1.4
Fluoranthene, mg/kg dw	16	ND	1.2	ND	5.9
Chrysene, mg/kg dw	8.1	ND	0.95	ND	4.8
Benzo(a)Anthracene, mg/kg dw	5.0	ND	0.88	ND	2.6
Benzo(b,k)fluoranthene, mg/kg dw	13	ND	0.73	ND	8.2
Benzo(a)pyrene, mg/kg dw	3.5	ND	0.58	ND	1.4
Indeno(1,2,3-cd)pyrene, mg/kg dw	1.9	ND	ND	ND	0.63
Dibenzo(a,h)anthracene, mg/kg dw	0.49	ND	ND	ND	ND
Carbazole, mg/kg dw	1.8	ND	ND	ND	1.0
tion factor	1	1	1	1	1

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30948-1	TWS-6A (# 9352) 2-28-91	Client
30948-2	TWS-6B (# 9353) 2-28-91	
30948-3	TWS-5A (# 9354) 2-28-91	
30948-4	TWS-5B (# 9355) 2-28-91	
30948-5	TWS-4A (# 9356) 2-28-91	

PARAMETER	30948-1	30948-2	30948-3	30948-4	30948-5
Arsenic, mg/kg dw	8.7	6.1	41	1.6	26
Chromium, mg/kg dw	13	27	19	4.1	8.4
Copper, mg/kg dw	7.2	3.9	71	ND	7.3
Percent Solids, %	83	55	70	79	74

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30948-6	TWS-4B (# 9357) 2-28-91	Client
30948-7	TWS-3A (# 9358) 2-28-91	
30948-8	TWS-3B (# 9359) 2-28-91	
30948-9	TWS-2A (# 9360) 2-28-91	
30948-10	TWS-2B (# 9361) 2-28-91	

PARAMETER	30948-6	30948-7	30948-8	30948-9	30948-10
K001 (Method 8270)					
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthene, mg/kg dw	ND	ND	47	ND	ND
Acenaphthylene, mg/kg dw	ND	0.60	ND	ND	ND
Phenanthrene, mg/kg dw	ND	0.75	220	ND	ND
Anthracene, mg/kg dw	ND	1.7	51	0.68	ND
Fluoranthene, mg/kg dw	0.95	3.9	150	3.4	1.0
Chrysene, mg/kg dw	ND	3.2	13	3.5	0.73
Benzo(a)Anthracene, mg/kg dw	ND	1.7	17	2.2	0.66
Benzo(b,k)fluoranthene, mg/kg dw	ND	7.0	20	6.7	ND
Benzo(a)pyrene, mg/kg dw	ND	1.4	ND	1.3	ND
Indeno(1,2,3-cd)pyrene, mg/kg dw	ND	0.84	ND	0.53	ND
Dibenzo(a,h)anthracene, mg/kg dw	ND	ND	ND	ND	ND
Carbazole, mg/kg dw	ND	0.77	ND	ND	ND
Dilution factor	1	1	10	1	1

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30948-6	TWS-4B (# 9357) 2-28-91	Client
30948-7	TWS-3A (# 9358) 2-28-91	
30948-8	TWS-3B (# 9359) 2-28-91	
30948-9	TWS-2A (# 9360) 2-28-91	
30948-10	TWS-2B (# 9361) 2-28-91	

PARAMETER	30948-6	30948-7	30948-8	30948-9	30948-10
Arsenic, mg/kg dw	13	13	4.3	6.4	3.5
Chromium, mg/kg dw	29	7.0	3.8	8.8	6.1
Copper, mg/kg dw	16	8.2	ND	ND	ND
Percent Solids, %	56	72	72	71	55

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
30948-16	Rinse Blank (2-28-91)	Client
30948-17	Field Blank (2-28-91)	

PARAMETER	30948-16	30948-17
K001 (Method 8270)		
[illegible]Chlorophenol, mg/l	ND	ND
[illegible]enol, mg/l	ND	ND
2,4-Dimethylphenol, mg/l	ND	ND
Trichlorophenols, mg/l	ND	ND
p-Chloro-m-cresol, mg/l	ND	ND
Tetrachlorophenols, mg/l	ND	ND
2,4-Dinitrophenol, mg/l	ND	ND
Pentachlorophenol, mg/l	ND	ND
Naphthalene, mg/l	ND	ND
Acenaphthene, mg/l	ND	ND
Acenaphthylene, mg/l	ND	ND
Phenanthrene, mg/l	ND	ND
Anthracene, mg/l	ND	ND
Fluoranthene, mg/l	ND	ND
Chrysene, mg/l	ND	ND
Benzo(a)Anthracene, mg/l	ND	ND
Benzo(b,k)fluoranthene, mg/l	ND	ND
Benzo(a)pyrene, mg/l	ND	ND
Indeno(1,2,3-cd)pyrene, mg/l	ND	ND
Dibenzo(a,h)anthracene, mg/l	ND	ND
Carbazole, mg/l	ND	ND
Dilution factor	1	1
Arsenic, mg/l	ND	ND
Chromium, mg/l	ND	ND

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
30948-16	Rinse Blank (2-28-91)	Client
30948-17	Field Blank (2-28-91)	

PARAMETER	30948-16	30948-17
Copper, mg/l	ND	ND

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
30948-18	Detection Limits - Soil	Client
30948-19	Accuracy (mean % recovery) - Soil	
30948-20	Precision (% RPD) - Soil	

PARAMETER	30948-18	30948-19	30948-20
1 (Method 8270)			
-Chlorophenol, mg/kg dw	0.33	101 %	1.0 %
Phenol, mg/kg dw	0.33	85 %	5.2 %
2,4-Dimethylphenol, mg/kg dw	0.33	57 %	18 %
Trichlorophenols, mg/kg dw	0.33	64 %	7.8 %
p-Chloro-m-cresol, mg/kg dw	0.33	88 %	2.3 %
Tetrachlorophenols, mg/kg dw	0.33	76 %	7.9 %
2,4-Dinitrophenol, mg/kg dw	1.7	79 %	10 %
Pentachlorophenol, mg/kg dw	1.7	93 %	14 %
Naphthalene, mg/kg dw	0.33	91 %	1.1 %
Acenaphthene, mg/kg dw	0.33	89 %	2.2 %
Acenaphthylene, mg/kg dw	0.33	107 %	1.9 %
Phenanthrene, mg/kg dw	0.33	89 %	2.2 %
Anthracene, mg/kg dw	0.33	84 %	7.1 %
Fluoranthene, mg/kg dw	0.33	89 %	4.5 %
Chrysene, mg/kg dw	0.33	72 %	1.4 %
Benzo(a)Anthracene, mg/kg dw	0.33	80 %	3.8 %
Benzo(b,k)fluoranthene, mg/kg dw	0.33	76 %	3.9 %
Benzo(a)pyrene, mg/kg dw	0.33	84 %	1.2 %
Indeno(1,2,3-cd)pyrene, mg/kg dw	0.33	90 %	1.1 %
Dibenzo(a,h)anthracene, mg/kg dw	0.33	84 %	13 %
Carbazole, mg/kg dw	0.33	93 %	7.2 %
Arsenic, mg/kg dw	1.0	111 %	5.4 %
Chromium, mg/kg dw	1.0	119 %	0.84 %

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
30948-18	Detection Limits - Soil	Client
30948-19	Accuracy (mean % recovery) - Soil	
30948-20	Precision (% RPD) - Soil	

PARAMETER	30948-18	30948-19	30948-20
er, mg/kg dw	2.5	117 %	2.6 %

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
30948-21	Detection Limits - Liquid	Client

PARAMETER	30948-21
K001 (Method 8270)	
2-Chlorophenol, mg/l	0.010
[illegible]enol, mg/l	0.010
[illegible],4-Dimethylphenol, mg/l	0.010
Trichlorophenols, mg/l	0.010
p-Chloro-m-cresol, mg/l	0.010
Tetrachlorophenols, mg/l	0.010
2,4-Dinitrophenol, mg/l	0.050
Pentachlorophenol, mg/l	0.050
Naphthalene, mg/l	0.010
Acenaphthene, mg/l	0.010
Acenaphthylene, mg/l	0.010
Phenanthrene, mg/l	0.010
Anthracene, mg/l	0.010
Fluoranthene, mg/l	0.010
Chrysene, mg/l	0.010
Benzo(a)Anthracene, mg/l	0.010
Benzo(b,k)fluoranthene, mg/l	0.010
Benzo(a)pyrene, mg/l	0.010
Indeno(1,2,3-cd)pyrene, mg/l	0.010
Dibenzo(a,h)anthracene, mg/l	0.010
Carbazole, mg/l	0.010
Arsenic, mg/l	0.010
Chromium, mg/l	0.010
Copper, mg/l	0.025

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
30948-22	Report Completion Date	Client

PARAMETER	30948-22
Date Reported	03.13.91

Methods: EPA SW-846
ND = Not Detected

J. W. Andrews, Ph. D.

Project Number NC 09003

Project Location Wilmington, NC

Laboratory Savannah Labs

Sampler(s)/Affiliation P. Jacobs (G+M)
M. Radecke (G+M)

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500 ml w/m plastic metals Cr, Cr, As 4°C	500 ml w/m glass K001 4°C								TOTAL
TWS-6A/9352	S	2-28-91 8:35		1	1								2
TWS-6B/9353	S	2-28-91 8:45		1	1								2
TWS-5A/9354	S	2-28-91 9:15		1	1								2
TWS-5B/9355	S	2-28-91 9:20		1	1								2
TWS-4A/9356	S	2-28-91 10:10		1	1								2
TWS-4B/9357	S	2-28-91 10:15		1	1								2
TWS-3A/9358	S	2-28-91 11:10		1	1								2
TWS-3B/9359	S	2-28-91 11:15		1	1								2
TWS-2A/9360	S	2-28-91 12:15		1	1								2
TWS-2B/9361	S	2-28-91 12:25		1	1								2
TWS-1A/9362	S	2-28-91 13:05		1	1								2
TWS-1B/9363	S	2-28-91 13:15		1	1								2
30948													

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 24

Relinquished by: P. Jacobs	Organization: Geraghty + Miller, Inc.	2-28-91 19:00	Seal Intact? Yes No N/A
Received by: Sandra Johnson	Organization: SAVH LABS	Date 3/1/91 Time 9:45	
Relinquished by:	Organization:		Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks: Log in under Southern Wood Piedmont

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

G&M Form 01 1.90

nvir ntal ices

Project Number C09003

Project Location Wilmington, NC

Laboratory Savannah Labs

Sampler(s)/Affiliation P. Jacobs (G+M)
M. Rodecke (G+M)

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500ml w/m plastic metals Cu,Cr,As 4°C	500ml w/m glass Kool	500ml plastic metals Cu,Cr,As 4°C	1L Amber glass HNO3 Kool 4°C						TOTAL
NTB-3/9364	S	2-28-91 17:10		1	1								2
NTB-6/9365	S	2-28-91 17:30		1	1								2
NTB-7/9366	S	2-28-91 17:30		1	1								2
FB-3	L	2-28-91 16:50				1	1						2
RB-3	L	2-28-91 16:48				1	1						2
30948													

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 10

Relinquished by: P. Jacobs Organization: Geraghty + Miller, Inc. Date 2-28-91 Time 19:00
Received by: Jamara Johnson Organization: SAVH LABS Date 3/1/91 Time 9:45
Seal Intact? Yes No N/A

Relinquished by: Organization:
Received by: Organization: Date / / Time 9
Seal Intact? Yes No N/A

Special Instructions/Remarks:
Log in under Southern Wood Piedmont

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

G&M Form 02 1.90 Southpoint 90 0136

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.
02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

Mark
RECEIVED
MAR 21 1991
G & M

LOG NO: S1-30966

Received: 02 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09003 Wilmington

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
0966-1	NTB-2 (# 9367) 3-1-91	Client
30966-2	NTB-5 (# 9368) 3-1-91	
30966-3	NTB-1 (# 9370) 3-1-91	
0966-4	NTB-4 (# 9369) 3-1-91	
0966-5	NTB-8 (# 9371) 3-1-91	

PARAMETER	30966-1	30966-2	30966-3	30966-4	30966-5
K001 (Method 8270)					
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	ND	0.93	ND	ND
Acenaphthene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthylene, mg/kg dw	ND	ND	1.6	ND	ND
Phenanthrene, mg/kg dw	1.0	ND	2.0	54	ND
Anthracene, mg/kg dw	3.7	ND	7.6	84	ND
Fluoranthene, mg/kg dw	1.3	0.70	7.5	97	0.68
Chrysene, mg/kg dw	0.74	0.49	4.6	52	0.79
Benzo(a)Anthracene, mg/kg dw	0.56	ND	3.1	25	ND
Benzo(b,k)fluoranthene, mg/kg dw	1.0	ND	11	50	1.2
Benzo(a)pyrene, mg/kg dw	ND	ND	4.3	17	ND
Indeno(1,2,3-cd)pyrene, mg/kg dw	ND	ND	3.8	ND	ND
Dibenzo(a,h)anthracene, mg/kg dw	ND	ND	1.3	ND	ND
Carbazole, mg/kg dw	2.2	ND	1.6	11	ND
Dilution factor	1	1	1	20	1

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30966

Received: 02 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09003 Wilmington

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30966-1	NTB-2 (# 9367) 3-1-91	Client
30966-2	NTB-5 (# 9368) 3-1-91	
30966-3	NTB-1 (# 9370) 3-1-91	
30966-4	NTB-4 (# 9369) 3-1-91	
30966-5	NTB-8 (# 9371) 3-1-91	

PARAMETER	30966-1	30966-2	30966-3	30966-4	30966-5
Arsenic, mg/kg dw	ND	1.8	7.0	1.7	5.3
Chromium, mg/kg dw	1.8	3.2	8.0	2.9	5.6
Copper, mg/kg dw	ND	3.9	30	9.7	90
Percent Solids, %	91	78	68	87	78

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30966

Received: 02 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09003 Wilmington

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30966-6	NTB-9 (# 9372) 3-1-91	Client
30966-7	NTB-10 (# 9374) 3-1-91	
30966-8	NTB-11 (# 9373) 3-1-91	
30966-9	NTB-12 (# 9375) 3-1-91	
30966-10	NTB-13 (# 9376) 3-1-91	

PARAMETER	30966-6	30966-7	30966-8	30966-9	30966-10
K001 (Method 8270)					
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthylene, mg/kg dw	ND	ND	ND	ND	ND
Phenanthrene, mg/kg dw	ND	3.0	ND	ND	ND
Anthracene, mg/kg dw	ND	1.3	ND	ND	ND
Fluoranthene, mg/kg dw	1.0	5.8	0.63	0.58	0.86
Chrysene, mg/kg dw	1.2	4.5	0.76	0.59	0.93
Benzo(a)Anthracene, mg/kg dw	ND	3.1	0.50	ND	0.69
Benzo(b,k)fluoranthene, mg/kg dw	2.0	5.5	1.7	1.2	1.3
Benzo(a)pyrene, mg/kg dw	ND	1.2	ND	ND	ND
Indeno(1,2,3-cd)pyrene, mg/kg dw	ND	0.57	ND	ND	ND
Dibenzo(a,h)anthracene, mg/kg dw	ND	ND	ND	ND	ND
Carbazole, mg/kg dw	ND	0.51	ND	ND	ND
Dilution factor	1	1	1	1	1

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

02 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30966

Received: 02 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09003 Wilmington

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30966-6	NTB-9 (# 9372) 3-1-91	Client
30966-7	NTB-10 (# 9374) 3-1-91	
30966-8	NTB-11 (# 9373) 3-1-91	
30966-9	NTB-12 (# 9375) 3-1-91	
30966-10	NTB-13 (# 9376) 3-1-91	

PARAMETER	30966-6	30966-7	30966-8	30966-9	30966-10
Arsenic, mg/kg dw	12	4.7	8.1	3.2	13
Chromium, mg/kg dw	5.7	2.2	4.6	1.4	22
Copper, mg/kg dw	130	8.6	81	3.1	20
Percent Solids, %	71	71	89	72	51

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

2 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30966

Received: 02 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09003 Wilmington

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
1966-14	Report Completion Date	Client

PARAMETER	30966-14
ıte Reported	03.20.91

Methods: EPA SW-846
ND = Not Detected

J. W. Andrews

. W. Andrews, Ph. D.

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30948-11	TWS-1A (# 9362) 2-28-91	Client
30948-12	TWS-1B (# 9363) 2-28-91	
30948-13	NTB-3 (# 9364) 2-28-91	
30948-14	NTB-6 (# 9365) 2-28-91	
30948-15	NTB-7 (# 9366) 2-28-91	

AMETER	30948-11	30948-12	30948-13	30948-14	30948-15
K001 (Method 8270)					
2-Chlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Phenol, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dimethylphenol, mg/kg dw	ND	ND	ND	ND	ND
Trichlorophenols, mg/kg dw	ND	ND	ND	ND	ND
p-Chloro-m-cresol, mg/kg dw	ND	ND	ND	ND	ND
Tetrachlorophenols, mg/kg dw	ND	ND	ND	ND	ND
2,4-Dinitrophenol, mg/kg dw	ND	ND	ND	ND	ND
Pentachlorophenol, mg/kg dw	ND	ND	ND	ND	ND
Naphthalene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthene, mg/kg dw	ND	ND	ND	ND	ND
Acenaphthylene, mg/kg dw	ND	ND	ND	ND	ND
Phenanthrene, mg/kg dw	13	ND	ND	ND	ND
Anthracene, mg/kg dw	36	ND	ND	ND	ND
Fluoranthene, mg/kg dw	25	ND	0.39	0.91	0.83
Chrysene, mg/kg dw	8.0	ND	0.40	0.82	0.75
Benzo(a)Anthracene, mg/kg dw	6.2	ND	ND	0.38	ND
Benzo(b,k)fluoranthene, mg/kg dw	12	ND	0.45	1.7	1.5
Benzo(a)pyrene, mg/kg dw	5.1	ND	ND	0.39	ND
Indeno(1,2,3-cd)pyrene, mg/kg dw	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene, mg/kg dw	ND	ND	ND	ND	ND
Carbazole, mg/kg dw	7.1	ND	ND	ND	ND
Dilution factor	10	1	1	1	1

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S1-30948

Received: 01 MAR 91

Ms. Sandra Watson
Southern Wood Piedmont (WI)
P.O. Box 5477, I-85 and Sigsbee Rd.
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
30948-11	TWS-1A (# 9362) 2-28-91	Client
30948-12	TWS-1B (# 9363) 2-28-91	
30948-13	NTB-3 (# 9364) 2-28-91	
30948-14	NTB-6 (# 9365) 2-28-91	
30948-15	NTB-7 (# 9366) 2-28-91	

AMETER	30948-11	30948-12	30948-13	30948-14	30948-15
Arsenic, mg/kg dw	6.8	2.0	4.8	5.0	9.4
Chromium, mg/kg dw	6.5	4.8	9.1	2.3	2.7
Copper, mg/kg dw	88	12	4.3	11	2.8
Percent Solids, %	89	79	88	87	79