Screening Site Inspection Report, Part 2

Wood Protection Company
Houston, Texas

TXD 059345116

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Texas Water Commission
and
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SCREENING SITE INSPECTION REPORT, PART 2
WOOD PROTECTION COMPANY
TXD 059345116

INTRODUCTION

Engineering-Science (ES) has been contracted by the Texas Water Commission (TWC) to conduct a screening site inspection (SSI) at the Wood Protection Company site (EPA identification number TXD 059345116). This site is located at 5151 South Loop East in Houston, Harris County, Texas. Wood Protection Company treats wood products with chromated copper arsenate (CCA). The site has been in operation since 1951. Prior to 1972, pentachlorophenol was used as the wood treating chemical. This report was prepared to describe the inspection and sampling activities conducted at the site.

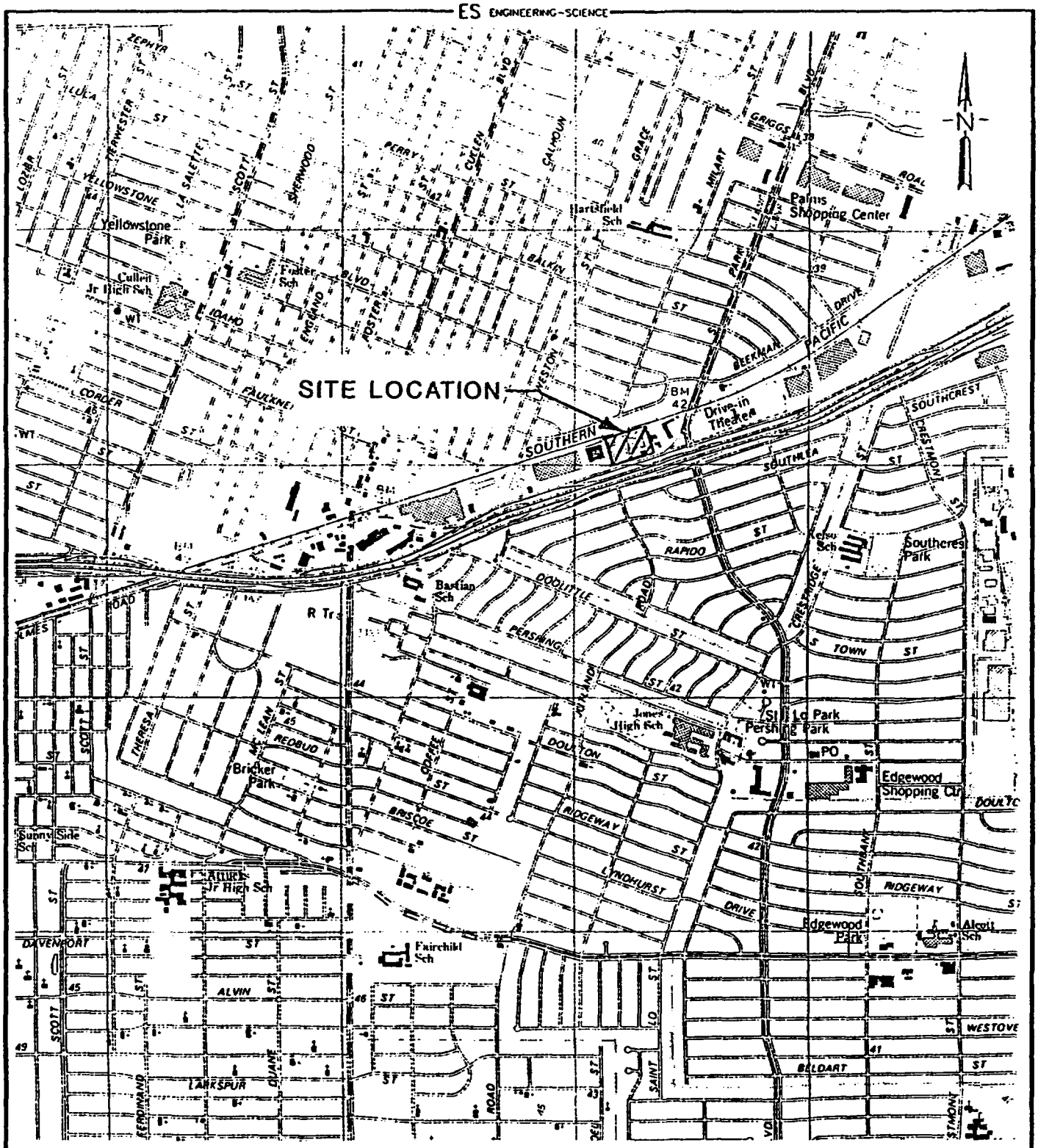
This document is Part 2 of a two-part report detailing SSI activities at the Wood Protection Company site. This report provides the analytical results from the samples collected at this site. The Part 1 report details site background information and describes the field activities conducted October 19 through 21, 1992. The activities included site reconnaissance, record searches, sample collection, and interviews with Joel Tigett and Jim Moncrief of Wood Protection Company. The site visit was conducted by Brian Vanderglas and Joyce Bailey of ES.

The data sheets for samples collected are in appendix A. The U.S. Environmental Protection Agency (EPA) data quality assurance summary is provided in appendix B. Raw data for these samples are not included in this report. Reference material not provided in the Part 1 report is included in appendix C.

SITE BACKGROUND AND DESCRIPTION

The Wood Protection Company site (5151 South Loop East, Houston, Harris County, Texas) is located on the north side of the south loop of Highway 610, about 0.1 mile west of Martin Luther King Drive, as shown in Figure 1.[ref. 1] The geographic coordinates of the site are 29°41′25″ north and 95°20′31″ west.[ref. 2] Figure 2 is a site sketch showing sampling locations.

The owner of the west half of the approximately 10-acre active site is Wood Protection Company.[ref. 3] The estate of C. E. King owns the east half and leases the property to Wood Protection Company, a wholly owned subsidiary of Osmose Wood Preserving Company.[ref. 3] Osmose Wood Preserving Company purchased the facilities in 1972.[ref. 7] Joel Tigett is the general manager.[ref. 4] The site has



SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

PARK PLACE QUADRANGLE
TEXAS-HARRIS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

QUADRANGLE LOCATION

FIGURE 1
SITE LOCATION MAP
WOOD PROTECTION COMPANY
TEXAS WATER COMMISSION

ES ENGINEERING-SCIENCE

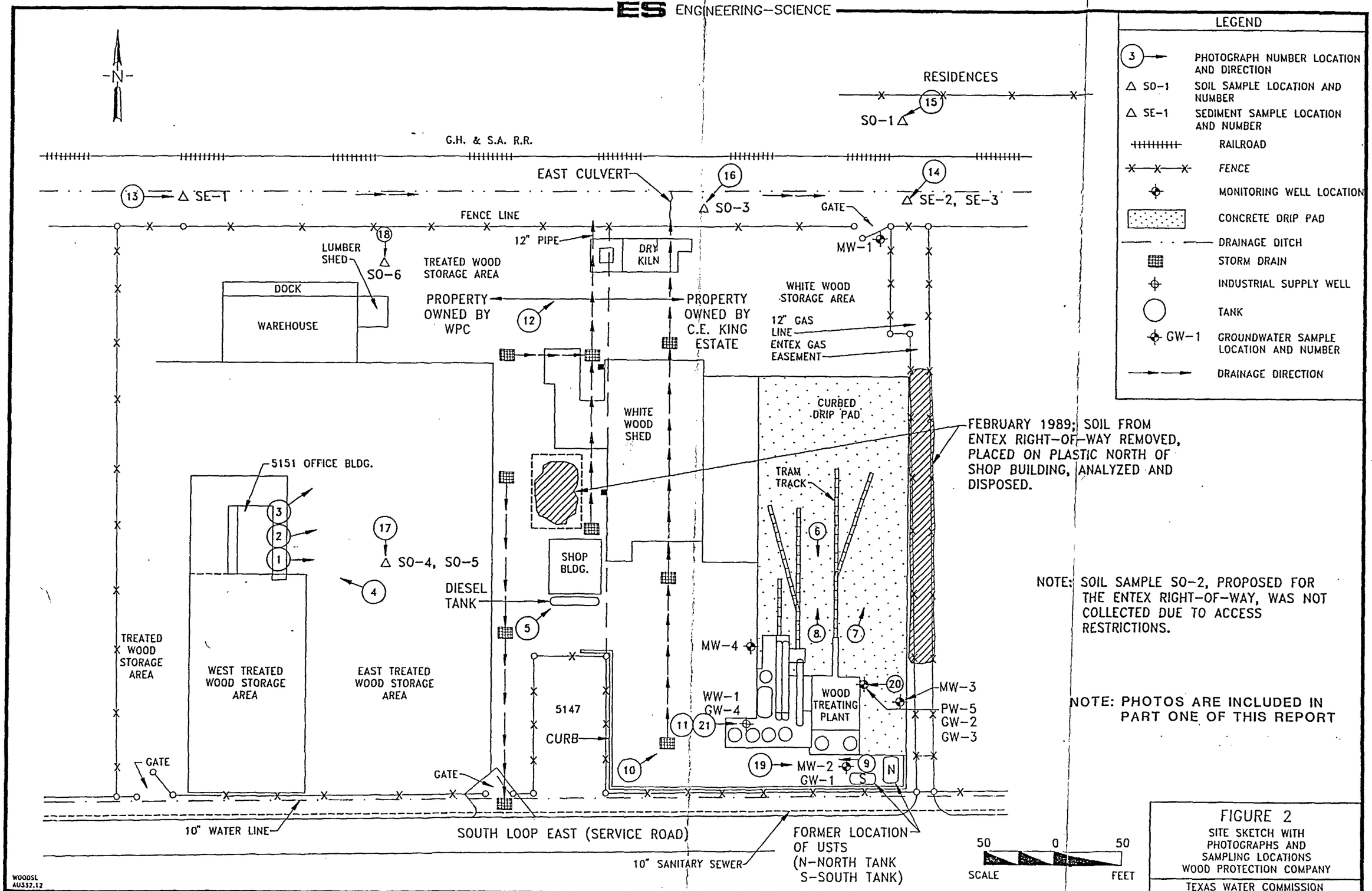


FIGURE 2
SITE SKETCH WITH PHOTOGRAPHS AND SAMPLING LOCATIONS
WOOD PROTECTION COMPANY
TEXAS WATER COMMISSION

operated as a wood treating facility since 1951.[ref. 4] The prior owner was Penta-Wood Life Vacuum Treated Company.[ref. 5]

Adjacent land use consists of commercial (west and east), light industrial (east), and residential areas (north and south). Railroad tracks lie immediately north of the site, and an Entex natural gas right-of way lies immediately east of the site.[ref. 3] The aerial photographs for 1965, 1978, and 1992 presented in appendix C indicate many changes in the site configuration and adjacent land use over that time.[ref. 6]

Public access is restricted; the site is surrounded by a chain-link fence topped with three-strand barbed wire with gates at entrance and exit points.[ref. 3] All areas subject to preservative drippage are covered in concrete.[ref. 3] A personnel decontamination station is located in the wood treatment area for employees leaving the curbed drip pad.[ref. 3]

There have been several spills and discharges at this site. These are discussed in detail in the Part 1 report.

WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION

The wood treating operation at the site used pentachlorophenol (PCP) from 1951 to 1972 and chromated copper arsenate (CCA) from 1972 to present.[ref. 4] Ammoniated inorganic phosphate and sulfuric acid have also been used on site.[ref. 8] Potential sources are thirteen tanks and pressure treating cylinders.[ref. 3] CCA-contaminated soil from past spills and drippage is also a potential source. A discharge onto soil east of the property in the Entex right of way also reportedly occurred.[ref. 3]

CCA is dark red-orange in color.[ref. 8] Spent CCA is green, after the oxidation-reduction reaction which occurs during the chemical treatment process. Concentrated CCA contains 17 percent arsenic acid, 23.75 percent chromic acid, 9.25 percent copper oxide, and 50 percent water.[ref. 8] The concentration of CCA used at the site is $\leq$50 percent.[ref. 8] PCP is a white powder or crystal.[ref. 5] The concentration and quantity used prior to 1972 was not known by any site representatives. According to the site representatives, creosote was not likely used in the prior operator's process; PCP was generally carried in heavy oil and mineral oil.[ref. 3]

Based on the composition of the wood-treating chemicals used at the facility, the contaminants of concern are arsenic, chromium, copper, and pentachlorophenol. To address the chemicals of concern, EPA-stipulated Contract Laboratory Program (CLP) analytical methods were requested on all pathway samples collected. A formal list of these analytical methods is specified under the CLP routine analytical services (RAS) contract. These methods were CLP VOA, CLP SV, CLP PEST, CLP metals, and CLP CN. The CLP methods cover a wide range of analytes, including priority pollutant volatile and semivolatile organic compounds, metals, pesticides, and PCBs.

GROUNDWATER PATHWAY

Sampling Activities

Contaminated soil from past CCA spills (preservative drippage and a tank spill) and contaminated soil from past operations using PCP[ref. 5] are potential sources of groundwater contamination

Six groundwater wells have been constructed at Wood Protection Company. Four are monitoring wells (MW-1 through MW-4), one is a recovery well (PW-5), and one is a water well (WW-1). WW-1 was drilled to a depth of 300 feet.[ref. 3, 9] Detailed construction, location, and previous sampling information for the wells is included in the Part 1 report.

The potential for releases to groundwater was assessed during this SSI by collecting samples from three of the onsite wells. No offsite groundwater samples were collected since the nearest private well is more than 1 mile from the site and is used as an industrial water supply. Four groundwater samples were collected on October 21, 1992. GW-1 was collected from MW-2, the most upgradient well, located in the southeast corner of the property in order to establish background conditions of the shallow groundwater. Samples GW-2 and GW-3 (duplicate), were collected from PW-5, the pumping recovery well, to assess shallow groundwater contamination. Sample GW-4 was collected from WW-1, the water supply well, to assess the potential for deep groundwater contamination.

Approximately 5 gallons of water were bailed from MW-2 prior to the collection of GW-1. One well volume was calculated as approximately 4 gallons. After one well volume was removed, well purging was continued until three consistent readings of pH, temperature, and conductivity were measured. Volatile organic concentrations measured with a portable photoionization meter during the SSI site visit registered up to 3.9 ppm at the top of the casing (ground level) during the purging of MW-2 prior to the collection of groundwater sample GW-1.[ref. 3] The sample was collected with a bailer which had been decontaminated prior to use. The sample was poured directly from the bailer into the sample bottles. Free-phase hydrocarbons were not observed in MW-2. The purge water was collected in a 5-gallon bucket and left for Wood Protection Company to use as process water.

Well PW-5 runs continuously; therefore, purging was not necessary. GW-2 and GW-3 were collected from the hydrant for PW-5 directly into the sample bottles. WW-1 was pumped about 20 minutes for purging prior to collection of GW-4. Construction details for WW-1 were unavailable, so the well volume could not be calculated. After running the pump for 15 minutes, well purging was continued until three consistent readings of pH, electrical conductivity, and temperature were measured. The samples were collected directly in the appropriate sample bottles. All samples were packed in coolers on ice for next-day delivery to the designated CLP laboratories.

Analytical Results

The analytical results from these samples are summarized in Table 1. Pentachlorophenol was detected in two of the three wells sampled. The

Table 1. Summary of Chemical Constituents Detected in Water Samples
Wood Protection Company, TXD 059345116

Constituent	Station Number GW-1	GW-2	GW-3[1]	GW-4	MCL
CLP sample number	FX347	FX349	FX350	FX351	
Volatile organics (µg/L)					
Xylene	<10	8J	8J	<10	NA
Semivolatile organics (µg/L)					
Pentachlorophenol	72	2,000	1,800	<25	1.0
Di-n-butyl phthalate	2J	<250	<500	<10	NA
Butyl benzyl phthalate	0.5J	<250	<500	<10	NA
Pesticides/PCBs	ND	ND	ND	ND	NA
CLP sample number	MFW347	MFW349	MFW350	MFW351	
Inorganics (µg/L)					
Aluminum	38,800	288	355	<24.7	NA
Arsenic	6.2BN(J)	3.1BN(J)	3.78N(J)	2.2BN(J)	50[2]
Barium	402	223	222	155B	1,000[2]
Beryllium	3.4B	<1.5	<0.30	<0.30	NA
Calcium	78,000	67,200	66,900	42,500	NA
Chromium	37.0	<2.6	<2.6	<2.6	50[2]
Cobalt	17.7B	<3.0	<3.0	<1.3	NA
Iron	29,200	238	246	<53.2	300[3]
Lead	12.9	<2.0	<2.0	<2.0	50[2]
Magnesium	31,500	25,200	25,000	8,690	NA
Manganese	197	46.0	46.0	134	50[3]
Mercury	0.40	0.55	0.20	<0.10	2[2]
Nickel	35.8B	<2.6	4.3B	<2.6	NA
Potassium	7,730	720B	705B	1,430B	NA
Sodium	90,500	120,000	118,000	55,500	NA
Vanadium	54.6	4.2B	5.2B	<2.5	NA
Zinc	70.3	9.9B	7.2B	21.4	5,000[3]

<X = means not detected at a detection limit of X
CLP = contract laboratory program
PCB = polychlorinated biphenyls
ND = non detected for the entire method
MCL = maximum contaminant level
NA = No standard established

1 GW-3 is a field duplicate of GW-2.
2 Texas Department of Health, drinking water standards
3 Texas Department of Health, recommended secondary constituent levels

Organic data qualifiers:
J = Indicates an estimated value as analyte concentration is less than the contract-required quantitation limit (CRQL) but greater than zero.

Inorganic data qualifiers:
B = The reported value is less than contract-required detection limit but greater than or equal to the instrument detection limit (IDL).
N = Spiked sample recovery not within control limits.

Data validation qualifiers:
(J) = The associated value is an estimated quantity.

concentration of pentachlorophenol was 72 μg/L in GW-1, and 2000 μg/L in GW-2. GW-3, a duplicate of GW-2, had a pentachlorophenol concentration of 1,800 μg/L. Xylene was also detected in samples GW-2 and GW-3 at 8 μg/L respectively.

Previous analyses of samples collected from the monitoring wells measured pentachlorophenol concentrations ranging from below detection limit to 15.0 mg/L. These results are discussed in the part 1 report. The EPA has established a maximum concentration level (MCL) for pentachlorophenol at 0.001 mg/L. The concentrations of arsenic, chromium, and copper were measured twice in the monitoring wells. One set of results for MW-3 (January 1988) slightly exceeded the MCL of 0.05 mg/L for arsenic and the MCL of 0.1 mg/L for chromium.(ref. 10) The results for existing analytical groundwater data are presented in Table 2.

During a hydrogeological study conducted by Ott Engineering, Inc. (ref. 5), soil samples were collected from the borings drilled during well construction. The analytical results of these samples are described in detail in the Part 1 report. Total arsenic concentrations ranged from <0.25 to 187 mg/kg; total chromium ranged from 3.0 to 377 mg/kg; total copper ranged from 5.3 to 130 mg/kg; and pentachlorophenol ranged from <0.380 to 460 mg/kg. Other analyses indicated the presence of fluorene, 1-methylnaphthalene, 2-methylnaphthalene, phenanthrene, and benzo(ghi)perylene in concentrations ranging from 3.2 to 23.2 mg/kg.(ref. 5, 11)

There is evidence of a release from this site to the groundwater pathway. Sampling has repeatedly indicated the presence in the groundwater of pentachlorophenol and other constitutents used at the site.

Required Analytical Information (Data Gaps)

Background levels of inorganic constituents in groundwater are unknown.

SURFACE WATER PATHWAY

Sampling Activities

Drainage control for the site consists of roofing over most of the treatment areas to divert rainfall, concrete paving, and sumps which collect surface runoff or product drippage in operation areas. The collected runoff is used as makeup process water. In June 1980, a concrete drip pad was installed to recover all chemical drip from the wood treating process.(ref. 7)

Exposed contaminated soil was not identified during the October 1992 site visit.(ref. 3) Site representatives indicated that runoff from nonoperational areas of the site enters storm sewers and is conveyed to the ditch north of the site or city storm sewers south of the site, as depicted in Figure 2.(ref. 3)

Three sediment samples were collected during the SSI on October 20, 1992, to assess potential releases to the surface water pathway. These samples were considered sediment samples because they were located in an active drainage ditch. The locations of these samples are shown on Figure 2. These samples were collected using a dedicated, stainless steel sampling scoop and a stainless steel mixing bowl. The samples were collected from a depth as close to the surface as possible, yet deep enough to avoid grass and roots.

Table 2
Existing Analytical Data - Groundwater[ref. 9, 27, 28, 20]

Well No.	Sample Collection Date	Contaminant Concentration				Characteristic	
		Pentachlorophenol (mg/L)	Arsenic (mg/L)	Chromium (mg/L)	Copper (mg/L)	pH (s.u.)	Conductivity (µΩ/cm)
MW-1 (88-1)	18 Nov 88	0.056	0.009	0.22	0.34	7.4	900
	6 Jan 89	NS	-	-	-	-	-
	6 Apr 89	<0.025	<0.005	0.017	0.018	7.1	1,000
	9 Oct 89	ND	-	-	-	-	-
	13 Dec 90	<0.030	-	-	-	-	-
	18 Apr 91	<0.010	-	-	-	-	-
MW-2 (89-2)	6 Jan 89	1.17	0.020	0.036	0.024	7.3	980
	6 Apr 89	<0.025	<0.005	0.008	0.013	7.2	980
	9 Oct 89	0.0062	-	-	-	-	-
	13 Dec 90	0.034	-	-	-	-	-
	19 Apr 91	NS	-	-	-	-	-
	4 Dec 91	0.027	-	-	-	-	-
MW-3 (89-3)	6 Jan 89	3.49	0.056	0.11	0.054	7.2	1,100
	6 Apr 89	15.00	0.009	0.006	0.014	7.1	1,100
	9 Oct 89	1.40	-	-	-	-	-
	13 Dec 90	<0.030	-	-	-	-	-
	19 Apr 91	NS	-	-	-	-	-
	4 Dec 91	<0.020	-	-	-	-	-
MW-4 (88-4)	6 Jan 89	0.015	<0.005	0.006	0.025	7.5	920
	5 Apr 89	<0.025	<0.005	0.005	0.010	7.2	920
	9 Oct 89	0.21	-	-	-	-	-
	13 Dec 90	<0.030	-	-	-	-	-
	19 Apr 91	<0.010	-	-	-	-	-
	4 Dec 91	<0.020	-	-	-	-	-

Table 2, continued

Well No.	Sample Collection Date	Contaminant Concentration				Characteristic	
		Pentachlorophenol (mg/L)	Arsenic (mg/L)	Chromium (mg/L)	Copper (mg/L)	pH (s.u.)	Conductivity (µΩ/cm)
PW-5 (PW-1)	6 Jan 89	NS	-	-	-	-	-
	5 Apr 89	NS	-	-	-	-	-
	9 Oct 89	7.40	-	-	-	-	-
	13 Dec 90	10.800	-	-	-	-	-
	18 Apr 91	7.840	-	-	-	-	-
	4 Dec 91	4.400	-	-	-	-	-
WW-1	18 Apr 91	<0.010	-	-	-	-	-

ND - Definition not provided in referenced report(ref. 9)

NS - Definition not provided in referenced report(ref. 9)

Table 3. Summary of Chemical Constituents Detected in Soil Samples
Wood Protection Company, TXD 059345116

Constituents	Station Number							
	SO-1	SO-3	SO-4	SO-5[1]	SO-6	SE-1	SE-2	SE-3[2]
CLP sample number	FX424	FX426	FX427	FX428	FX429	FX430	FX431	FX432
Volatile organic (µg/kg)								
2-Butanone	<2	<3	<10	<10	3J	<13	<13	<13
Toluene	<11	3J(J)	<10	<10	<11	<13	<13	<13
Semivolatile organics (µg/kg)								
bis(2-Ethylhexyl) phthalate	75J	1,500J(J)	220J	330J	<180	<2,100	55J	54J
Di-n-octyl phthalate	66J	<4,800	<340	43J	<380	<2,100	<870	44J
Hexachlorobenzene	<370	370J	<340	<340	<380	<2,100	<870	<430
Pentachlorophenol	<900	17,000(J)	<820	<820	<920	<5,100	<2,100	<1,000
Pyrene	<370	300J	66J	92J	69J	<2,100	820J	<430
Chrysene	<370	290J	88J	100J	120J	<2,100	440J	<430
Benzo(a) pyrene	<370	480J	80J	73J	200J	<2,100	260J	<430
Phenathrene	<370	<4,800	34J	41J	42J	<2,100	<870	<430
Di-n-butyl phthalate	<370	<4,800	160J	110J	28J	<2,100	<870	<430
Fluoranthene	<370	<4,800	70J	95J	130J	<2,100	670J	<430
Benzo(a) anthracene	<370	<4,800	67J	75J	98J	<2,100	380J	<430
Benzo(b) fluoranthene	<370	<4,800	69J	72J	260J	<2,100	210J	<430
Benzo(k) fluoranthene	<370	<4,800	59J	59J	<380	<2,100	240J	<430
Indeno (1,2,3-cd) pyrene	<370	<4,800	91J	120J	210J(J)	<2,100	<870	<430
Benzo(g,h,i) perylene	<370	<4,800	110J	150J	260J	490J	<870	<430
Pesticides/PCBs (µg/kg)								
Heptachlor	2.9	<2.5	2.1	1.8	2.3	4.2	2.2	2.3
Heptachlor epoxide	2.1P	<2.5	<1.7	<1.7	<2.0	4.9P	<2.2	<2.2
4,4'-DDE	4.1P	<4.8	<3.4	<3.4	<3.8	<4.2	<4.3	<4.3
alpha-Chlordane	34P	5.7P	<1.7	<1.7	<2.0	<2.2	<2.2	<2.2
gamma-Chlordane	39	17	1.8P	1.8	3.2P	4.3P	<2.2	<2.2
Aldrin	<1.9	7.7P	<1.7	<1.7	<2.0	<2.2	<2.2	<2.2
Endosulfan I	<1.9	5.0	<1.7	<1.7	<2.0	<2.2	<2.2	<2.2
Dieldrin	<3.7	8.4P	<3.4	<3.4	<3.8	<4.2	<4.3	<4.3
4,4'-DDT	<3.7	42P	<3.4	<3.4	<3.8	<4.2	<4.3	<4.3
delta-BHC	<1.9	<2.5	<1.7	<1.7	<2.0	3.9P	<2.2	<2.2
Endrin	<3.7	<4.8	<3.4	<3.4	<3.8	4.3	<4.3	<4.3

Sample SE-1 was collected on the south side of the drainage ditch outside the northwest corner of the site to evaluate sediment upgradient from the site. Measurements taken during the sampling with a portable photoionization meter registered up to 0.7 ppm organic vapor in air near the exposed soil.[ref. 3] Samples SE-2 and SE-3 (duplicate) were collected on the south side of the drainage ditch outside the northeast corner of the site to evaluate the potential migration of contaminants from the site through the ditch.

Analytical Results

The analytical results for the sediment samples are summarized in Table 3. Low levels of several semivolatile organic compounds were detected in SE-2, but other than the phthalate esters which are common laboratory and sampling contaminants[ref. 12], the presence of these compounds was not confirmed in the duplicate sample, SE-3. These compounds included pyrene (820 μg/kg), chrysene (440 μg/kg), benzo(a)pyrene (260 μg/kg), fluoranthene (670 μg/kg), benzo(a)anthracene (380 μg/kg), benzo(b)fluoranthene (210 μg/kg), and benzo(k)fluoranthene (240 μg/kg). Additionally, benzo(ghi)perylene was detected at 490 μg/kg in SE-1. These compounds are commonly found in petroleum products or creosote. The presence of these constituents in the sediment samples indicates the potential for a release via the surface water pathway.

There were also several pesticides detected in the sediment samples. Heptachlor was present in all three sediment samples, at concentrations ranging from 2.2 to 4.2 μg/kg. Heptachlor epoxide (4.9 μg/kg), gamma-chlordane (4.3 μg/kg), delta-BHC (3.9 μg/kg), and endrin (4.3 μg/kg) were also found in SE-1. There is no evidence that these chemicals were used at the site. Heptachlor, heptachlor epoxide, and gamma-chlordane were also all found in the background soil sample (SO-1), which was collected northeast of the site.

Seven surface water samples were collected during an environmental audit of the site conducted by Ott Engineering in June 1988. The analytical results are discussed in detail the Part 1 of this report. Total arsenic concentrations ranged from 1.3 to 4.2 mg/L, total chromium concentrations ranged from <0.05 to 1.0 mg/L, and total copper concentrations ranged from 0.05 to 1.2 mg/L.[ref. 13]

Required Analytical Information (Data Gaps)

- There are no CLP quality analytical data to indicate an observed release to surface water.
- There is no background data for inorganic constituents in the sediments.

SOIL EXPOSURE PATHWAY

Sampling Activities

Soil sampling was conducted in 1980, 1986, 1987, 1988, and 1989, as described in the Part 1 report. Samples were collected in a number of site locations, both in response to spills and as part of other investigations. The analytical data are discussed in detail in the Part 1 report.

Table 3, continued

Constituents	Station Number							
	SO-1	SO-3	SO-4	SO-5[1]	SO-6	SE-1	SE-2	SE-3[2]
CLP sample number	MFW224	MFW226	MFW227	MFW228	MFW229	MFW230	MFW231	MFW232
Inorganics (µg/kg)								
Aluminum	7,870	12,700	5,720	4,320	6,490	12,600	18,600	19,100
Arsenic	<1.2	2,030	245	229	348	62.4	39.9	77.1
Barium	86.2	207	91.1	80.3	104	122	201	177
Beryllium	0.38B	1.1B	<0.45B	<0.18B	0.74B	0.95B	1.2B	1.3
Calcium	4,650	107,000	187,000	204,000	212,000	69,600	6,190	13,200
Chromium	8.8	2,610	665	630	732	138	28.4	75.4
Cobalt	2.7B	6.2B	3.1B	3.1B	5.7B	5.1B	7.4B	5.5B
Copper	6.2	2,760	207	253	349	105	16.1	42.8
Iron	6,500	24,100	35,300	21,500	15,900	14,800	15,900	17,300
Lead	9.6	131	23.3	24.0	44.6	11.0	16.3	19.1
Magnesium	1,160	6,010	13,200	8,590	23,500	6,930	2,460	3,140
Manganese	76.1*	2,310*	8,220*	4,790*	2,370*	180*	33.1*	322*
Mercury	0.23	0.28	0.05B	0.06B	0.14	0.08B	2.5	0.47
Nickel	5.1B	19.4	16.5	21.0	14.7	12.2	12.1	12.5
Potassium	635B	1,160B	465B	390B	715B	1,330	1,360	1,680
Sodium	<66.8	272B	304B	290B	315B	148B	115B	148B
Vanadium	15.6	70.9	138	73.6	57.1	27.4	41.4	34.4
Zinc	<19.2	898N(J)	67.0N(J)	87.4N(J)	265N(J)	460N(J)	56.6N(J)	248N(J)

<X = means not detected at a detection limit of X
CLP = contract laboratory program
PCB = polychlorinated biphenyls

[1] SO-5 is a field duplicate of SO-4.
[2] SE-3 is a field duplicate of SE-2.

Organic data qualifiers:
- B = The analyte is found in the associated blank as well as the sample.
- J = Indicates an estimated value as analyte concentration is less than the contract-required quantitation limit (CRQL) but greater than zero.
- P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns.

Inorganic data qualifiers:
- * = Duplicate analysis not within control limits.
- B = The reported value is less than contract-required detection limit but greater than or equal to the instrument detection limit (IDL).
- N = Spiked sample recovery not within control limits.

Data validation qualifiers:
- (J) = The associated value is an estimated quantity.

Several surface soil samples were collected for this SSI which can be used to assess the soil exposure pathway. The locations for these samples are shown on Figure 2. Sample SO-1 was collected northeast of the site between the residential area and the railroad tracks to establish background levels. Proposed sample SO-2, planned for the Entex right-of-way, could not be collected because of access restrictions and because owner authorization was not received. Sample SO-3 was collected between the drainage ditch north of the site and the property fence to assess offsite contamination. This sample was not collected near the drip pad as scheduled because the area around the pad is concrete. Samples SO-4 and SO-5 were collected in fill soil near stacks of treated lumber in the east treated wood storage area to assess contamination from treated lumber preservative drippings. Sample SO-6 was collected near stacks of treated lumber in the north treated wood storage area.

Sampling was performed with dedicated stainless steel trowels. The samples were collected from a depth as close to the surface as possible. In most cases, the loose soil-gravel fill material in the top 3 inches was collected. Samples were placed in glass jars as specified by the CLP and sealed with Teflon-lined lids. Organic samples were placed in one 8-ounce widemouth glass jar and two 4-ounce widemouth glass jars. Inorganic soil samples were placed in one 8-ounce widemouth glass jar. No headspace was left in the volatile organics sample jars. Sample jars were marked for identification and placed on ice for preservation. Identification markings included site location, sample number, date and time of collection, and names of samplers.

Analytical Results

The analytical results for the SSI soil samples are summarized in Table 3. A number of organic compounds were detected in the samples. Semivolatile compounds were detected at the highest concentrations. Pentachlorophenol was present in SO-3 at 17,000 μg/kg, but was not detected in any of the other soil samples. SO-3 was collected outside the fenced operations area between the site and the drainage ditch. Low levels of a number of semivolatile compounds which are common fuel or creosote constituents were present in samples SO-4, SO-5, and SO-6. Two phthalate esters, 2-butanone, and xylene were found in most of the samples, including the background sample, SO-1. These compounds are common sampling and laboratory contaminants.[ref. 12]

There were also a number of pesticides detected in the soil samples. Several of these were also present in the background sample, and may indicate chemical application in the area of the site, rather than site activities. Sample SO-3 contained several pesticides which were not present in the background sample.

There were also a number of metals detected in the soil samples. Arsenic was present in all the soil samples at levels well above background. The highest arsenic concentrations were found in sample SO-3 (2,030 μg/kg). Chromium and copper were also present in all the soil samples at levels well in excess of the background concentration. The data for the common soil components such as calcium and magnesium also showed concentrations in the samples well in excess of those in the

background sample. Therefore, it is possible that the background sample is not representative of the soils from which the soil samples were collected. Any comparison of the metals data between the soil samples and the background sample should consider this possibility.

The presence of these constituents indicates a potential for release via the soil exposure pathway. Site access is restricted, which minimizes the potential exposure to the general public; however, employees of Wood Protection are still at risk for exposure. In addition, one soil sample, SO-3, which was collected outside the fenced facility, indicated the presence of contamination.

Required Analytical Information (Data Gaps)

The background sample for the soil exposure pathway may not represent the actual background conditions of the soils at the site.

AIR PATHWAY

Sampling Activities

No releases to the atmosphere of hazardous substances have been documented at the site. The tanks and treatment systems containing hazardous substances are enclosed and are installed on concrete. Measurements taken during the SSI site visit with a portable photoionization meter registered up to 0.7 ppm organic vapor in air near exposed soil during collection of sediment sample SE-1 and up to 3.9 ppm at the top of the casing (ground level) during the purging of MW-2 prior to collection of the groundwater sample GW-1.[ref. 3]

The Texas Air Control Board Austin and Houston (regional) offices and the City of Houston Bureau of Air Quality Control do not have reports of observed releases from the site, reports of adverse health effects, or other records on file for the site.

Several surface soil and sediment samples were collected which can be used to assess potential sources of air emissions. These samples are discussed above in the soil exposure and surface water pathway sections.

Analytical Results

The analytical results for the soil and sediment samples collected during the SSI are discussed above. There were a number of constituents present in the surface soils, which may become airborne via either volatilization or particulates. Additionally, measurements taken with a photoionization meter during the SSI site visit indicated that there is a potential for volatile organics to leave via the air pathway.

On March 20 and 21, 1986, three personal air monitoring samples were collected for three Wood Protection Company personnel (two fork lift operators and one treating operator) and analyzed by Osmose Research Division for arsenic. The results were as follows:

Sample Number	Time-weighted Average (8 hours) (μg As/m^3 air)
AS 8017	1.91
AS 8018	0.65
AS 8022	0.84

The analytical report concluded that the samples were below the OSHA workplace exposure limit of 10 μg As/m^3 on an 8-hour, time-weighted average.[ref. 14]

Required Analytical Information (Data Gaps)

No analytical data for the air pathway exists, other than those reported from March 1986, because the collection of air samples was beyond the scope of this investigation.

QA/QC EVALUATION

Six soil samples, two soil duplicates, three groundwater samples, one groundwater duplicate, and two trip blanks collected from the Wood Protection Company, Houston, Texas, on October 19, 20, and 21, 1992, were analyzed by Southwest Laboratories of Oklahoma, in Broken Arrow, Oklahoma, for complete routine analytical service (RAS) organic analysis: CLP volatiles, CLP semivolatiles, and CLP pesticides. The trip blanks were analyzed for CLP-volatiles only. Six soil samples, two soil duplicates, three groundwater samples and one groundwater duplicate collected from the same location, on the same date, were analyzed by Skinner and Sherman, in Waltham, Massachusetts, for total CLP metals* and cyanide. In addition, an equipment rinsate associated with soil and groundwater samples was collected on October 6, 1992, and was analyzed by Compuchem Laboratories, in Research Triangle Park, North Carolina, for compute RAS organic analysis. A similar equipment rinsate collected on October 9, 1992, was analyzed by Silver Valley Laboratories in Kellog, Idaho, for total CLP metals and cyanide. EPA level V was the required analytical level.

The data packages from Southwest Laboratories and Skinner and Sherman were reviewed and validated by EPA Region 6 according to the EPA CLP National Functional Guidelines for Organic Data Review (1991),[ref. 12] for Pesticide/Aroclor Data Review (1991),[ref. 15] and for Inorganic Data Review (1988).[ref. 16] The form I results are included in appendix A.

According to the EPA Region 6 data reports received, the volatile, semivolatile, pesticide, metal, and cyanide data met contract requirements with some exceptions resulting in qualification of some of the data. Data were found to be either provisional or acceptable by Region 6 data reviewers. A detailed discussion can be found in the data reviewers comments included in appendix B.

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* Total CLP metals = aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc.

Field quality control checks for the project included two trip blanks, an equipment rinsate applying to soil and water samples, two soil field duplicates, and one water field duplicate as recommended in the quality assurance project plan (QAPP).

The trip blanks were analyzed for CLP volatiles and were reported to contain chloroform at 21 μg/L and 22 μg/L and acetone below the contract required quantitation limit (CRQL) at 6 μg/L. All sample results were below 110 μg/L, five times (5x) the amount of chloroform in the trip blank and 60 μg/L, ten times (10x) the amount acetone of in the trip blank and therefore were considered nondetected.

The equipment rinsate was analyzed for complete RAS organic analysis, total CLP metals, and cyanide. Methylene chloride (49 μg/L), endrin aldehyde, bis(2-ethylhexyl) phthalate (2 μg/L), acetone, chloroform, and bromodichloromethane were found in the equipment rinsate. All sample results for methylene chloride, a common laboratory contaminant, were below 10x the concentration found in the rinsate and, therefore were considered nondetected. Inorganic results did not indicate a problem with the decontamination process. Therefore, the data were unaffected by the soil and water sampling equipment.

Relative percent differences (RPD) were calculated for all analytes detected above the CRQL or contract required detection limit (CRDL) in sample GW-2 and the field duplicate GW-3, in sample SO-4 and field duplicate SO-5, and in SE-2 and field duplicate SE-3. The precision objective for field duplicates established in the quality assurance project plan (QAPP) was an RPD of 50 percent or less. Arsenic with an RPD of 64 percent, calcium with an RPD of 72 percent, copper with an RPD of 91 percent, and mercury with an RPD of 136 percent failed to meet the criterion in sediment samples SE-2 and SE-3. Vanadium, with an RPD of 61 percent in soil samples SO-4 and SO-5 also did not meet the established criterion. All other analytes not flagged as estimated met the precision objective.

Completeness was calculated by comparing the number of tests requested with the number of tests completed by the testing laboratories and validated by EPA Region 6. All data were reported as useable (acceptable or provisional) by Region 6. The completeness value was calculated as follows:

Analyses from Southwest Labs = 14 samples X 3 analyses =	42
Analyses from Skinner and Sherman = 12 samples X 24 analyses =	288
Total analyses	330
Total analyses rejected	0

$$\frac{330}{330} \text{ X } 100 = 100\%$$

The completeness of 100 percent exceeded the completeness objective of 90 percent established in the QAPP.

CONCLUSIONS

The groundwater, surface water, soil exposure, and air pathways of contaminant migration were evaluated in this report.

The primary targets of concern are the workers at the site, the employees of adjacent businesses, the occupants of fifteen residences within 200 feet of the site, and two day care centers located approximately 1,000 and 2,000 feet from the site. Since the site is located in an urban residential area, the number of potential targets within ½ mile of the site for soil exposure and air pathways is high; however, soil exposure potential is minimized by the site fences and access controls. The sediment samples and soil sample SO-3, which indicated contamination, were collected outside the fenced operations area. The tanks are covered and enclosed by retaining walls; however, the treating cylinders and work tanks are opened for removing treated wood.

There are few potential targets for the surface water and groundwater pathway. The surface water relies on 1 mile of overland flow through an urban area to reach Kuhlman Gully. Kuhlman Gully feeds the Houston Ship Channel, an industrial shipping route. The nearest private wells are located about 0.8 mile from the site and are used as industrial supply wells.

Analytical data from samples collected as part of this SSI indicate a release from this site via the groundwater pathway, since chemical constituents used at the site have been found in the groundwater below the site. The presence of contamination in the surface soils and sediment indicate a potential for release via the surface water, and air pathways.

REFERENCES

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8. Osmose Wood Preserving, Inc., Griffin, Georgia, material safety data sheet for CCA Type C; chromated copper arsenated, transmitted by fax June 26, 1992.
9. Jim Moncrief, production supervisor, Wood Protection Company, correspondence with Gus Staats, Osmose Wood Preserving, July 20, 1990.
10. Analytical report, Thornton Laboratories, Inc., for groundwater samples collected January 6, 1989.
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12. U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, draft revision, June 1991.
13. Ott Engineering, Inc., Environmental Audit for Wood Protection Company, August 1988.

14. Thomas A. Marr, P.E., manager, Environmental Engineering, Osmose Research Division, transmittal letter and analytical report to Marc Hoover, Wood Preserving Company, July 1, 1986.

15. U.S. EPA Laboratory Data Validation Functional Guidelines for Evaluating Pesticide and Aroclor Data, draft, 1991.

16. U.S. EPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, draft, July 1, 1988.

Appendix A

Analytical Data Reporting Sheets

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX424

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144301

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB302

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 10 Date Analyzed: 10/22/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	9	J
67-64-1	Acetone	11	BJ
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	1	J
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	2	BJ
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	Trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX424

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144301

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB302

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 10 Date Analyzed: 10/22/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX426

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144302

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB366

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 31 Date Analyzed: 10/25/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	45	
67-64-1	Acetone	14	U
75-15-0	Carbon Disulfide	14	U
75-35-4	1,1-Dichloroethene	14	U
75-34-3	1,1-Dichloroethane	14	U
540-59-0	1,2-Dichloroethene (total)	14	U
67-66-3	Chloroform	14	U
107-06-2	1,2-Dichloroethane	14	U
78-93-3	2-Butanone	2	BJ
71-55-6	1,1,1-Trichloroethane	14	U
56-23-5	Carbon Tetrachloride	14	U
75-27-4	Bromodichloromethane	14	U
78-87-5	1,2-Dichloropropane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
79-01-6	Trichloroethene	14	U
124-48-1	Dibromochloromethane	14	U
79-00-5	1,1,2-Trichloroethane	14	U
71-43-2	Benzene	2	J
10061-02-6	Trans-1,3-Dichloropropene	14	U
75-25-2	Bromoform	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	14	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	5	J
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	14	U
100-42-5	Styrene	14	U
1330-20-7	Xylene (total)	14	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX426

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144302

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB366

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 31 Date Analyzed: 10/25/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX426RE

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144302

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB368

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 31 Date Analyzed: 10/25/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	27	
67-64-1	Acetone	14	U
75-15-0	Carbon Disulfide	14	U
75-35-4	1,1-Dichloroethene	14	U
75-34-3	1,1-Dichloroethane	14	U
540-59-0	1,2-Dichloroethene (total)	14	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	14	U
78-93-3	2-Butanone	3	BJ
71-55-6	1,1,1-Trichloroethane	14	U
56-23-5	Carbon Tetrachloride	14	U
75-27-4	Bromodichloromethane	14	U
78-87-5	1,2-Dichloropropane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
79-01-6	Trichloroethene	14	U
124-48-1	Dibromochloromethane	14	U
79-00-5	1,1,2-Trichloroethane	14	U
71-43-2	Benzene	14	U
10061-02-6	Trans-1,3-Dichloropropene	14	U
75-25-2	Bromoform	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	14	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	14	U
100-42-5	Styrene	14	U
1330-20-7	Xylene (total)	14	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX426RE

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144302

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB368

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 31 Date Analyzed: 10/25/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX427

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144303

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB342

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 2 Date Analyzed: 10/24/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX427

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144303

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB342

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 2 Date Analyzed: 10/24/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX428

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144304

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB343

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 2 Date Analyzed: 10/24/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	3	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX428

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144304

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB343

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 2 Date Analyzed: 10/24/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX429

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144305

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB344

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 13 Date Analyzed: 10/24/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	2	BJ
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	3	J
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	Trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX429

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144305

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB344

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 13 Date Analyzed: 10/24/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX430

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144306

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB367

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 21 Date Analyzed: 10/25/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	15	
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	13	U
75-35-4	1,1-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
540-59-0	1,2-Dichloroethene (total)	13	U
67-66-3	Chloroform	1	BJ
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	13	U
56-23-5	Carbon Tetrachloride	13	U
75-27-4	Bromodichloromethane	13	U
78-87-5	1,2-Dichloropropane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	Trichloroethene	13	U
124-48-1	Dibromochloromethane	13	U
79-00-5	1,1,2-Trichloroethane	13	U
71-43-2	Benzene	13	U
10061-02-6	Trans-1,3-Dichloropropene	13	U
75-25-2	Bromoform	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
100-42-5	Styrene	13	U
1330-20-7	Xylene (total)	13	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX430

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144306

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB367

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 21 Date Analyzed: 10/25/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX430RE

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144306

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB369

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 21 Date Analyzed: 10/25/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	11	J
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	13	U
75-35-4	1,1-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
540-59-0	1,2-Dichloroethene (total)	13	U
67-66-3	Chloroform	1	BJ
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	13	U
56-23-5	Carbon Tetrachloride	13	U
75-27-4	Bromodichloromethane	13	U
78-87-5	1,2-Dichloropropane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	Trichloroethene	13	U
124-48-1	Dibromochloromethane	13	U
79-00-5	1,1,2-Trichloroethane	13	U
71-43-2	Benzene	13	U
10061-02-6	Trans-1,3-Dichloropropene	13	U
75-25-2	Bromoform	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
100-42-5	Styrene	13	U
1330-20-7	Xylene (total)	13	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX430RE

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144306

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB369

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 21 Date Analyzed: 10/25/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX431

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144307

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB306

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 24 Date Analyzed: 10/22/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	13	J
67-64-1	Acetone	4	BJ
75-15-0	Carbon Disulfide	13	U
75-35-4	1,1-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
540-59-0	1,2-Dichloroethene (total)	13	U
67-66-3	Chloroform	1	J
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	13	U
56-23-5	Carbon Tetrachloride	13	U
75-27-4	Bromodichloromethane	13	U
78-87-5	1,2-Dichloropropane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	Trichloroethene	13	U
124-48-1	Dibromochloromethane	13	U
79-00-5	1,1,2-Trichloroethane	13	U
71-43-2	Benzene	13	U
10061-02-6	Trans-1,3-Dichloropropene	13	U
75-25-2	Bromoform	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
100-42-5	Styrene	13	U
1330-20-7	Xylene (total)	13	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX431

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144307

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB306

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 24 Date Analyzed: 10/22/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX432

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144308

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB307

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 23 Date Analyzed: 10/22/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	12	J
67-64-1	Acetone	16	B
75-15-0	Carbon Disulfide	13	U
75-35-4	1,1-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
540-59-0	1,2-Dichloroethene (total)	13	U
67-66-3	Chloroform	13	U
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	13	U
56-23-5	Carbon Tetrachloride	13	U
75-27-4	Bromodichloromethane	13	U
78-87-5	1,2-Dichloropropane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	Trichloroethene	13	U
124-48-1	Dibromochloromethane	13	U
79-00-5	1,1,2-Trichloroethane	13	U
71-43-2	Benzene	13	U
10061-02-6	Trans-1,3-Dichloropropene	13	U
75-25-2	Bromoform	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
100-42-5	Styrene	13	U
1330-20-7	Xylene (total)	13	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX432

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144308

Sample wt/vol: 5.0 (g/mL) G Lab File ID: KB307

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. 23 Date Analyzed: 10/22/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	12.68	21	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX347

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145101

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND794

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX347

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145101

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND794

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX349

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145103

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND799

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	8	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX349

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145103

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND799

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKYLBENZENE	18.23	9	J
2.	UNKNOWN ALKYLBENZENE	18.60	11	J
3.	UNKNOWN	18.88	9	J
4.	UNKNOWN ALKYLBENZENE	19.41	13	J
5.	UNKNOWN ALKYLBENZENE	19.74	7	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX350

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER / Lab Sample ID: 1145104

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND803

Level: (low/med) LOW ✓ Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L /

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U ✓
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	8	J

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX350

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145104

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND803

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 5

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKYLBENZENE	18.22	9	J
2.	UNKNOWN ALKYLBENZENE	18.59	11	J
3.	UNKNOWN	18.89	8	J
4.	UNKNOWN ALKYLBENZENE	19.41	19	J
5.	UNKNOWN ALKYLBENZENE	19.74	6	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX351

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145105

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND801

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX351

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145105

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND801

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX433

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1144309

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND756

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. _____ Date Analyzed: 10/22/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	21	
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX433

ab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1144309

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND756

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec. _____ Date Analyzed: 10/22/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX348

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145102

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND802

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	22	
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX348

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145102

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ND802

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: not dec. _____ Date Analyzed: 10/26/92

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX424

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144301

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3738

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 11 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0 (uL) Dilution Factor: 1 ~~0.5~~ 2

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	900	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethyl Phthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	370	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX424

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144301

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3738

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 11 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: / ~~0.5~~ 1

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	900	U
100-02-7	4-Nitrophenol	900	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-Methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	bis(2-Ethylhexyl)Phthalate	75	J
117-84-0	Di-n-Octyl Phthalate	66	J
205-99-2	Benzo(b)Fluoranthene	370	U
207-08-9	Benzo(k)Fluoranthene	370	U
50-32-8	Benzo(a)Pyrene	370	U
193-39-5	Indeno(1,2,3-cd)Pyrene	370	U
53-70-3	Dibenz(a,h)Anthracene	370	U
191-24-2	Benzo(g,h,i)Perylene	370	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX424

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144301

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3738

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 11 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~ pt

GPC Cleanup: (Y/N) Y pH: 7.6

Number TICs found: 7

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	19.58	75	J B
2.	UNKNOWN	19.72	150	J B
3.	UNKNOWN	21.10	2300	J B
4.	UNKNOWN	23.84	770	J B
5.	UNKNOWN	26.94	2300	J
6.	UNKNOWN	28.49	640	J
7.	UNKNOWN	28.63	94	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX426

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144302

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3756

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 31 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 10 ~~5.0~~ pt

GPC Cleanup: (Y/N) Y pH: 7.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	4800	U
111-44-4	bis(2-Chloroethyl)Ether	4800	U
95-57-8	2-Chlorophenol	4800	U
541-73-1	1,3-Dichlorobenzene	4800	U
106-46-7	1,4-Dichlorobenzene	4800	U
95-50-1	1,2-Dichlorobenzene	4800	U
95-48-7	2-Methylphenol	4800	U
108-60-1	2,2'-oxybis(1-Chloropropane)	4800	U
106-44-5	4-Methylphenol	4800	U
621-64-7	N-Nitroso-Di-n-Propylamine	4800	U
67-72-1	Hexachloroethane	4800	U
98-95-3	Nitrobenzene	4800	U
78-59-1	Isophorone	4800	U
88-75-5	2-Nitrophenol	4800	U
105-67-9	2,4-Dimethylphenol	4800	U
111-91-1	bis(2-Chloroethoxy)Methane	4800	U
120-83-2	2,4-Dichlorophenol	4800	U
120-82-1	1,2,4-Trichlorobenzene	4800	U
91-20-3	Naphthalene	4800	U
106-47-8	4-Chloroaniline	4800	U
87-68-3	Hexachlorobutadiene	4800	U
59-50-7	4-Chloro-3-Methylphenol	4800	U
91-57-6	2-Methylnaphthalene	4800	U
77-47-4	Hexachlorocyclopentadiene	4800	U
88-06-2	2,4,6-Trichlorophenol	4800	U
95-95-4	2,4,5-Trichlorophenol	12000	U
91-58-7	2-Chloronaphthalene	4800	U
88-74-4	2-Nitroaniline	12000	U
131-11-3	Dimethyl Phthalate	4800	U
208-96-8	Acenaphthylene	4800	U
606-20-2	2,6-Dinitrotoluene	4800	U
99-09-2	3-Nitroaniline	12000	U
83-32-9	Acenaphthene	4800	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX426

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144302

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3756

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 31 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: ~~5.0~~ 10

GPC Cleanup: (Y/N) Y pH: 7.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	12000	U
100-02-7	4-Nitrophenol	12000	U
132-64-9	Dibenzofuran	4800	U
121-14-2	2,4-Dinitrotoluene	4800	U
84-66-2	Diethylphthalate	4800	U
7005-72-3	4-Chlorophenyl-phenylether	4800	U
86-73-7	Fluorene	4800	U
100-01-6	4-Nitroaniline	12000	U
534-52-1	4,6-Dinitro-2-Methylphenol	12000	U
86-30-6	N-Nitrosodiphenylamine (1)	4800	U
101-55-3	4-Bromophenyl-phenylether	4800	U
118-74-1	Hexachlorobenzene	370	J
87-86-5	Pentachlorophenol	17000	
85-01-8	Phenanthrene	4800	U
120-12-7	Anthracene	4800	U
86-74-8	Carbazole	4800	U
84-74-2	Di-n-Butylphthalate	4800	U
206-44-0	Fluoranthene	4800	U
129-00-0	Pyrene	300	J
85-68-7	Butylbenzylphthalate	4800	U
91-94-1	3,3'-Dichlorobenzidine	4800	U
56-55-3	Benzo(a)Anthracene	4800	U
218-01-9	Chrysene	290	J
117-81-7	bis(2-Ethylhexyl)Phthalate	1500	J
117-84-0	Di-n-Octyl Phthalate	4800	U
205-99-2	Benzo(b)Fluoranthene	4800	U
207-08-9	Benzo(k)Fluoranthene	4800	U
50-32-8	Benzo(a)Pyrene	480	J
193-39-5	Indeno(1,2,3-cd)Pyrene	4800	U
53-70-3	Dibenz(a,h)Anthracene	4800	U
191-24-2	Benzo(g,h,i)Perylene	4800	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX426

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144302

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3756

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 31 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 10 ~~5.0~~

GPC Cleanup: (Y/N) Y pH: 7.2

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.96	1700	J
2.	UNKNOWN ALKANE	15.57	1200	J
3.	UNKNOWN ALKANE	15.62	1400	J
4.	UNKNOWN ALKANE	17.40	1700	J
5.	UNKNOWN ALKANE	18.25	1900	J
6.	UNKNOWN ALKANE	19.06	1200	J
7.	UNKNOWN	24.23	6000	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX427

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144303

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3740

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0 (uL) Dilution Factor: 1.0 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 8.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethyl Phthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	340	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX427

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144303

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3740

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 8.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	820	U
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-Methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	34	J
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	160	J
206-44-0	Fluoranthene	70	J
129-00-0	Pyrene	66	J
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	67	J
218-01-9	Chrysene	88	J
117-81-7	bis(2-Ethylhexyl)Phthalate	220	J
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	69	J
207-08-9	Benzo(k)Fluoranthene	59	J
50-32-8	Benzo(a)Pyrene	80	J
193-39-5	Indeno(1,2,3-cd)Pyrene	91	J
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	110	J

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX427

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144303

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3740

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 3 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 8.1

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.17	690	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX428

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144304

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3741

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 8.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethyl Phthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	340	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX428

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144304

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3741

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 8.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	820	U
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-Methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	41	J
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	110	J
206-44-0	Fluoranthene	95	J
129-00-0	Pyrene	92	J
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	75	J
218-01-9	Chrysene	100	J
117-81-7	bis(2-Ethylhexyl)Phthalate	330	J
117-84-0	Di-n-Octyl Phthalate	43	J
205-99-2	Benzo(b)Fluoranthene	72	J
207-08-9	Benzo(k)Fluoranthene	59	J
50-32-8	Benzo(a)Pyrene	73	J
193-39-5	Indeno(1,2,3-cd)Pyrene	120	J
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	150	J

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX428

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144304

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3741

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 2 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 8.2

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 541026	Cyclopentasiloxane, decameth	9.31	68	JN
2.	UNKNOWN	21.17	680	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX429

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144305

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3788

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 10/28/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~ 2

GPC Cleanup: (Y/N) Y pH: 7.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)Ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2'-oxybis(1-Chloropropane)	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-Di-n-Propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
111-91-1	bis(2-Chloroethoxy)Methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-Methylphenol	150	BJ
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	920	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	920	U
131-11-3	Dimethyl Phthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U
99-09-2	3-Nitroaniline	920	U
83-32-9	Acenaphthene	380	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX429

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144305

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3788

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 10/28/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 7.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	920	U
100-02-7	4-Nitrophenol	920	U
132-64-9	Dibenzofuran	380	U
121-14-2	2,4-Dinitrotoluene	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	920	U
534-52-1	4,6-Dinitro-2-Methylphenol	920	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenyl-phenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	920	U
85-01-8	Phenanthrene	42	J
120-12-7	Anthracene	380	U
86-74-8	Carbazole	380	U
84-74-2	Di-n-Butylphthalate	28	J
206-44-0	Fluoranthene	130	J
129-00-0	Pyrene	69	J
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)Anthracene	98	J
218-01-9	Chrysene	120	J
117-81-7	bis(2-Ethylhexyl)Phthalate	180	BJ
117-84-0	Di-n-Octyl Phthalate	380	U
205-99-2	Benzo(b)Fluoranthene	260	J
207-08-9	Benzo(k)Fluoranthene	380	U
50-32-8	Benzo(a)Pyrene	200	J
193-39-5	Indeno(1,2,3-cd)Pyrene	210	J
53-70-3	Dibenz(a,h)Anthracene	380	U
191-24-2	Benzo(g,h,i)Perylene	260	J

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX429

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144305

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3788

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 13 decanted: (Y/N) N Date Extracted: 10/28/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/29/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 7.8

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKANE	15.46	96	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX430

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144306

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3743

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 21 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: ~~5~~ ~~2.5~~ pt

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	2100	U
111-44-4	bis(2-Chloroethyl)Ether	2100	U
95-57-8	2-Chlorophenol	2100	U
541-73-1	1,3-Dichlorobenzene	2100	U
106-46-7	1,4-Dichlorobenzene	2100	U
95-50-1	1,2-Dichlorobenzene	2100	U
95-48-7	2-Methylphenol	2100	U
108-60-1	2,2'-oxybis(1-Chloropropane)	2100	U
106-44-5	4-Methylphenol	2100	U
621-64-7	N-Nitroso-Di-n-Propylamine	2100	U
67-72-1	Hexachloroethane	2100	U
98-95-3	Nitrobenzene	2100	U
78-59-1	Isophorone	2100	U
88-75-5	2-Nitrophenol	2100	U
105-67-9	2,4-Dimethylphenol	2100	U
111-91-1	bis(2-Chloroethoxy)Methane	2100	U
120-83-2	2,4-Dichlorophenol	2100	U
120-82-1	1,2,4-Trichlorobenzene	2100	U
91-20-3	Naphthalene	2100	U
106-47-8	4-Chloroaniline	2100	U
87-68-3	Hexachlorobutadiene	2100	U
59-50-7	4-Chloro-3-Methylphenol	2100	U
91-57-6	2-Methylnaphthalene	2100	U
77-47-4	Hexachlorocyclopentadiene	2100	U
88-06-2	2,4,6-Trichlorophenol	2100	U
95-95-4	2,4,5-Trichlorophenol	5100	U
91-58-7	2-Chloronaphthalene	2100	U
88-74-4	2-Nitroaniline	5100	U
131-11-3	Dimethyl Phthalate	2100	U
208-96-8	Acenaphthylene	2100	U
606-20-2	2,6-Dinitrotoluene	2100	U
99-09-2	3-Nitroaniline	5100	U
83-32-9	Acenaphthene	2100	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX430

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144306

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3743

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 21 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 5 ~~2.5~~ pt

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	5100	U
100-02-7	4-Nitrophenol	5100	U
132-64-9	Dibenzofuran	2100	U
121-14-2	2,4-Dinitrotoluene	2100	U
84-66-2	Diethylphthalate	2100	U
7005-72-3	4-Chlorophenyl-phenylether	2100	U
86-73-7	Fluorene	2100	U
100-01-6	4-Nitroaniline	5100	U
534-52-1	4,6-Dinitro-2-Methylphenol	5100	U
86-30-6	N-Nitrosodiphenylamine (1)	2100	U
101-55-3	4-Bromophenyl-phenylether	2100	U
118-74-1	Hexachlorobenzene	2100	U
87-86-5	Pentachlorophenol	5100	U
85-01-8	Phenanthrene	2100	U
120-12-7	Anthracene	2100	U
86-74-8	Carbazole	2100	U
84-74-2	Di-n-Butylphthalate	2100	U
206-44-0	Fluoranthene	2100	U
129-00-0	Pyrene	2100	U
85-68-7	Butylbenzylphthalate	2100	U
91-94-1	3,3'-Dichlorobenzidine	2100	U
56-55-3	Benzo(a)Anthracene	2100	U
218-01-9	Chrysene	2100	U
117-81-7	bis(2-Ethylhexyl)Phthalate	2100	U
117-84-0	Di-n-Octyl Phthalate	2100	U
205-99-2	Benzo(b)Fluoranthene	2100	U
207-08-9	Benzo(k)Fluoranthene	2100	U
50-32-8	Benzo(a)Pyrene	2100	U
193-39-5	Indeno(1,2,3-cd)Pyrene	2100	U
53-70-3	Dibenz(a,h)Anthracene	2100	U
191-24-2	Benzo(g,h,i)Perylene	490	J

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX430

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144306

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3743

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 21 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 5 ~~2.5~~ jt

GPC Cleanup: (Y/N) Y pH: 7.7

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX431

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144307

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3744

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 24 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0 (uL) Dilution Factor: 2 ~~1.0~~ pat

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	870	U
111-44-4	bis(2-Chloroethyl)Ether	870	U
95-57-8	2-Chlorophenol	870	U
541-73-1	1,3-Dichlorobenzene	870	U
106-46-7	1,4-Dichlorobenzene	870	U
95-50-1	1,2-Dichlorobenzene	870	U
95-48-7	2-Methylphenol	870	U
108-60-1	2,2'-oxybis(1-Chloropropane)	870	U
106-44-5	4-Methylphenol	870	U
621-64-7	N-Nitroso-Di-n-Propylamine	870	U
67-72-1	Hexachloroethane	870	U
98-95-3	Nitrobenzene	870	U
78-59-1	Isophorone	870	U
88-75-5	2-Nitrophenol	870	U
105-67-9	2,4-Dimethylphenol	870	U
111-91-1	bis(2-Chloroethoxy)Methane	870	U
120-83-2	2,4-Dichlorophenol	870	U
120-82-1	1,2,4-Trichlorobenzene	870	U
91-20-3	Naphthalene	870	U
106-47-8	4-Chloroaniline	870	U
87-68-3	Hexachlorobutadiene	870	U
59-50-7	4-Chloro-3-Methylphenol	870	U
91-57-6	2-Methylnaphthalene	870	U
77-47-4	Hexachlorocyclopentadiene	870	U
88-06-2	2,4,6-Trichlorophenol	870	U
95-95-4	2,4,5-Trichlorophenol	2100	U
91-58-7	2-Chloronaphthalene	870	U
88-74-4	2-Nitroaniline	2100	U
131-11-3	Dimethyl Phthalate	870	U
208-96-8	Acenaphthylene	870	U
606-20-2	2,6-Dinitrotoluene	870	U
99-09-2	3-Nitroaniline	2100	U
83-32-9	Acenaphthene	870	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX431

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144307

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3744

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 24 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 2 ~~1.0~~ pt

GPC Cleanup: (Y/N) Y pH: 7.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	2100	U
132-64-9	Dibenzofuran	870	U
121-14-2	2,4-Dinitrotoluene	870	U
84-66-2	Diethylphthalate	870	U
7005-72-3	4-Chlorophenyl-phenylether	870	U
86-73-7	Fluorene	870	U
100-01-6	4-Nitroaniline	2100	U
534-52-1	4,6-Dinitro-2-Methylphenol	2100	U
86-30-6	N-Nitrosodiphenylamine (1)	870	U
101-55-3	4-Bromophenyl-phenylether	870	U
118-74-1	Hexachlorobenzene	870	U
87-86-5	Pentachlorophenol	2100	U
85-01-8	Phenanthrene	870	U
120-12-7	Anthracene	870	U
86-74-8	Carbazole	870	U
84-74-2	Di-n-Butylphthalate	870	U
206-44-0	Fluoranthene	670	J
129-00-0	Pyrene	820	J
85-68-7	Butylbenzylphthalate	870	U
91-94-1	3,3'-Dichlorobenzidine	870	U
56-55-3	Benzo(a)Anthracene	380	J
218-01-9	Chrysene	440	J
117-81-7	bis(2-Ethylhexyl)Phthalate	55	J
117-84-0	Di-n-Octyl Phthalate	870	U
205-99-2	Benzo(b)Fluoranthene	210	J
207-08-9	Benzo(k)Fluoranthene	240	J
50-32-8	Benzo(a)Pyrene	260	J
193-39-5	Indeno(1,2,3-cd)Pyrene	870	U
53-70-3	Dibenz(a,h)Anthracene	870	U
191-24-2	Benzo(g,h,i)Perylene	870	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX431

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144307

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3744

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 24 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 2 ~~1.0~~ pt

GPC Cleanup: (Y/N) Y pH: 7.6

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	9.88	180	J
2.	UNKNOWN	12.17	440	J
3.	UNKNOWN	14.98	310	J
4.	UNKNOWN	21.13	1200	J
5.	UNKNOWN	23.88	1100	J
6.	UNKNOWN	26.99	2100	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX432

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144308

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3745

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 23 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~ pt

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	430	U
111-44-4	bis(2-Chloroethyl)Ether	430	U
95-57-8	2-Chlorophenol	430	U
541-73-1	1,3-Dichlorobenzene	430	U
106-46-7	1,4-Dichlorobenzene	430	U
95-50-1	1,2-Dichlorobenzene	430	U
95-48-7	2-Methylphenol	430	U
108-60-1	2,2'-oxybis(1-Chloropropane)	430	U
106-44-5	4-Methylphenol	430	U
621-64-7	N-Nitroso-Di-n-Propylamine	430	U
67-72-1	Hexachloroethane	430	U
98-95-3	Nitrobenzene	430	U
78-59-1	Isophorone	430	U
88-75-5	2-Nitrophenol	430	U
105-67-9	2,4-Dimethylphenol	430	U
111-91-1	bis(2-Chloroethoxy)Methane	430	U
120-83-2	2,4-Dichlorophenol	430	U
120-82-1	1,2,4-Trichlorobenzene	430	U
91-20-3	Naphthalene	430	U
106-47-8	4-Chloroaniline	430	U
87-68-3	Hexachlorobutadiene	430	U
59-50-7	4-Chloro-3-Methylphenol	430	U
91-57-6	2-Methylnaphthalene	430	U
77-47-4	Hexachlorocyclopentadiene	430	U
88-06-2	2,4,6-Trichlorophenol	430	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	430	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethyl Phthalate	430	U
208-96-8	Acenaphthylene	430	U
606-20-2	2,6-Dinitrotoluene	430	U
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	430	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX432

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144308

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3745

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 23 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1000	U
100-02-7	4-Nitrophenol	1000	U
132-64-9	Dibenzofuran	430	U
121-14-2	2,4-Dinitrotoluene	430	U
84-66-2	Diethylphthalate	430	U
7005-72-3	4-Chlorophenyl-phenylether	430	U
86-73-7	Fluorene	430	U
100-01-6	4-Nitroaniline	1000	U
534-52-1	4,6-Dinitro-2-Methylphenol	1000	U
86-30-6	N-Nitrosodiphenylamine (1)	430	U
101-55-3	4-Bromophenyl-phenylether	430	U
118-74-1	Hexachlorobenzene	430	U
87-86-5	Pentachlorophenol	1000	U
85-01-8	Phenanthrene	430	U
120-12-7	Anthracene	430	U
86-74-8	Carbazole	430	U
84-74-2	Di-n-Butylphthalate	430	U
206-44-0	Fluoranthene	430	U
129-00-0	Pyrene	430	U
85-68-7	Butylbenzylphthalate	430	U
91-94-1	3,3'-Dichlorobenzidine	430	U
56-55-3	Benzo(a)Anthracene	430	U
218-01-9	Chrysene	430	U
117-81-7	bis(2-Ethylhexyl)Phthalate	54	J
117-84-0	Di-n-Octyl Phthalate	44	J
205-99-2	Benzo(b)Fluoranthene	430	U
207-08-9	Benzo(k)Fluoranthene	430	U
50-32-8	Benzo(a)Pyrene	430	U
193-39-5	Indeno(1,2,3-cd)Pyrene	430	U
53-70-3	Dibenz(a,h)Anthracene	430	U
191-24-2	Benzo(g,h,i)Perylene	430	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX432

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 1144308

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M3745

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: 23 decanted: (Y/N) N Date Extracted: 10/22/92

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) Y pH: 7.7

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	14.97	260	J
2.	UNKNOWN	19.63	150	J
3.	UNKNOWN	19.77	200	J
4.	UNKNOWN	21.15	1000	J
5.	UNKNOWN	23.89	1300	J
6.	UNKNOWN	26.99	1000	J
7.	UNKNOWN	28.57	220	J
8.	UNKNOWN	29.28	220	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX347

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145101

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3723

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/26/92

Injection Volume: 2.0 (uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) N pH: 7.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX347

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145101

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3723

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/26/92

Injection Volume: 2.0(uL) Dilution Factor: / ~~0.5~~ pt

GPC Cleanup: (Y/N) N pH: 7.2

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	72	
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	2	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	0.5	J
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX347

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145101

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3723

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/26/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) N pH: 7.2

Number TICs found: 17

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.23	9	J
2.	UNKNOWN	7.16	10	J
3.	UNKNOWN	7.50	50	J
4.	UNKNOWN	8.97	3	J
5. 120401	Dodecanamide, N,N-bis(2-hydr	14.29	10	JN
6. 544638	Tetradecanoic acid	16.18	5	JN
7. 57103	Hexadecanoic acid	17.94	4	JN
8.	Pentadecenoic acid	19.41	32	J
9.	UNKNOWN	20.56	55	J
10.	UNKNOWN	20.94	2	J
11.	UNKNOWN	27.22	8	J
12.	UNKNOWN	28.89	2	J
13.	UNKNOWN	28.99	26	J
14.	UNKNOWN	29.09	15	J
15.	UNKNOWN	31.36	20	J
16.	UNKNOWN	31.55	140	J
17.	UNKNOWN	31.67	13	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX349

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145103

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3765

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/28/92

Injection Volume: 2.0 (uL) Dilution Factor: 25 ~~12.5~~

GPC Cleanup: (Y/N) N pH: 7.1

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	250	U
111-44-4	bis(2-Chloroethyl)Ether	250	U
95-57-8	2-Chlorophenol	250	U
541-73-1	1,3-Dichlorobenzene	250	U
106-46-7	1,4-Dichlorobenzene	250	U
95-50-1	1,2-Dichlorobenzene	250	U
95-48-7	2-Methylphenol	250	U
108-60-1	2,2'-oxybis(1-Chloropropane)	250	U
106-44-5	4-Methylphenol	250	U
621-64-7	N-Nitroso-Di-n-Propylamine	250	U
67-72-1	Hexachloroethane	250	U
98-95-3	Nitrobenzene	250	U
78-59-1	Isophorone	250	U
88-75-5	2-Nitrophenol	250	U
105-67-9	2,4-Dimethylphenol	250	U
111-91-1	bis(2-Chloroethoxy)Methane	250	U
120-83-2	2,4-Dichlorophenol	250	U
120-82-1	1,2,4-Trichlorobenzene	250	U
91-20-3	Naphthalene	250	U
106-47-8	4-Chloroaniline	250	U
87-68-3	Hexachlorobutadiene	250	U
59-50-7	4-Chloro-3-Methylphenol	250	U
91-57-6	2-Methylnaphthalene	250	U
77-47-4	Hexachlorocyclopentadiene	250	U
88-06-2	2,4,6-Trichlorophenol	250	U
95-95-4	2,4,5-Trichlorophenol	620	U
91-58-7	2-Chloronaphthalene	250	U
88-74-4	2-Nitroaniline	620	U
131-11-3	Dimethyl Phthalate	250	U
208-96-8	Acenaphthylene	250	U
606-20-2	2,6-Dinitrotoluene	250	U
99-09-2	3-Nitroaniline	620	U
83-32-9	Acenaphthene	250	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX349

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145103

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3765

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/28/92

Injection Volume: 2.0(uL) Dilution Factor: 25 ~~12.5~~ pt

GPC Cleanup: (Y/N) N pH: 7.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	620	U
100-02-7	4-Nitrophenol	620	U
132-64-9	Dibenzofuran	250	U
121-14-2	2,4-Dinitrotoluene	250	U
84-66-2	Diethylphthalate	250	U
7005-72-3	4-Chlorophenyl-phenylether	250	U
86-73-7	Fluorene	250	U
100-01-6	4-Nitroaniline	620	U
534-52-1	4,6-Dinitro-2-Methylphenol	620	U
86-30-6	N-Nitrosodiphenylamine (1)	250	U
101-55-3	4-Bromophenyl-phenylether	250	U
118-74-1	Hexachlorobenzene	250	U
87-86-5	Pentachlorophenol	2000	2100
85-01-8	Phenanthrene	250	U
120-12-7	Anthracene	250	U
86-74-8	Carbazole	250	U
84-74-2	Di-n-Butylphthalate	250	U
206-44-0	Fluoranthene	250	U
129-00-0	Pyrene	250	U
85-68-7	Butylbenzylphthalate	250	U
91-94-1	3,3'-Dichlorobenzidine	250	U
56-55-3	Benzo(a)Anthracene	250	U
218-01-9	Chrysene	250	U
117-81-7	bis(2-Ethylhexyl)Phthalate	250	U
117-84-0	Di-n-Octyl Phthalate	250	U
205-99-2	Benzo(b)Fluoranthene	250	U
207-08-9	Benzo(k)Fluoranthene	250	U
50-32-8	Benzo(a)Pyrene	250	U
193-39-5	Indeno(1,2,3-cd)Pyrene	250	U
53-70-3	Dibenz(a,h)Anthracene	250	U
191-24-2	Benzo(g,h,i)Perylene	250	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX349

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145103

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3765

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/28/92

Injection Volume: 2.0(uL) Dilution Factor: 25 ~~12.5~~ pt

GPC Cleanup: (Y/N) N pH: 7.1

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.03	62	J
2. 4901513	Phenol, 2,3,4,5-tetrachloro-	14.42	75	JN

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX350

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145104

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3750

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0 (uL) Dilution Factor: ~~25.0~~ 50

GPC Cleanup: (Y/N) N pH: 7.2

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	500	U
111-44-4	bis(2-Chloroethyl)Ether	500	U
95-57-8	2-Chlorophenol	500	U
541-73-1	1,3-Dichlorobenzene	500	U
106-46-7	1,4-Dichlorobenzene	500	U
95-50-1	1,2-Dichlorobenzene	500	U
95-48-7	2-Methylphenol	500	U
108-60-1	2,2'-oxybis(1-Chloropropane)	500	U
106-44-5	4-Methylphenol	500	U
621-64-7	N-Nitroso-Di-n-Propylamine	500	U
67-72-1	Hexachloroethane	500	U
98-95-3	Nitrobenzene	500	U
78-59-1	Isophorone	500	U
88-75-5	2-Nitrophenol	500	U
105-67-9	2,4-Dimethylphenol	500	U
111-91-1	bis(2-Chloroethoxy)Methane	500	U
120-83-2	2,4-Dichlorophenol	500	U
120-82-1	1,2,4-Trichlorobenzene	500	U
91-20-3	Naphthalene	500	U
106-47-8	4-Chloroaniline	500	U
87-68-3	Hexachlorobutadiene	500	U
59-50-7	4-Chloro-3-Methylphenol	500	U
91-57-6	2-Methylnaphthalene	500	U
77-47-4	Hexachlorocyclopentadiene	500	U
88-06-2	2,4,6-Trichlorophenol	500	U
95-95-4	2,4,5-Trichlorophenol	1200	U
91-58-7	2-Chloronaphthalene	500	U
88-74-4	2-Nitroaniline	1200	U
131-11-3	Dimethyl Phthalate	500	U
208-96-8	Acenaphthylene	500	U
606-20-2	2,6-Dinitrotoluene	500	U
99-09-2	3-Nitroaniline	1200	U
83-32-9	Acenaphthene	500	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX350

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145104

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3750

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 50 ~~25.0~~ pt

GPC Cleanup: (Y/N) N pH: 7.2

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	1200	U
100-02-7	4-Nitrophenol	1200	U
132-64-9	Dibenzofuran	500	U
121-14-2	2,4-Dinitrotoluene	500	U
84-66-2	Diethylphthalate	500	U
7005-72-3	4-Chlorophenyl-phenylether	500	U
86-73-7	Fluorene	500	U
100-01-6	4-Nitroaniline	1200	U
534-52-1	4,6-Dinitro-2-Methylphenol	1200	U
86-30-6	N-Nitrosodiphenylamine (1)	500	U
101-55-3	4-Bromophenyl-phenylether	500	U
118-74-1	Hexachlorobenzene	500	U
87-86-5	Pentachlorophenol	1800	
85-01-8	Phenanthrene	500	U
120-12-7	Anthracene	500	U
86-74-8	Carbazole	500	U
84-74-2	Di-n-Butylphthalate	500	U
206-44-0	Fluoranthene	500	U
129-00-0	Pyrene	500	U
85-68-7	Butylbenzylphthalate	500	U
91-94-1	3,3'-Dichlorobenzidine	500	U
56-55-3	Benzo(a)Anthracene	500	U
218-01-9	Chrysene	500	U
117-81-7	bis(2-Ethylhexyl)Phthalate	500	U
117-84-0	Di-n-Octyl Phthalate	500	U
205-99-2	Benzo(b)Fluoranthene	500	U
207-08-9	Benzo(k)Fluoranthene	500	U
50-32-8	Benzo(a)Pyrene	500	U
193-39-5	Indeno(1,2,3-cd)Pyrene	500	U
53-70-3	Dibenz(a,h)Anthracene	500	U
191-24-2	Benzo(g,h,i)Perylene	500	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX350

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145104

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3750

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 50 ~~25.0~~

GPC Cleanup: (Y/N) N pH: 7.2

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.05	180	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX351

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145105

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3751

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: 1 ~~0.5~~

GPC Cleanup: (Y/N) N pH: 7.7

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX351

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145105

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3751

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: / ~~0.5~~ 1

GPC Cleanup: (Y/N) N pH: 7.7

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FX351

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 1145105

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M3751

Level: (low/med) LOW Date Received: 10/22/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 10/23/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/27/92

Injection Volume: 2.0(uL) Dilution Factor: / ~~0.5~~ 1

GPC Cleanup: (Y/N) N pH: 7.7

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.32	8	J

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX424

b Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 11443-01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 10 decanted: (Y/N) N Date Received: 10/21/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/22/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.9	U
319-85-7	beta-BHC	1.9	U
319-86-8	delta-BHC	1.9	U
58-89-9	gamma-BHC (Lindane)	1.9	U
76-44-8	Heptachlor	2.9	
309-00-2	Aldrin	1.9	U
1024-57-3	Heptachlor epoxide	2.1	P
959-98-8	Endosulfan I	1.9	U
60-57-1	Dieldrin	3.7	U
72-55-9	4,4'-DDE	4.1	P
72-20-8	Endrin	3.7	U
33213-65-9	Endosulfan II	3.7	U
72-54-8	4,4'-DDD	3.7	U
1031-07-8	Endosulfan sulfate	3.7	U
50-29-3	4,4'-DDT	3.7	U
72-43-5	Methoxychlor	19	U
53494-70-5	Endrin ketone	3.7	U
7421-93-4	Endrin aldehyde	3.7	U
5103-71-9	alpha-Chlordane	34	P
5103-74-2	gamma-Chlordane	39	
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	74	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX426

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 11443-02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 31 decanted: (Y/N) N Date Received: 10/21/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/22/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.5	U
319-85-7	beta-BHC	2.5	U
319-86-8	delta-BHC	2.5	U
58-89-9	gamma-BHC (Lindane)	2.5	U
76-44-8	Heptachlor	2.5	U
309-00-2	Aldrin	7.7	P
1024-57-3	Heptachlor epoxide	2.5	U
959-98-8	Endosulfan I	5.0	
60-57-1	Dieldrin	8.4	P
72-55-9	4,4'-DDE	4.8	U
72-20-8	Endrin	4.8	U
33213-65-9	Endosulfan II	4.8	U
72-54-8	4,4'-DDD	4.8	U
1031-07-8	Endosulfan sulfate	4.8	U
50-29-3	4,4'-DDT	42	P
72-43-5	Methoxychlor	25	U
53494-70-5	Endrin ketone	4.8	U
7421-93-4	Endrin aldehyde	4.8	U
5103-71-9	alpha-Chlordane	5.7	P
5103-74-2	gamma-Chlordane	17	
8001-35-2	Toxaphene	250	U
12674-11-2	Aroclor-1016	48	U
11104-28-2	Aroclor-1221	97	U
11141-16-5	Aroclor-1232	48	U
53469-21-9	Aroclor-1242	48	U
12672-29-6	Aroclor-1248	48	U
11097-69-1	Aroclor-1254	48	U
11096-82-5	Aroclor-1260	48	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX427

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 11443-03

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 2 decanted: (Y/N) N Date Received: 10/21/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/22/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	2.1	
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.8	P
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX428

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 11443-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 2 decanted: (Y/N) N Date Received: 10/21/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/22/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.7	U
319-85-7	beta-BHC	1.7	U
319-86-8	delta-BHC	1.7	U
58-89-9	gamma-BHC (Lindane)	1.7	U
76-44-8	Heptachlor	1.8	
309-00-2	Aldrin	1.7	U
1024-57-3	Heptachlor epoxide	1.7	U
959-98-8	Endosulfan I	1.7	U
60-57-1	Dieldrin	3.4	U
72-55-9	4,4'-DDE	3.4	U
72-20-8	Endrin	3.4	U
33213-65-9	Endosulfan II	3.4	U
72-54-8	4,4'-DDD	3.4	U
1031-07-8	Endosulfan sulfate	3.4	U
50-29-3	4,4'-DDT	3.4	U
72-43-5	Methoxychlor	17	U
53494-70-5	Endrin ketone	3.4	U
7421-93-4	Endrin aldehyde	3.4	U
5103-71-9	alpha-Chlordane	1.7	U
5103-74-2	gamma-Chlordane	1.8	
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	68	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX429

b Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 11443-05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 13 decanted: (Y/N) N Date Received: 10/21/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/22/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.0	U
319-85-7	beta-BHC	2.0	U
319-86-8	delta-BHC	2.0	U
58-89-9	gamma-BHC (Lindane)	2.0	U
76-44-8	Heptachlor	2.3	
309-00-2	Aldrin	2.0	U
1024-57-3	Heptachlor epoxide	2.0	U
959-98-8	Endosulfan I	2.0	U
60-57-1	Dieldrin	3.8	U
72-55-9	4,4'-DDE	3.8	U
72-20-8	Endrin	3.8	U
33213-65-9	Endosulfan II	3.8	U
72-54-8	4,4'-DDD	3.8	U
1031-07-8	Endosulfan sulfate	3.8	U
50-29-3	4,4'-DDT	3.8	U
72-43-5	Methoxychlor	20	U
53494-70-5	Endrin ketone	3.8	U
7421-93-4	Endrin aldehyde	3.8	U
5103-71-9	alpha-Chlordane	2.0	U
5103-74-2	gamma-Chlordane	3.2	P
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	77	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX430

b Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 11443-06

Sample wt/vol: 30.0 /(g/mL) G Lab File ID: _____

% Moisture: 21 decanted: (Y/N) N Date Received: 10/21/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/22/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	3.9	P
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	4.2	
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	4.9	P
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.3	
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	4.2	U
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	4.2	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.2	U
7421-93-4	Endrin aldehyde	4.2	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	4.3	P
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	42	U
11104-28-2	Aroclor-1221	85	U
11141-16-5	Aroclor-1232	42	U
53469-21-9	Aroclor-1242	42	U
12672-29-6	Aroclor-1248	42	U
11097-69-1	Aroclor-1254	42	U
11096-82-5	Aroclor-1260	42	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX431

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL Lab Sample ID: 11443-07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Moisture: 24 decanted: (Y/N) N Date Received: 10/21/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/22/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.2	~~U~~ JK 12/28/92
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	4.3	U
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	4.3	U
1031-07-8	Endosulfan sulfate	4.3	U
50-29-3	4,4'-DDT	4.3	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.3	U
7421-93-4	Endrin aldehyde	4.3	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	88	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	43	U
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	43	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX432

b Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) SOIL / Lab Sample ID: 11443-08

Sample wt/vol: 30.0 / (g/mL) G Lab File ID: _____

% Moisture: 23 / decanted: (Y/N) N Date Received: 10/21/92

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 10/22/92

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 10/25/92

Injection Volume: 2.00 /(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y / pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	2.2	U
319-85-7	beta-BHC	2.2	U
319-86-8	delta-BHC	2.2	U
58-89-9	gamma-BHC (Lindane)	2.2	U
76-44-8	Heptachlor	2.3	
309-00-2	Aldrin	2.2	U
1024-57-3	Heptachlor epoxide	2.2	U
959-98-8	Endosulfan I	2.2	U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	4.3	U
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	4.3	U
1031-07-8	Endosulfan sulfate	4.3	U
50-29-3	4,4'-DDT	4.3	U
72-43-5	Methoxychlor	22	U
53494-70-5	Endrin ketone	4.3	U
7421-93-4	Endrin aldehyde	4.3	U
5103-71-9	alpha-Chlordane	2.2	U
5103-74-2	gamma-Chlordane	2.2	U
8001-35-2	Toxaphene	220	U
12674-11-2	Aroclor-1016	43	U
11104-28-2	Aroclor-1221	87	U
11141-16-5	Aroclor-1232	43	U
53469-21-9	Aroclor-1242	43	U
12672-29-6	Aroclor-1248	43	U
11097-69-1	Aroclor-1254	43	U
11096-82-5	Aroclor-1260	43	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX347

Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 11451-01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 10/22/92

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 10/22/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/23/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX349

b Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 11451-03

Sample wt/vol: 1000 /(g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 10/22/92

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 10/22/92

Concentrated Extract Volume: 10000 /(uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 / (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX350

b Name: SWL-TULSA Contract: 68-D2-0031

ab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER / Lab Sample ID: 11451-04

ample wt/vol: 1000 /(g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 10/22/92

xtraction: (SepF/Cont/Sonc) CONT Date Extracted: 10/22/92

oncentrated Extract Volume: 10000 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

PC Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FX351

Lab Name: SWL-TULSA Contract: 68-D2-0031

Lab Code: SWOK Case No.: 18932 SAS No.: _____ SDG No.: FX424

Matrix: (soil/water) WATER Lab Sample ID: 11451-05

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 10/22/92

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 10/22/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 10/24/92

Injection Volume: 2.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW224

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW224

Matrix (soil/water): SOIL Lab Sample ID: 10367-01S

Level (low/med): LOW Date Received: 10/21/92

% Solids: 89.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7870			P
7440-36-0	Antimony	3.7	U	N	P
7440-38-2	Arsenic	1.2	B		F
7440-39-3	Barium	86.2			P
7440-41-7	Beryllium	0.38	B		P
7440-43-9	Cadmium	0.22	U		P
7440-70-2	Calcium	4650			P
7440-47-3	Chromium	8.8			P
7440-48-4	Cobalt	2.7	B		P
7440-50-8	Copper	6.2			P
7439-89-6	Iron	6500			P
7439-92-1	Lead	9.6			F
7439-95-4	Magnesium	1160			P
7439-96-5	Manganese	76.1		*	P
7439-97-6	Mercury	0.23			CV
7440-02-0	Nickel	5.1	B		P
7440-09-7	Potassium	635	B		P
7782-49-2	Selenium	0.85	U	WN	F
7440-22-4	Silver	0.55	U		P
7440-23-5	Sodium	66.8	B		P
7440-28-0	Thallium	0.83	U		F
7440-62-2	Vanadium	15.6			P
7440-66-6	Zinc	19.2		N	P
	Cyanide	0.55	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS, STONES

0002

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW226

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW224

Matrix (soil/water): SOIL Lab Sample ID: 10367-02S

Level (low/med): LOW Date Received: 10/21/92

% Solids: 67.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12700			P
7440-36-0	Antimony	8.3	B	N	P
7440-38-2	Arsenic	2030			F
7440-39-3	Barium	207			P
7440-41-7	Beryllium	1.1	B		P
7440-43-9	Cadmium	0.29	B		P
7440-70-2	Calcium	107000			P
7440-47-3	Chromium	2610			P
7440-48-4	Cobalt	6.2	B		P
7440-50-8	Copper	2760			P
7439-89-6	Iron	24100			P
7439-92-1	Lead	131			F
7439-95-4	Magnesium	6010			P
7439-96-5	Manganese	2310		*	P
7439-97-6	Mercury	0.28			CV
7440-02-0	Nickel	19.4			P
7440-09-7	Potassium	1160	B		P
7782-49-2	Selenium	1.2	U	WN	F
7440-22-4	Silver	0.72	U		P
7440-23-5	Sodium	272	B		P
7440-28-0	Thallium	1.1	U		F
7440-62-2	Vanadium	70.9			P
7440-66-6	Zinc	898		N	P
	Cyanide	0.75	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS, STONES, WOOD

0003

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW227

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW224

Matrix (soil/water): SOIL Lab Sample ID: 10367-03S

Level (low/med): LOW Date Received: 10/21/92

% Solids: 97.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5720			P
7440-36-0	Antimony	3.5	U	N	P
7440-38-2	Arsenic	245			F
7440-39-3	Barium	91.1			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	0.21	U		P
7440-70-2	Calcium	187000			P
7440-47-3	Chromium	665			P
7440-48-4	Cobalt	3.1	B		P
7440-50-8	Copper	207			P
7439-89-6	Iron	35300			P
7439-92-1	Lead	23.3			F
7439-95-4	Magnesium	13200			P
7439-96-5	Manganese	8220		*	P
7439-97-6	Mercury	0.05	B		CV
7440-02-0	Nickel	16.5			P
7440-09-7	Potassium	465	B		P
7782-49-2	Selenium	0.80	U	WN	F
7440-22-4	Silver	0.57	B		P
7440-23-5	Sodium	304	B		P
7440-28-0	Thallium	0.78	U		F
7440-62-2	Vanadium	138			P
7440-66-6	Zinc	67.0		N	P
	Cyanide	0.50	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES, WOOD

0004

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW228

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW224

Matrix (soil/water): SOIL Lab Sample ID: 10367-04S

Level (low/med): LOW Date Received: 10/21/92

% Solids: 93.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4320			P
7440-36-0	Antimony	3.5	U	N	P
7440-38-2	Arsenic	229			F
7440-39-3	Barium	80.3			P
7440-41-7	Beryllium	0.18	B		P
7440-43-9	Cadmium	0.20	U		P
7440-70-2	Calcium	204000			P
7440-47-3	Chromium	630			P
7440-48-4	Cobalt	3.1	B		P
7440-50-8	Copper	253			P
7439-89-6	Iron	21500			P
7439-92-1	Lead	24.0			F
7439-95-4	Magnesium	8590			P
7439-96-5	Manganese	4790		*	P
7439-97-6	Mercury	0.06	B		CV
7440-02-0	Nickel	21.0			P
7440-09-7	Potassium	390	B		P
7782-49-2	Selenium	4.1	U	N	F
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	290	B		P
7440-28-0	Thallium	0.81	U		F
7440-62-2	Vanadium	73.6			P
7440-66-6	Zinc	87.4		N	P
	Cyanide	0.52	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES, WOOD

0005

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW229

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW224

Matrix (soil/water): SOIL Lab Sample ID: 10367-05S

Level (low/med): LOW Date Received: 10/21/92

Solids: 85.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6490			P
7440-36-0	Antimony	3.8	U	N	P
7440-38-2	Arsenic	348			F
7440-39-3	Barium	104			P
7440-41-7	Beryllium	0.74	B		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	212000			P
7440-47-3	Chromium	732			P
7440-48-4	Cobalt	5.7	B		P
7440-50-8	Copper	349			P
7439-89-6	Iron	15900			P
7439-92-1	Lead	44.6			F
7439-95-4	Magnesium	23500			P
7439-96-5	Manganese	2370		*	P
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel	14.7			P
7440-09-7	Potassium	715	B		P
7782-49-2	Selenium	0.89	U	MWN	F
7440-22-4	Silver	0.57	U		P
7440-23-5	Sodium	315	B		P
7440-28-0	Thallium	0.87	U		F
7440-62-2	Vanadium	57.1			P
7440-66-6	Zinc	265		N	P
	Cyanide	0.56	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES, WOOD

0006

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW230

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW224

Matrix (soil/water): SOIL Lab Sample ID: 10367-06S

Level (low/med): LOW Date Received: 10/21/92

% Solids: 77.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12600			P
7440-36-0	Antimony	4.0	U	N	P
7440-38-2	Arsenic	62.4			F
7440-39-3	Barium	122			P
7440-41-7	Beryllium	0.95	B		P
7440-43-9	Cadmium	0.24	U		P
7440-70-2	Calcium	69600			P
7440-47-3	Chromium	138			P
7440-48-4	Cobalt	5.1	B		P
7440-50-8	Copper	105			P
7439-89-6	Iron	14800			P
7439-92-1	Lead	11.0			F
7439-95-4	Magnesium	6930			P
7439-96-5	Manganese	180		*	P
7439-97-6	Mercury	0.08	B		CV
7440-02-0	Nickel	12.2			P
7440-09-7	Potassium	1330			P
7782-49-2	Selenium	0.95	U	WN	F
7440-22-4	Silver	0.59	U		P
7440-23-5	Sodium	148	B		P
7440-28-0	Thallium	0.93	U	W	F
7440-62-2	Vanadium	27.4			P
7440-66-6	Zinc	460		N	P
	Cyanide	0.59	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES, WOOD

0007

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW231

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW224

Matrix (soil/water): SOIL Lab Sample ID: 10367-07S

Level (low/med): LOW Date Received: 10/21/92

Solids: 76.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18600			P
7440-36-0	Antimony	4.4	U	N	P
7440-38-2	Arsenic	39.9			F
7440-39-3	Barium	201			P
7440-41-7	Beryllium	1.2	B		P
7440-43-9	Cadmium	0.26	U		P
7440-70-2	Calcium	6190			P
7440-47-3	Chromium	28.4			P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	16.1			P
7439-89-6	Iron	15900			P
7439-92-1	Lead	16.3			F
7439-95-4	Magnesium	2460			P
7439-96-5	Manganese	331		*	P
7439-97-6	Mercury	2.5			CV
7440-02-0	Nickel	12.1			P
7440-09-7	Potassium	1360			P
7782-49-2	Selenium	1.0	U	N	F
7440-22-4	Silver	0.65	U		P
7440-23-5	Sodium	115	B		P
7440-28-0	Thallium	0.98	U	W	F
7440-62-2	Vanadium	41.4			P
7440-66-6	Zinc	56.6		N	P
	Cyanide	0.65	U		CA

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS

0008

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW232

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW224

Matrix (soil/water): SOIL Lab Sample ID: 10367-08S

Level (low/med): LOW Date Received: 10/21/92

% Solids: 73.7

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19100			P
7440-36-0	Antimony	4.3	U	N	P
7440-38-2	Arsenic	77.1			F
7440-39-3	Barium	177			P
7440-41-7	Beryllium	1.3			P
7440-43-9	Cadmium	0.26	U		P
7440-70-2	Calcium	13200			P
7440-47-3	Chromium	75.4			P
7440-48-4	Cobalt	5.5	B		P
7440-50-8	Copper	42.8			P
7439-89-6	Iron	17300			P
7439-92-1	Lead	19.1			F
7439-95-4	Magnesium	3140			P
7439-96-5	Manganese	322		*	P
7439-97-6	Mercury	0.47			CV
7440-02-0	Nickel	12.5			P
7440-09-7	Potassium	1680			P
7782-49-2	Selenium	1.0	U	N	F
7440-22-4	Silver	0.64	U		P
7440-23-5	Sodium	148	B		P
7440-28-0	Thallium	1.0	U		F
7440-62-2	Vanadium	34.4			P
7440-66-6	Zinc	248		N	P
	Cyanide	0.68	U		CA

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts: YES

Comments:
ROOTS, STONES

0009

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW347

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW347

Matrix (soil/water): WATER Lab Sample ID: 10388-01S

Level (low/med): LOW Date Received: 10/22/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	38800			P
7440-36-0	Antimony	14.8	U		P
7440-38-2	Arsenic	6.2	B	N	F
7440-39-3	Barium	402			P
7440-41-7	Beryllium	3.4	B		P
7440-43-9	Cadmium	1.5	U		P
7440-70-2	Calcium	78000			P
7440-47-3	Chromium	37.0			P
7440-48-4	Cobalt	17.7	B		P
7440-50-8	Copper	17.4	B		P
7439-89-6	Iron	29200			P
7439-92-1	Lead	12.9			F
7439-95-4	Magnesium	31500			P
7439-96-5	Manganese	197			P
7439-97-6	Mercury	0.40			CV
7440-02-0	Nickel	35.8	B		P
7440-09-7	Potassium	7730			P
7782-49-2	Selenium	18.0	U	EN	F
7440-22-4	Silver	3.6	U		P
7440-23-5	Sodium	90500			P
7440-28-0	Thallium	1.3	U	WN	F
7440-62-2	Vanadium	54.6			P
7440-66-6	Zinc	70.3			P
	Cyanide	10.0	U	N	CA

Color Before: ORANGE Clarity Before: OPAQUE Texture:

Color After: ORANGE Clarity After: OPAQUE Artifacts:

Comments:

2

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW349

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW347

Matrix (soil/water): WATER Lab Sample ID: 10388-02S

Level (low/med): LOW Date Received: 10/22/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	288			P
7440-36-0	Antimony	14.8	U		P
7440-38-2	Arsenic	3.1	B	N	F
7440-39-3	Barium	223			P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.5	U		P
7440-70-2	Calcium	67200			P
7440-47-3	Chromium	2.6	U		P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	1.9	U		P
7439-89-6	Iron	238			P
7439-92-1	Lead	2.0	U		F
7439-95-4	Magnesium	25200			P
7439-96-5	Manganese	46.0			P
7439-97-6	Mercury	0.55			CV
7440-02-0	Nickel	2.6	U		P
7440-09-7	Potassium	720	B		P
7782-49-2	Selenium	3.6	U	WN	F
7440-22-4	Silver	3.6	U		P
7440-23-5	Sodium	120000			P
7440-28-0	Thallium	6.5	U	WN	F
7440-62-2	Vanadium	4.2	B		P
7440-66-6	Zinc	9.9	B		P
	Cyanide	10.0	U	N	CA

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

003

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW350

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW347

Matrix (soil/water): WATER Lab Sample ID: 10388-03S

Level (low/med): LOW Date Received: 10/22/92

Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	355			P
7440-36-0	Antimony	14.8	U		P
7440-38-2	Arsenic	3.7	B	N	F
7440-39-3	Barium	222			P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.5	U		P
7440-70-2	Calcium	66900			P
7440-47-3	Chromium	2.6	U		P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	1.9	U		P
7439-89-6	Iron	246			P
7439-92-1	Lead	2.0	U		F
7439-95-4	Magnesium	25000			P
7439-96-5	Manganese	46.0			P
7439-97-6	Mercury	0.20			CV
7440-02-0	Nickel	4.3	B		P
7440-09-7	Potassium	705	B		P
7782-49-2	Selenium	3.6	U	N	F
7440-22-4	Silver	3.6	U		P
7440-23-5	Sodium	118000			P
7440-28-0	Thallium	6.5	U	WN	F
7440-62-2	Vanadium	5.2	B		P
7440-66-6	Zinc	7.2	B		P
	Cyanide	10.0	U	N	CA

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

4

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MFW351

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0109

Lab Code: SKINER Case No.: 18932 SAS No.: SDG No.: MFW347

Matrix (soil/water): WATER Lab Sample ID: 10388-04S

Level (low/med): LOW Date Received: 10/22/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	24.7	B		P
7440-36-0	Antimony	14.8	U		P
7440-38-2	Arsenic	2.2	B	N	F
7440-39-3	Barium	155	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.5	U		P
7440-70-2	Calcium	42500			P
7440-47-3	Chromium	2.6	U		P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	1.9	U		P
7439-89-6	Iron	53.2	B		P
7439-92-1	Lead	2.0	U		F
7439-95-4	Magnesium	8690			P
7439-96-5	Manganese	134			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.6	U		P
7440-09-7	Potassium	1430	B		P
7782-49-2	Selenium	3.6	U	WN	F
7440-22-4	Silver	3.6	U		P
7440-23-5	Sodium	55500			P
7440-28-0	Thallium	1.3	U	WN	F
7440-62-2	Vanadium	2.5	U		P
7440-66-6	Zinc	21.4			P
	Cyanide	10.0	U	N	CA

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

5

Appendix B

EPA CLP Data Quality Assurance Summary

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

Site Name Wood Protection

Case# 18932

SDG# FX-424

Date: 12-18-1992

Subject: CLP Data Review

From: Dr Melvin Ritter , Chemist , Region VI

To : L. Ross , 6H-MA , Region VI

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section.
Samples were:

INORGANIC:

ORGANIC:

FX-347 TO			
FX-351			
FX-424			
FX-426 TO			
FX-433			

The data was found:

( ) Acceptable

(X) Provisional; use of data requires caution. Problems are noted in Review Summary.

( ) Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

cc: Mahmoud El-Feky, 6E-HO
Mike Hiatt, EMSL/Las Vegas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

MEMORANDUM

Date: 12-18-1992

Subject: CLP Data Review

From: Mahmoud El-Feky, Data Coordinator ,Region VI

To: Dr. Melvin Ritter , Chemist , Region VI

Attached is the data review summary for Site Wood Protection
Case # 18932
SDG # FX-424

Data was found: ( ) Acceptable

(X) Provisional

( ) Unacceptable

Action required by TPO: (X) Yes

( ) No

COMMENTS:

1- One VOA and three BNA failed technical calibration criteria.

2- Low internal standard areas for three VOA samples.

3- VOA trip blanks contaminated with chloform >CRQL.

4- Identification of gamma-chlordane is tentative in four samples due to absence of α-chlordane.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 18932
LABORATORY SWOK
CONTRACT# 68-D2-0031
SDG# FX424
SOW# RAS SOW OLM01.8
ACCT# 3TGBDN35 SF# TGBUZZ

SITE Wood Protection
NO. OF SAMPLES 14
MATRIX 6 Water/ 8 Soil
REVIEWER (IF NOT ESD) ESAT
REVIEWER'S NAME Tseng-Ying Fan
COMPLETION DATE December 16, 1992

SAMPLE NO.					
	FX-347	FX-351	FX-428	FX-432	
	FX-348	FX-424	FX-429	FX-433	
	FX-349	FX-426	FX-430		
	FX-350	FX-427	FX-431		

DATA ASSESSMENT SUMMARY

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	O	O	O	N/A
2. GC/MS TUNE/INSTR. PERFORM.	O	O	O	N/A
3. CALIBRATIONS	M	M	O	N/A
4. METHOD/TRIP BLANKS	X	O	O	N/A
5. SURROGATES/SMC	O	O	X	N/A
6. MATRIX SPIKE/DUPLICATE	X	X	O	N/A
7. DUPLICATES	O	O	O	N/A
8. INTERNAL STANDARDS	M	O	N/A	N/A
9. COMPOUND ID/QUANTITATION	O	O	M	N/A
10. SYSTEM PERFORMANCE	O	O	O	N/A
11. OVERALL ASSESSMENT	M	M	M	N/A

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.
NA = Not applicable.

ACTION ITEMS: One VOA and 3 BNA compounds failed technical calibration criteria. Three VOA samples had low internal standard areas. Matrix interferences obscured the detection of 3 analytes in Pest/PCB sample FX-426. The identification of γ-chlordane is tentative in 4 samples due to the absence of α-chlordane.

AREA OF CONCERN: Both VOA trip blanks were contaminated with chloroform >CRQLs.

NOTABLE PERFORMANCE: The data package arrived 1 day early.

COMMENTS/CLARIFICATIONS
REGION 6 CLP QA REVIEW

CASE 18932 SDG: FX424 SITE Wood Protection LAB SWOK

The following is a summary of sample qualifiers used by Region 6 in reporting this CLP data:

No.	Acceptable	Provisional	Unacceptable
VOA	10	4	
BNA	10	2	
PEST	7	5	

COMMENTS: The case consisted of data for 6 water and 8 soil samples. The trip blanks, samples FX-348 and FX-433, were for VOA analysis only. Other samples required complete RAS organics analysis. The data package arrived one day early for the contractual 14 day turnaround. According to the OTR/COC records, samples FX-349/FX-350, FX-427/FX-428, and FX-431/FX-432 were duplicate pairs; and samples FX-347 and FX-429 were the designated QC samples. Low level analyses were performed for the soil samples.
VOA Low internal standard recoveries were reported for samples FX-426, FX-429, and FX-430. Both trip blanks were contaminated with chloroform >CRQL. Methylene chloride and the blank contaminant, acetone, were detected >CRQLs in some samples.
BNA Samples FX-349, FX-350, and FX-426 required dilutions due to very high levels of pentachlorophenol (up to 17,000 µg/kg). Samples FX-430 and FX-431 were diluted due to high levels of background contamination. PAHs were detected <CRQLs in some samples.
PEST Many pesticides were reported >CRQLs in several samples. Matrix interferences obscured the detection of 3 analytes in sample FX-426.

Data are provisional for 4 VOA, 2 BNA, and 5 Pest/PCB samples due to one or more of the following deficiencies: calibration, internal standard performance, matrix interference, and compound identification. Some corrected BNA forms and the laboratory response to CCS results which contained corrected Pest/PCB data are enclosed and should be used.

An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF) and the Evidence Inventory Checklist is attached to this report.

1. **Holding Times** - Acceptable. All samples met contractual and/or technical holding time criteria.

ORGANIC QA CHECKLIST
CONTINUATION PAGE

CASE 18932 SDG: FX424 SITE Wood Protection LAB SWOK

COMMENT:

2. **Tuning/Performance** - Provisional. BFB and DFTPP analyses met GC/MS tuning criteria. BNA and Pest/PCB analyses met instrument performance guidelines.
VOA Samples FX-426 and FX-430 required reanalyses due to low internal standard (IS) recoveries and the reanalyses had similar problems. Outlying internal standard areas were also reported for samples FX-429 and FX-429 MS/MSD. In the reviewer's opinion, the original data should be used for sample FX-430 and the reanalysis data should be used for sample FX-426 due to improved IS performance. However, results associated with IS3 are estimated for samples FX-426RE, FX-429, and FX-430 as a consequence of the outlying IS performance. Other VOA samples met instrument performance guidelines.

3. **Calibrations** - Provisional. Target compounds generally met contractual calibration criteria for all fractions. The following results are estimated due to outlying technical %D calibration deficiencies:

2-butanone in VOA sample FX-424,

pentachlorophenol and bis(2-ethylhexyl)phthalate in BNA sample FX-426, and

indeno(1,2,3-cd)pyrene in BNA sample FX-429.

4. **Blanks** - Acceptable. Method and/or instrument blanks met contractual requirements for all fractions. Chloroform, acetone, 2-butanone, 4-methyl-2-pentanone, 4-chloro-3-methylphenol, and bis(2-ethylhexyl)phthalate were reported <CRQLs in some VOA or BNA method blanks. The VOA trip blanks, samples FX-348 and FX-433, also contained chloroform >CRQL. The following sample results should be qualified as non-detects (U) because the concentrations were below 5X and 10X the associated method and trip blank levels:

all "B" flagged VOA sample results for chloroform and 2-butanone, and

4-chloro-3-methylphenol and bis(2-ethylhexyl)phthalate results in BNA sample FX-429.

5. **System Monitoring Compounds (SMC)/Surrogates** - Acceptable. The VOA SMC and BNA surrogate recoveries met contractual guidelines. Surrogates were diluted out in BNA samples FX-349 and FX-350. Surrogate recoveries were outside of the advisory QC limits on one column for several Pest/PCB samples due to matrix interferences. No data were qualified.

ORGANIC QA CHECKLIST
CONTINUATION PAGE

CASE 18932 SDG: FX424 SITE Wood Protection LAB SWOK

COMMENT:

6. **Matrix Spike/Matrix Spike Duplicate** - Acceptable. MS/MSD analyses met QC criteria for accuracy and precision for the Pest/PCB fraction. Pentachlorophenol recoveries exceeded QC limits for BNA samples FX-347 MS/MSD. In the reviewer's opinion, the outlying recoveries were due to sample concentrations exceeding linear calibration range, so no data were qualified. The acenaphthene quantitation limit should be used with caution for BNA sample FX-347 because this compound was recovered below the QC limit for the MS analysis. The following parameters exceeded MS/MSD QC limits but sample data were unaffected:

4-nitrophenol recoveries for BNA samples FX-347 MS/MSD,

%RPDs for acenaphthene and toluene for VOA and BNA water matrices, and

the 2,4-dinitrotoluene recovery for BNA sample FX-429MS.

7a. **Compound Identity/Quantitation** - Provisional. Duplicate results were consistent for all fractions. VOA and BNA sample spectra met identification criteria.
VOA/BNA No TCL compounds were reported >CRQLs in the VOA samples other than methylene chloride and the field and blank contaminants, acetone and chloroform. Pentachlorophenol was reported >CRQL in 4 BNA samples and at high levels in samples FX-349, FX-350, and FX-426.
PEST Heptachlor, δ-BHC, aldrin, heptachlor epoxide, endosulfan I, dieldrin, DDE, DDT, chlordanes, and endrin were reported >CRQLs in several samples, but GC/MS confirmation was not required. The quantitation limits are estimated for AR1254, AR1260, and toxaphene in sample FX-426 because matrix interferences obscured their detections. In the reviewer's opinion, the actual quantitation limits may be much higher than the reported values for these analytes. The identification for γ-chlordane is tentative for samples FX-427, FX-428, FX-429, and FX-430 due to absence of the commonly coexisting α-chlordane.

7b. **Data Completeness** - Provisional. The data package was incomplete because a BNA Form VII was omitted. The laboratory was contacted for this resubmission and other needed corrections (see attached FAX Record Log).

ORGANIC QA CHECKLIST
CONTINUATION PAGE

CASE 18932 SDG: FX424 SITE Wood Protection LAB SWOK

COMMENT:
8. Case Assessment - Data are acceptable for 10 VOA, 10 BNA, and 7 Pest/PCB samples.
VOA Data are provisional for samples FX-424, FX-426, FX-429, and FX-430 due to deficiencies in internal standard recovery or calibration.
BNA Data are provisional for samples FX-426 and FX-429 due to deficiencies in calibration.
Pest/PCB Data are provisional for samples FX-426, FX-427, FX-428, FX-429, and FX-430 due to problems with matrix interference and compound identification.

INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIS

Case No. 18932 SDG No. FX424 SDG Nos. To Follow SAS No. Date Rec 11/04/92

EPA Lab ID: SWOK
Lab Location: Broken Arrow, OK 74012
Region: 6 Audit No.: 18932/FX424
Re_Submitted CSF? Yes _____ No X
Box No(s): 1
COMMENTS:

Over for additional comments.

ORIGINALS	YES	NO	N/A
CUSTODY SEALS			
1. Present on package?	X		
2. Intact upon receipt?	X		
FORM DC-2			
3. Numbering scheme accurate?	X		
4. Are enclosed documents listed?	X		
5. Are listed documents enclosed?	X		
FORM DC-1			
6. Present?	X		
7. Complete?	X		
8. Accurate?	X		
CHAIN-OF-CUSTODY RECORD(s)			
9. Signed?	X		
10. Dated?	X		
TRAFFIC REPORT(s) PACKING LIST(s)			
11. Signed?	X		
12. Dated?	X		
AIRBILLS/AIRBILL STICKER			
13. Present?	X		
14. Signed?	X		
15. Dated?	X		
SAMPLE TAGS			
16. Does DC-1 list tags as being included?	X		
17. Present?	X		
OTHER DOCUMENTS			
18. Complete?	X		
19. Legible?	X		
20. Original?		X	
20a. If "NO", does the copy indicate where original documents are located?	X		

	Signature	Printed Name/Title	Date
Audited by:	Kathleen Thanh Thien Nguyen	Kathleen Nguyen/Scientist Associate	11/17/92
Audited by:	Tseng-Ying Fan	Tseng-Ying Fan/Data Reviewer	12/09/92
Audited by:			

TO BE COMPLETED BY CEAT

Date Recvd by CEAT: _____ Date Entered: _____ Date Reviewed: _____

Entered by: _____ _____

Reviewed by: _____ _____

Signature Printed Name/Title

In Reference to Case No(s):
18932 SDG: FX424

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
FAX Record Log

Date of FAX: December 17, 1992
Laboratory Name: SWOK
Lab Contact: Harry Borg

Region: 6
Regional Contact: Tseng-Ying Fan - ESAT

FAX initiated by: _____Laboratory ___X___Region

In reference to data for the following fractions:

BNA PEST

Summary of Questions/Issues:

A. BNA

1. A Form VII is required by the contract for the initial calibration dated 10/26/92 because samples were analyzed within the same 12 hour sequence (OLM01.0, D-49/SV, 5.10). Please submit.

2. Form VI (p. 521): The reported RRFs for 2,4,6-tribromophenol were incorrect except for RRF50. Please correct RRFs and %RSD, and resubmit Form VI and the affected Form VIIs.

3. Significant levels of non-target compound contamination were present in SBLK2 and SBLK3. Please comment.

4. Sample FX-349: The pentachlorophenol result was miscalculated. Please verify and resubmit corrected Form I and quantitation report.

5. Sample FX-424: "B" flag was omitted for TIC No.'s 1 - 4. Please resubmit Form I-TIC (p. 368).

B. Pest/PCB

1. Sample FX-431: Heptachlor was indicated at CRQL level in the sample but the result was omitted. Please verify and submit a corrected Form I.

FAX COMMUNICATION LOG

Continuation Page 2 of 2
Laboratory/Contact SWOK / Harry Borg
In Reference To Case No. 18932 SDG: FX424

NOTE: Any laboratory resubmission should be submitted either as an addendum to the original CSF with a revised Form DC-2 or submitted as a new CSF with a new Form DC-2 (OLM01.0, p. B-22), except those containing only replacement pages. Custody seals are required for all CSF resubmission shipments.

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 14 days to:

Ms. Christy Macdowell - ESAT
c/o U.S. EPA Region 6 Laboratory
10625 Fallstone Road
Houston, TX 77099

If you have any questions, please contact me at (713) 983-2134.

Signature

December 16, 1992
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

EPA

United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

SAS No. (if applicable):

Case No.: 18932

1. Project Code:
Account Code:
2. Region No.: 6
Sampling Co.: ENGINEERING-SCIENCE
4. Date Shipped: 10/20/92
Carrier: FEDERAL EXPRESS

Regional Information:
Sampler (Name): J.A. BAILEY
Airbill Number: 2601034822

Non-Superfund Program:
Sampler Signature:

Site Name: TXD 059 345 116 WOOD PROTECTION COMPANY
City, State: HOUSTON, TX
Site Spill ID:

3. Type of Activity:

	Lead	Pre-Remedial	Remedial	Removal
SF			RIFS	CLEM
PRP		PA	RD	REMA
ST	X	SSI X	RA	REM
FED		LSI	O&M	OIL
			NPLD	UST

5. Ship To:
SOUTHWEST LABS OF OKLAHOMA
1700 WEST ALBANY SUITE C
BROKEN ARROW, OK 74012
ATTN: MISSY HAMBY

6. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Other (Specify)
6. Ice only
N. Not preserved

7. Sample Description (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Rinsate
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify)

CLP Sample Numbers (from labels)	A Enter # from Box 7	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative from Box 6	E RAS Analysis VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Number	H Mo/Day/Year/Time Sample Collection	I Sampler Initials	J Corresp. CLP Inorg. Samp. No.	K Enter Appropriate Qualifier for Designated Field QC (B = Blank S = Spike D = Duplicate PE = Perform. Eval. — = Not a QC Sample)
FX424	5	L	G	6	X	X	X		6-024167→169	SO-1	10/20/92;1350	JB	MFW224	—
~~FX425~~	~~5~~	~~L~~	~~G~~	~~6~~	~~X~~	~~X~~	~~X~~		~~6-024171→173~~	~~SO-2~~	~~10/20/92;~~	~~JB~~	~~MFW225~~	~~S~~ BRV
FX426	5	L	G	6	X	X	X		6-024175→177	SO-3	10/20/92;1415	JB	MFW226	—
FX427	5	L	G	6	X	X	X		6-024179→181	SO-4	10/20/92;1445	JB	MFW227	—
FX428	5	L	G	6	X	X	X		6-024183→185	SO-5	10/20/92;1445	JB	MFW228	D
FX429	5	L	G	6	X	X	X		6-024187→189	SO-6	10/20/92;1500	JB	MFW229	—
FX430	5	L	G	6	X	X	X		6-024191→193	SE-1	10/20/92;1305	JB	MFW230	—
FX431	5	L	G	6	X	X	X		6-024195→197	SE-2	10/20/92;1330	JB	MFW231	—
FX432	5	L	G	6	X	X	X		6-024199→201	SE-3	10/20/92;1330	JB	MFW232	D
FX433	3	L	G	6	X				6-024203→204	TB-1	10/19/92;1355	JB	—	B

Shipment for Case complete? (Y/N): Y
Page 1 of 1
Sample used for a spike and/or duplicate: ~~SO-2~~ BRV SO-6
Additional Sampler Signatures:
Chain of Custody Seal Number:

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Brian Bailey	10/20/92 1630	FEDERAL EXPRESS			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Split Samples: ☒ Accepted ☐ Declined (Signature) 10/20/92

EPA Form 9110-2 (Rev. 5-91) Replaces EPA Form (2075-7), previous edition which may be used

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SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS

C043206

RG-2

EPA

United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

Organic Traffic Report & Chain of Custody Record

(For Organic CLP Analysis)

Case No. (if applicable)

Case No. 18932

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		6	ENGINEERING-SCIENCE	10/21/92	FEDERAL EXPRESS

Regional Information

Sampler (Name): JOYCE A. BAILEY

Airbill Number: 2601034844

Non-Superfund Program

Sampler Signature: [signature]

5. Ship To: SOUTHWEST LABS OF OKLAHOMA, 1700 WEST ALBANY, SUITE C, BROKEN ARROW, OK 74012

ATTN: MESSY HAMBY

Site Name: TXD 059345116 WOOD PRESERVING COMPANY

City, State: HOUSTON, TX

Site Spill ID

3. Type of Activity

	Lead	Pre-Remedial	Remedial	Removal
SF			RIFS	CLEM
PRP		PA	RD	REMA
ST	X	SSI	RA	REM
FED		LSI	O&M	OIL
			NPLD	UST

6. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. $NaHSO_4$ 4. H_2SO_4 5. Other (Specify) 6. Ice only N. Not preserved

7. Sample Description (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Rinsate 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify)

CLP Sample Numbers (from labels)	A Enter # from Box 7	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative from Box 6	E RAS Analysis VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Number	H Mo/Day/Year/Time Sample Collection	I Sampler Initials	J Corresp. CLP Inorg. Samp. No.	K Enter Appropriate Qualifier for Designated Field QC (B = Blank S = Spike D = Duplicate PE = Perform. Eval. — = Not a QC Sample)
FX347	2	L	G	6	X	X	X		6-011001→012	GW-1	10/21/92 1015	JB	MFW347	—
FX349	2	L	G	6	X				6-011019→020	GW-2	10/21/92 1115	JB	MFW349	—
FX350	2	L	G	6	X				6-011025→026	GW-3	10/21/92 1115	JB	MFW350	D
FX351	2	L	G	6	X				6-011031→032	GW-4	10/21/92 1200	JB	MFW351	—
~~TB-2~~ FX348	3	L	G	6	X				6-024205→206	TB-2	10/19/92 1355	JB	—	B

Shipment for Case complete? (Y/N)

Page 1 of 1

Sample used for a spike and/or duplicate: FX347

Additional Sampler Signatures: Brian Vandyke

Chain of Custody Seal Number

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Joyce A. Bailey	10/21/92 1400	Federal Express			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

Split Samples: [X] Accepted (Signature) [signature] 10/21/92 [ ] Declined

EPA Form 9110-2 (Rev. 5-91) Replaces EPA Form (2075-7), previous edition which may be used

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0343267

EPA United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

SAS No. (if applicable)

Case No. 18932

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		6	Engineering Science	10/21/92	Federal Express

Regional Information

Sampler (Name): Brian Vandergles

Airbill Number: 2601034844

Non-Superfund Program

Sampler Signature: Brian Vandergles

Site Name: TXD 059345116 Wood Protection Company

City, State: Houston, TX

Site Spill ID

3. Type of Activity

Lead		Pre-Remedial		Remedial		Removal	
SF				RIFS		CLEM	
PRP		PA		RD		REMA	
ST	X	SSI	X	RA		REM	
FED		LSI		O&M		OIL	
				NPLD		UST	

5. Ship To: Southwest Labs of Oklahoma, 1700 West Albany, Suite C, Broken Arrow, OK 74012

ATTN: Missy Hamby

6. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. $NaHSO_4$
4. H_2SO_4
5. Other (Specify)
6. Ice only
N. Not preserved

7. Sample Description (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Rinsate
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify)

CLP Sample Numbers (from labels)	A Enter # from Box 7	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative from Box 6	E RAS Analysis VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Number	H Mo/Day/Year/Time Sample Collection	I Sampler Initials	J Corresp. CLP Inorg. Samp. No.	K Enter Appropriate Qualifier for Designated Field QC (B = Blank S = Spike D = Duplicate PE = Perform. Eval. — = Not a QC Sample)
FX349	2	L	G	6		1	1		6-011017→018	GW2	10/21/92 1115	BRV	MFW349	—
FX350	2	L	G	6		1	1		6-011023→024	GW3	10/21/92 1115	BRV	MFW350	D
FX351	2	L	G	6		1	1		6-011029→030	GW4	10/21/92 1200	BRV	MFW351	—

Shipment for Case complete? (Y/N) Y

Page 1 of 1

Sample used for a spike and/or duplicate: FX 347

Additional Sampler Signatures: [signature]

(14) day RTRND 10K

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Brian Vandergles	10/21/92 1400	Federal Express			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

Split Samples: [X] Accepted (Signature) [ ] Declined

EPA Form 9110-2 (Rev. 5-91) Replaces EPA Form (2075-7), previous edition which may be used

DISTRIBUTION:
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SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS

C043259

Org-1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

Site Name Wood Protection

Case# 18932

SDG# MFW-224

Date: 12-31-1992

Subject: CLP Data Review

From: Dr Melvin Ritter , Chemist , Region VI M.C. Ritter

To : L. Ross , 6H-MA , Region VI

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section.
Samples were:

INORGANIC:	MFW-224			
	MFW-226 TO			
	MFW-232			
ORGANIC:				

The data was found:

( ) Acceptable

(X) Provisional; use of data requires caution. Problems are noted in Review Summary.

( ) Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

cc: Mahmoud El-Feky, 6E-HO
Mike Hiatt, EMSL/Las Vegas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

MEMORANDUM

Date: 12-31-1992

Subject: CLP Data Review

From: Mahmoud El-Feky, Data Coordinator , Region VI

To: Dr. Melvin Ritter , Chemist , Region VI

Attached is the data review summary for Site Wood Protection
Case # 18932
SDG # MFW-224

Data was found: ( ) Acceptable

(X) Provisional

( ) Unacceptable

Action required by TPO: ( ) Yes

(X) No

COMMENTS:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 18932
LABORATORY SKINER (MA)
CONTRACT # 68-D0-0109
SDG # MFW224
SOW# ILM02.1
ACCT # 3TGBDN35 SF # TGBUZZ

SITE Wood Protection
NO. OF SAMPLES/
MATRIX 8 soil
REVIEWER (IF NOT ESD) ESAT
REVIEWER'S NAME Mike Fertitta
COMPLETION DATE December 30, 1992

SAMPLE NOs.: MFW224, MFW226, MFW227, MFW228, MFW229, MFW230, MFW231, MFW232

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CYANIDE
1. HOLDING TIMES	O	O	O	O
2. CALIBRATIONS	O	O	O	O
3. BLANKS	X	X	O	O
4. ICS	O			
5. LCS	O	O	O	O
6. DUPLICATE ANALYSIS	O	O	O	O
7. MATRIX SPIKE	X	X	O	O
8. MSA		N/A		
9. SERIAL DILUTION	O			
10. SAMPLE VERIFICATION	O	O	X	O
11. OTHER QC	N/A	X	N/A	N/A
12. OVERALL ASSESSMENT	X	X	X	O

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.
N/A= Not applicable

ACTION ITEMS: Blank concentrations were above the instrument detection limits; matrix spike recoveries were below the lower quality control limit; the percent relative standard deviations for duplicate FAA injections were above 20% for both the initial determination and the rerun for one sample, and furnace atomic absorption analytical spike recoveries were outside of the quality control limits for seven of thirty-two determinations.

AREAS OF CONCERN: A custody seal was not placed on the box containing the CSF.

NOTABLE PERFORMANCE: Duplicate and serial dilution results met technical quality control criteria. Mercury and cyanide met quality control criteria.

4. ICS

Interference check sample criteria were met.

5. LCS

All laboratory control sample results were acceptable.

6. **Duplicate Analysis**

All duplicate results met technical quality control criteria.

7. **Matrix Spike**

A. The antimony, selenium, and zinc results are qualified as estimated (J and UJ) due to pre-digestion matrix spike recoveries of 48.6%, 65.8%, and 69.8%, respectively. Matrix interference is suspected.

B. All other analytes had acceptable pre-digestion/pre-distillation matrix spike recoveries.

8. MSA

The method of standard addition was not required.

9. **Serial Dilutions**

All serial dilution results met quality control criteria.

10. **Sample Verification**

A. A custody seal was not placed on the box containing the CSF. ILM01.0, F-6, 2.5 states, "...shipments require custody seals on the containers placed such that they cannot be opened without damaging or breaking the seal." The laboratory was contacted for clarification.

B. Mercury results were not reported for a second LCSS and a second PBS prepared with samples on November 9, 1992. The laboratory was contacted for resubmission.

11. Other QC

A. Furnace Atomic Absorption (FAA) Quality Control

1. The selenium result for sample MFW229 is qualified as estimated (UJ) because the percent relative standard deviations for duplicate FAA injections were above 20% for both the initial determination and the rerun and the FAA analytical spike recovery was 61.1% for the rerun. Matrix interference is suspected.

INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No. 18932 SDG No. MFW224 SDG Nos. To Follow SAS No. Date Rec 11/27/92

EPA Lab ID: SKINER
Lab Location: Waltham, MA
Region: 6 Audit No.: I944MJF
Re_Submitted CSF? Yes _____ No X
Box No(s): 1
COMMENTS:

1 A custody seal was not placed on the package containing the CSF. The laboratory was contacted for clarification.

3 Page numbers were reversed for two consecutive pages (pages 90 and 91) during pagination of ICP raw data. Necessary corrections were made on the pages by the auditor.

Over for additional comments.

ORIGINALS	YES	NO	N/A
CUSTODY SEALS			
1. Present on package?		X	
2. Intact upon receipt?			X
FORM DC-2			
3. Numbering scheme accurate?		X	
4. Are enclosed documents listed?	X		
5. Are listed documents enclosed?	X		
FORM DC-1			
6. Present?	X		
7. Complete?	X		
8. Accurate?	X		
CHAIN-OF-CUSTODY RECORD(s)			
9. Signed?	X		
10. Dated?	X		
TRAFFIC REPORT(s) PACKING LIST(s)			
11. Signed?	X		
12. Dated?	X		
AIRBILLS/AIRBILL STICKER			
13. Present?	X		
14. Signed?	X		
15. Dated?	X		
SAMPLE TAGS			
16. Does DC-1 list tags as being included?	X		
17. Present?	X		
OTHER DOCUMENTS			
18. Complete?	X		
19. Legible?	X		
20. Original?		X	
20a. If "NO", does the copy indicate where original documents are located?	X		

Audited by: Michael J. Fertitta — Michael J. Fertitta/Data Reviewer — Date 12/29/92
Audited by: _____ — _____ — Date _____
Audited by: _____ — _____ — Date _____
Signature — Printed Name/Title

TO BE COMPLETED BY CEAT

Date Recvd by CEAT: _____ Date Entered: _____ Date Reviewed: _____
Entered by: _____ _____
Reviewed by: _____ _____
Signature — Printed Name/Title

In Reference to
Case 18932 SDG MFW224

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

FAX Record Log

Date of FAX: December 31, 1992

Laboratory Name: SKINER

Lab Contact: Richard P. Purdy

Region: 6

Regional Contact: Michael J. Fertitta (ESAT)

Initiated by: Region

In reference to data for the following sample numbers:

MFW224, MFW226, MFW227, MFW228, MFW229, MFW230, MFW231, MFW232

Summary of Questions/Issues:

A. A custody seal was not placed on the box containing the CSF. ILM01.0, F-6, 2.5 states, "...shipments require custody seals on the containers placed such that they cannot be opened without damaging or breaking the seal." Please use custody seals on all future shipments.

B. Mercury results were not reported for a second LCSS and a second PBS prepared with samples on November 9, 1992. Please resubmit Forms 3, 7, and 14 with these results included.

Summary of Resolutions:

Region expects lab to look into this question and submit the completed Signature Form within fourteen days after receiving it to:

Attn: Christy Macdowell - ESAT
c/o US EPA Regional Laboratory
10625 Fallstone Road
Houston, TX 77099

Michael J. Fertitta — 12/31/92
Signature — Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

ManTech Environmental Technology, Inc.
ESAT Region 6

c/o US EPA 10625 Fallstone Road, Houston, TX 77099 (713) 983-2243

FACSIMILE COVER SHEET

Please deliver the following pages to:

Name Richard P. Purdy

Firm SKINER

City Waltham State MA

Telephone (617) 890-7200 Ext. _____

Fax Telephone No. (617) 890-3883 Ext. _____

Sender:

Name Michael J. Fertitta

Date December 31, 1992 Time _____

Total Number of pages including this Cover Sheet 2.

If you do not receive all the pages or if any pages are unclear, please call: (713) 983-2243.

MESSAGES: _____

Fax Model No. Panafax UF-620 Fax No. (713) 983-2248

EPA

United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

Inorganic Traffic Report & Chain of Custody Record

(For Inorganic CLP Analysis)

SAS No. (if applicable)

Case No. 18932

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		6	ENGINEERING-SCIENCE	10/20/92	FEDERAL EXPRESS

Regional Information

Sampler (Name): J. A. BAILEY

Airbill Number: 2601034833

Non-Superfund Program

Sampler Signature: [signature]

5. Ship To: SKINNER & SHERMAN, 300 SECOND AVENUE, WALTHAM, MA 02254

ATTN: JEFF DEPAOLO

Site Name: TXD059345116 WOOD PROTECTION COMPANY

City, State: HOUSTON, TX

Site Spill ID

3. Type of Activity

	Lead	Pre-Remedial	Remedial	Removal
SF			RIFS	CLEM
PRP		PA	RD	REMA
ST	X	SSI X	RA	REM
FED		LSI	O&M	OIL
			NPLD	UST

6. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (Specify) N. Not preserved

7. Sample Description (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Rinsate 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify)

CLP Sample Numbers (from labels)	A Enter # from Box 7	B Conc. Low Med High	C Sample Type: Comp/Grab	D Preservative from Box 6	E - RAS Analysis: Metals Total	Metals Dissolved	Cyanide	Low Conc. only: Nitrate/Nitrite	Fluoride	High only: pH	Conductivity	F Regional Specific Tracking Number or Tag Numbers	G Station Location Number	H Mo/Day/Year/Time Sample Collection	I Sampler Initials	J Corresp. CLP Org. Samp. No.	K Enter Appropriate Qualifier for Designated Field QC (B = Blank S = Spike D = Duplicate PE = Perform. Eval. — = Not a QC Sample)
MFW224	5	L	G	6	X		X					6-024170	SO-1	10/20/92;1350	[illegible]	FX424	—
~~MFW225~~	~~5~~	~~L~~	~~G~~	~~6~~	~~X~~		~~X~~					~~6-024174~~	~~SO-2~~	~~10/20/92;~~	~~[illegible]~~	~~FX425~~	~~S~~ BRV
MFW226	5	L	G	6	X		X					6-024178	SO-3	10/20/92;1415	[illegible]	FX426	—
MFW227	5	L	G	6	X		X					6-024182	SO-4	10/20/92;1445	[illegible]	FX427	—
MFW228	5	L	G	6	X		X					6-024186	SO-5	10/20/92;1445	[illegible]	FX428	D
MFW229	5	L	G	6	X		X					6-024190	SO-6	10/20/92;1500	[illegible]	FX429	—
MFW230 ~~233~~	5	L	G	6	X		X					6-024194	SE-1	10/20/92;1305	[illegible]	FX430	—
MFW231	5	L	G	6	X		X					6-024198	SE-2	10/20/92;1330	[illegible]	FX431	—
MFW232	5	L	G	6	X		X					6-024202	SE-3	10/20/92;1330	[illegible]	FX432	D

Shipment for Case complete? (Y/N): Y

Page 1 of 1

Sample used for a spike and/or duplicate: ~~SO-2~~ BRV SO-6

Additional Sampler Signatures: [signature]

Chain of Custody Seal Number

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	10/20/92 1630	FEDERAL EXPRESS			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

Split Samples: ☒ Accepted ☐ Declined (Signature) [signature] 10/20/92

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS

EPA Form 9110-1 (Rev. 5-91) Replaces EPA Form (2075-6), previous edition which may be used

DISTRIBUTION: Green - Region Copy Pink - SMO Copy White - Lab Copy for return to Region Yellow - Lab Copy for Return to SMO

Inorg-1

I 340263

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

Site Name Wood Protection

Case # 18932

SDG# MFW-347

Date : 1-5-1993

Subject: CLP Data Review

From: Dr Melvin Ritter , Chemist , Region VI M.C. Ritter

To : L. Ross , 6H-MA , Region VI

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section. Samples were:

INORGANIC: MFW-347
MFW-349
MFW-350
MFW-351

ORGANIC:

The data was found:

( ) Acceptable

(X) Provisional; use of data requires caution. Problems are noted in Review Summary.

( ) Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

cc: Mahmoud El-Feky, 6E-HO
Mike Hiatt, EMSL/Las Vegas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD.
HOUSTON, TEXAS 77099

MEMORANDUM

Date: 1-5-1993

Subject: CLP Data Review

From: Mahmoud El-Feky, Data Coordinator ,Region VI

To: Dr. Melvin Ritter , Chemist , Region VI

Attached is the data review summary for Site Wood Protection
Case # 18932
SDG # MFW-347

Data was found: ( ) Acceptable
(X) Provisional
( ) Unacceptable

Action required by TPO: ( ) Yes
(X) No

COMMENTS:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 18932
LABORATORY Skinner/Sherman (MA)
CONTRACT # 68-D0-0109
SDG # MFW347
SOW# ILM02.1
ACCT # 3TGBDN35 SF # TGBUZZ

SITE Wood Protection
NO. OF SAMPLES/
MATRIX 4/water
REVIEWER (IF NOT ESD) ESAT
REVIEWER'S NAME Victor Chapman
COMPLETION DATE Jan. 4, 1993

SAMPLE NO.: MFW347, MFW349, MFW350, MFW351

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CYANIDE
1. HOLDING TIMES	O	O	O	O
2. CALIBRATIONS	O	O	O	O
3. BLANKS	X	O	O	O
4. ICS	O			
5. LCS	O	O		
6. DUPLICATE ANALYSIS	O	O	O	O
7. MATRIX SPIKE	O	X	O	X
8. MSA		NA		
9. SERIAL DILUTION	O			
10. SAMPLE VERIFICATION	O	O	X	O
11. OTHER QC	NA	X	NA	NA
12. OVERALL ASSESSMENT	X	X	X	X

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.
N/A= Not applicable

ACTION ITEMS: Blank concentrations were above the instrument detection limits; matrix spike recoveries were outside of the quality control limits, and furnace atomic absorption analytical spike recoveries exceeded the quality control limits for six of twelve determinations.

AREAS OF CONCERN:

NOTABLE PERFORMANCE: All duplicate, and serial dilution quality control criteria were met.

6. **Duplicate Analysis**

All duplicate results met technical quality control criteria.

7. **Matrix Spike**

A. Pre-digestion/Pre-distillation Matrix Spike Recovery

1. The arsenic, selenium, and thallium sample results are qualified as estimated (J and UJ) due pre-digestion matrix spike recoveries of 70.6%, 38.0%, and 42.8%, respectively. Matrix interference is suspected.

2. The cyanide sample results are qualified as estimated (UJ) due to a 74.1% pre-distillation matrix spike recovery.

B. All other analytes had acceptable pre-digestion/pre-distillation matrix spike recoveries.

8. MSA

The method of standard addition was not required.

9. **Serial Dilutions**

All serial dilution results met quality control criteria.

10. **Sample Verification**

The 5.0 ppm mercury calibration peak on pages 120 and 122 is 101 millimeters, not 111 mm. The laboratory should recalculate and resubmit the mercury results. The reviewer calculated that these results met QC criteria.

11. **Other QC**

A. Furnace Atomic Absorption Quality Control

1) The selenium results for samples MFW349 and MFW351 are qualified as estimated (UJ) due to FAA analytical spike recoveries of 78.3% and 74.1%, respectively. Matrix interference is suspected.

2) The thallium results for samples MFW347, MFW349, MFW350, and MFW351 are qualified as estimated (UJ) due to FAA analytical spike recoveries of 39.6%, 42.5%, 45.4%, and 39.6%, respectively. Matrix interference is suspected.

INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No.	18932	SDG No.	MFW347	SDG Nos. To Follow	SAS No.	Date Rec	11-30-92

EPA Lab ID: SKINER

Lab Location: WALTHAM, MA

Region: 6 Audit No.: 1948.VAC

Re_Submitted CSF? Yes ____ No X

Box No(s): ONE

COMMENTS:

Over for additional comments.

ORIGINALS	YES	NO	N/A
CUSTODY SEALS			
1. Present on package?	X		
2. Intact upon receipt?	X		
FORM DC-2			
3. Numbering scheme accurate?	X		
4. Are enclosed documents listed?	X		
5. Are listed documents enclosed?	X		
FORM DC-1			
6. Present?	X		
7. Complete?	X		
8. Accurate?	X		
CHAIN-OF-CUSTODY RECORD(s)			
9. Signed?	X		
10. Dated?	X		
TRAFFIC REPORT(s) PACKING LIST(s)			
11. Signed?	X		
12. Dated?	X		
AIRBILLS/AIRBILL STICKER			
13. Present?	X		
14. Signed?	X		
15. Dated?	X		
SAMPLE TAGS			
16. Does DC-1 list tags as being included?	X		
17. Present?	X		
OTHER DOCUMENTS			
18. Complete?	X		
19. Legible?	X		
20. Original?		X	
20a. If "NO", does the copy indicate where original documents are located?	X		

	Signature	Printed Name/Title	Date
Audited by:	V. A. Chapman	V. A. Chapman, Jr./ESAT Data Reviewer	1-4-93
Audited by:			
Audited by:			

TO BE COMPLETED BY CEAT

Date Recvd by CEAT: ____ Date Entered: ____ Date Reviewed: ____

Entered by: ____ ____

Reviewed by: ____ ____

Signature Printed Name/Title

In Reference to Case
18932 SDG MFE347
Page 1 of 1 pages

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

FAX Record Log

Date of FAX: January 5, 1993

Laboratory Name: Skinner and Sherman

Lab Contact: David N. Peterson

Region: 6

Regional Contact: Victor Chapman (ESAT)

FAX Initiated by: Region

In reference to data for the following sample numbers:

MFW347, MFW349, MFW350, MFW351

Summary of Questions/Issues:

The 5.0 ppm mercury calibration peak on pages 120 and 122 is 101 millimeters, not 111 mm. Please recalculate and resubmit the mercury results.

Summary of Resolutions:

The EPA expects the laboratory to look into items and submit data within fourteen days to Christy Macdowell, U.S. EPA, 10625 Fallstone Road, Houston TX 77099.

V. A. Chapman
Signature

1-5-93
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

DATA SUMMARY

NUMBERS IN CIRCLES ARE FOR ANALYTICAL SPIKE RECOVERIES

Case No. 18932

Laboratory SKINER

Matrix WATER

Units UG/L

EPA TR #	MFW347													COMMENTS
Lab I.D.	MFW347	MFW349	MFW350	MFW351										
Aluminum	38800	288	355	24.7 B										
Antimony														
Arsenic	6.2BN	31BN	3.7BN	2.2BN										
Barium	402	223	222	155 B										
Beryllium	3.4B													
Cadmium														
Calcium	78000	67200	66900	42500										
Chromium	37.0													
Cobalt	17.7B	3.0B	3.0B	1.3B										
Copper	17.4B													
Iron	29200	239	246	53.2B										
Lead	12.9													
Magnesium	31500	25200	25000	3690										
Manganese	197	46.0	46.0	134										
Mercury	0.42	0.55	0.24											
Nickel	35.8B		43.5											
Potassium	7730	720B	765B	1430B										
Selenium	EN	WN 78.3	N	WN 94.1										
Silver														
Sodium	90500	120000	118000	55500										
Thallium	WN 39.6	WN 42.5	WN 45.4	WN 89.6										
Tin														
Vanadium	54.6	4.2B	5.2B											
Zinc	70.5	9.9B	7.2B	21.4										
Cyanide	N	N	N	N										
% Solids														

EPA

United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

Inorganic Traffic Report & Chain of Custody Record

(For Inorganic CLP Analysis)

SAS No. (if applicable):

Case No.: 18932

1. Project Code:
Account Code:
2. Region No.: 6
Sampling Co.: ENGINEERING-SCIENCE
4. Date Shipped: 10/21/92
Carrier: FEDERAL EXPRESS

Regional Information:
Sampler (Name): JOYCE A. BAILEY
Airbill Number: 279681 3342

Non-Superfund Program:
Sampler Signature: [signature]
5. Ship To: SKINNER & SHERMAN, 300 SECOND AVE., WALTHAM, MA 02254
ATTN: JEFF DEPAOLO

Site Name: TXD059345116 WOOD PROTECTION COMPANY
City, State: HOUSTON, TX
Site Spill ID:

3. Type of Activity

	Lead	Pre-Remedial	Remedial	Removal
SF			RIFS	CLEM
PRP		PA	RD	REMA
ST	X	SSI X	RA	REM
FED		LSI	O&M	OIL
			NPLD	UST

6. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (Specify)
N. Not preserved

7. Sample Description (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Rinsate
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify)

CLP Sample Numbers (from labels)	A Enter # from Box 7	B Conc. Low Med High	C Sample Type: Comp/Grab	D Preservative from Box 6	E - RAS Analysis: Metals Total	Metals Dissolved	Cyanide	Low Conc. only: Nitrate/Nitrite	Fluoride	High only: pH	Conductivity	F Regional Specific Tracking Number or Tag Numbers	G Station Location Number	H Mo/Day/Year/Time Sample Collection	I Sampler Initials	J Corresp. CLP Org. Samp. No.	K Enter Appropriate Qualifier for Designated Field QC (B = Blank, S = Spike, D = Duplicate, PE = Perform. Eval., — = Not a QC Sample)
MFW347	2	L	G	2/3	X		X					6-011013→016	GW-1	10/21/92 1015	[illegible]	FX347	-
MFW349	2	L	G	2/3	X		X					6-011021→022	GW-2	10/21/92 1115	[illegible]	FX349	-
MFW350	2	L	G	2/3	X		X					6-011027→028	GW-3	10/21/92 1115	[illegible]	FX350	D
MFW351	2	L	G	2/3	X		X					6-011033→034	GW-4	10/21/92 1200	[illegible]	FX351	-

Shipment for Case complete? (Y/N): Y
Page 1 of 1
Sample used for a spike and/or duplicate: ~~GW-2/ MFW349~~ MFW347
Additional Sampler Signatures: [signature]
Chain of Custody Seal Number:

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	10/21/92 1400	Federal Express			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

Split Samples: ☒ Accepted (Signature) [signature] 10/21/92
☐ Declined

EPA Form 9110-1 (Rev. 5-91) Replaces EPA Form (2075-6), previous edition which may be used

DISTRIBUTION:
Green - Region Copy Pink - SMO Copy White - Lab Copy for return to Region Yellow - Lab Copy for Return to SMO

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS

Inorg-1

1 340264

Appendix C

Reference Material

Reference 1

EC 3/26/85

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION	SITE NUMBER (to be assigned by HQ)
6	TX 13692

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II (*Preliminary Assessment*). File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (*EN-335*); 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION TXD 059 345 116

A. SITE NAME: Wood Protection Company

B. STREET (*or other identifier*): 5151 South Loop East

C. CITY: Houston

D. STATE: Texas

E. ZIP CODE: 77033

F. COUNTY NAME: Harris

G. OWNER/OPERATOR (*if known*)
1. NAME: Marc Hoover, General Manager
P.O. Box 33376
Houston, TX 77033
2. TELEPHONE NUMBER: (713) 233-7421

H. TYPE OF OWNERSHIP
☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION
Company which treats wood products using chromated copper arsenate (CCA)

J. HOW IDENTIFIED (*i.e., citizen's complaints, OSHA citations, etc.*)
TDWR

K. DATE IDENTIFIED (*mo., day, & yr.*)
November 1984

L. PRINCIPAL STATE CONTACT
1. NAME: Daniel Scheppers, TDWR
2. TELEPHONE NUMBER: (512) 475-6371

II. PRELIMINARY ASSESSMENT (*complete this section last*)

A. APPARENT SERIOUSNESS OF PROBLEM
☐ 1. HIGH ☐ 2. MEDIUM ☐ 3. LOW ☐ 4. NONE ☒ 5. UNKNOWN

B. RECOMMENDATION
☐ 1. NO ACTION NEEDED (*no hazard*)
☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:
☐ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:
☒ 4. SITE INSPECTION NEEDED (*low priority*)

C. PREPARER INFORMATION
1. NAME: Robert H Davis, Jr., Engineering Science
2. TELEPHONE NUMBER: (512) 477-9901
3. DATE (*mo., day, & yr.*): 1/11/84

III. SITE INFORMATION

A. SITE STATUS
☒ 1. ACTIVE (*those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if intermittently.*)
☐ 2. INACTIVE (*those sites which no longer receive wastes.*)
☐ 3. OTHER (*specify*): (*those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.*)

SUPERFUND FILE

B. IS GENERATOR ON SITE?
☐ 1. NO ☒ 2. YES (*specify generator's four-digit SIC Code*): 2491

APR 29 1992

C. AREA OF SITE (*in acres*): 10 (estimated)

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES
1. LATITUDE (*deg.—min.—sec.*): 29° 37'30"
2. LONGITUDE (*deg.—min.—sec.*): 95° 20'30"

REORGANIZED

E. ARE THERE BUILDINGS ON THE SITE?
☐ 1. NO ☒ 2. YES (*specify*): office, lumber shelter, warehouse, treatment area

Continued From Front

CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

	A. TRANSPORTER		B. STORER		C. TREATER		D. DISPOSER
		X		X			
	1. RAIL		1. PILE		1. FILTRATION		1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE	X	3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
	4. TRUCK		4. TANK, ABOVE GROUND	X	4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS. TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY		8. OTHER (specify):
					9. OTHER (specify):		

E. SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

TDWR SW registration indicated that facility has a drum storage area. Correspondence in the file indicates that wastewater is reused and sludge is broken down with sulfuric acid and kept in the process.

V. WASTE RELATED INFORMATION

A. WASTE TYPE

[ ] 1 UNKNOWN [X] 2. LIQUID [ ] 3. SOLID [ ] 4. SLUDGE [ ] 5. GAS

B. WASTE CHARACTERISTICS

[ ] 1. UNKNOWN [ ] 2. CORROSIVE [ ] 3. IGNITABLE [ ] 4. RADIOACTIVE [ ] 5 HIGHLY VOLATILE
[X] 6. TOXIC [ ] 7. REACTIVE [ ] 8. INERT [ ] 9. FLAMMABLE

[ ] 10. OTHER (specify):

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

Unknown

2. Estimate the amount (specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT None	AMOUNT None	AMOUNT None	AMOUNT Unknown	AMOUNT None	AMOUNT None
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
X (1) PAINT, PIGMENTS	X (1) OILY WASTES	X (1) HALOGENATED SOLVENTS	X (1) ACIDS	X (1) FLYASH	X (1) LABORATORY PHARMACEUT.
(2) METALS SLUDGES	(2) OTHER (specify):	(2) NON-HALOGNTD. SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER (specify):	(3) CAUSTICS	(3) MILLING/ MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMLTG. WASTES	(4) MUNICIPAL
(5) OTHER (specify):			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER (specify):
			(6) CYANIDE	(6) OTHER (specify):	
			(7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			X (10) METALS		
			(11) OTHER (specify)		

Continue On Page 3

Continued From Page 2

V. WASTE RELATED INFORMATION (continued)

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE (place in descending order of hazard).

Chromates, Arsenic

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

See attached comments

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD (mark 'X')	C. ALLEGED INCIDENT (mark 'X')	D. DATE OF INCIDENT (mo., day, yr.)	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY	X			Potential hazard due to nature of chemicals used in process:
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER				
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL		X	10/12/82	TDWR inspection revealed contaminated areas around one pressure cylinder due to a leaky seal. Company allegedly repaired.
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER (specify):				

Continue On Reverse

VII. PERMIT INFORMATION

A. INDICATE ALL APPLICABLE PERMITS HELD BY THE SITE.

- [ ] 1. NPDES PERMIT
- [ ] 2. SPCC PLAN
- [ ] 3. STATE PERMIT (specify): TDWR SW 32010
- [ ] 4. AIR PERMITS
- [ ] 5. LOCAL PERMIT
- [ ] 6. RCRA TRANSPORTER
- [ ] 7. RCRA STORER
- [ ] 8. RCRA TREATER
- [ ] 9. RCRA DISPOSER
- [X] 10. OTHER (specify): EPA ID NO. TXD 05 934 5116

B. IN COMPLIANCE?

- [ ] 1. YES
- [ ] 2. NO
- [X] 3. UNKNOWN

C. WITH RESPECT TO (list regulation name & number):

VIII. PAST REGULATORY ACTIONS

- [ ] A. NONE
- [X] B. YES (summarize below)

Letter of TAC noncompliance, issued 2/15/83

IX. INSPECTION ACTIVITY (past or on-going)

- [ ] A. NONE
- [ ] B. YES (complete items 1, 2, 3, & 4 below)

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION (mo., day, & yr.)	3. PERFORMED BY: (EPA/State)	4. DESCRIPTION
SW compliance	10/12/82	TDWR	Pressure cylinder leak noted
			Company corrected and improved runoff controls

X. REMEDIAL ACTIVITY (past or on-going)

- [X] A. NONE
- [ ] B. YES (complete items 1, 2, 3, & 4 below)

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION (mo., day, & yr.)	3. PERFORMED BY: (EPA/State)	4. DESCRIPTION

NOTE: Based on the information in Sections III through X, fill out the Preliminary Assessment (Section II) information on the first page of this form.

RCRA 3012 PRELIMINARY ASSESSMENT COMMENTS
WOOD PROTECTION COMPANY
HOUSTON, TEXAS
HARRIS COUNTY

INTRODUCTION

On December 18, 1984, Robert H. Davis, Jr., Engineering Science, Inc. conducted a RCRA 3012 preliminary assessment of the Wood Protection Company facility located in Houston, Texas. The assessment consisted of a review of available file information and off-site surveillance with photographs.

SITE INFORMATION AND OBSERVATIONS

The company treats wood products with chromated copper arsenate (CCA) and flame retardant (containing ammoniated inorganic phosphates). Sumps are in place to collect treating solution for reuse. According to the company, rainwater is also collected and mixed with the chemicals so that contaminated runoff does not occur. In February, 1983, a TDWR inspector reported that sulfuric acid is added periodically to breakdown any accumulated sludge.

The surveillance revealed that the plant is enclosed by a wooden privacy fence. Five upright white tanks, lumber shelters, a treatment area, and the main office were observed. Details of the treating area were not visible. Surrounding land uses are commercial and residential.

ASSESSMENT

The site has undergone one TDWR solid waste compliance inspection. The file information indicated that TAC deficiencies determined from the inspection were cleared up by the company. Although treatment chemicals are apparently reused in the process, a low priority site inspection is recommended to confirm past and present waste management practices and to determine whether nearby surface or groundwaters could be impacted by the facility.

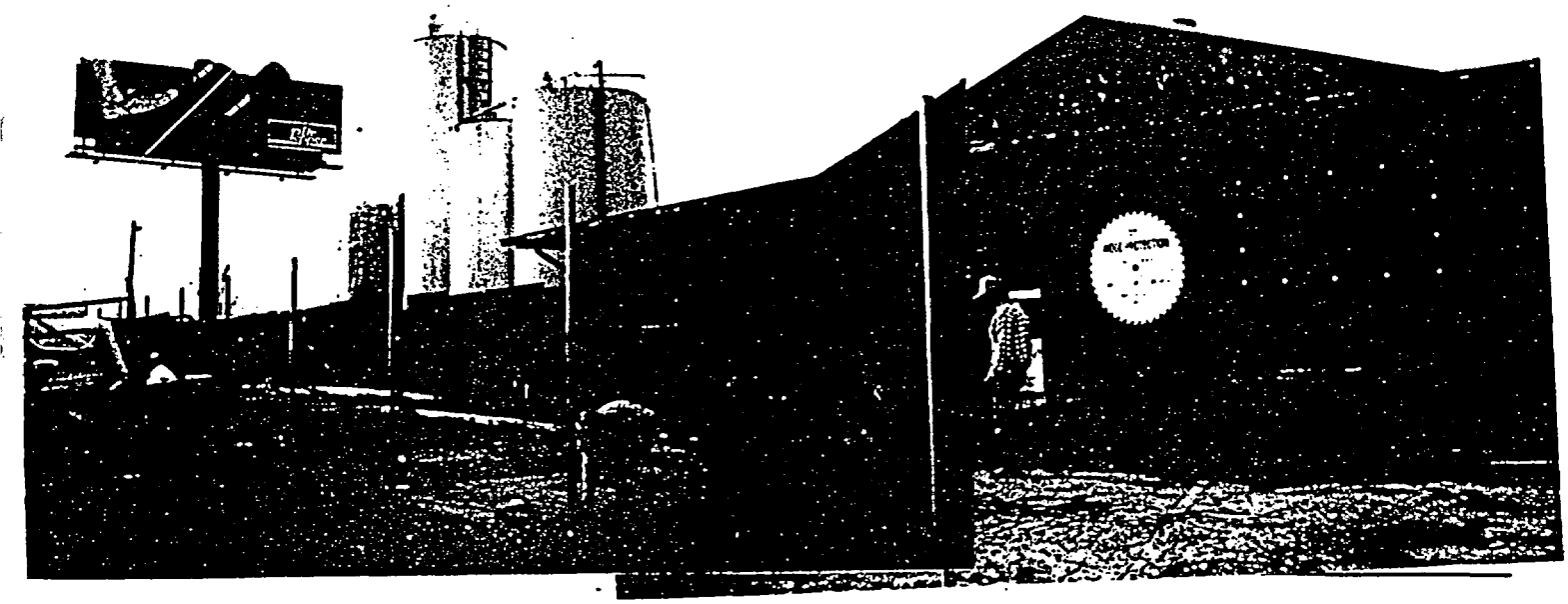
Photographer / Witness

R H Davis - Engineering Science

Date / Time / Direction

12-18-84 / 3:50 pm / N.W

Comments: Front of facility from South Loop 610



Photographer / Witness

Date / Time / Direction

Comments:

Reference 3

SCREENING SITE INSPECTION
Field Log Book

WOOD PROTECTION COMPANY
TXD 059345 116
Harris County, Texas
Site No. TX 13692

AUTHORS

LEAD INVESTIGATOR: JOYCE BAILEY (JAB)
ASSISTANT INVESTIGATOR: Brian Vanderglas (BRV)

III. SITE RECONNAISANCE

DATE/TIME	COMMENTS	SKETCH/ MAP REFERENCE
~~10/20/92~~	~~0845-1030~~	
10/19/92	1300-1500	
	1. Identified 15 residences directly north of site on Idaho Street. House numbers marked on sketch.	14
	2. Identified Yellowstone Baptist Church north of site.	14
	3. Identified adjacent landuse as being Strip mall & rental company (East) & Fingers Furniture Wkrs (West). South is 610 Loop, with residences beyond That.	14
	4. Kandy Stripe Academy Day Care Center located SE of site.	14
	5. YMCA located NE of site.	14
	6. Located Industrial Metal Finishing - appeared to be a plater or similar activity (tanks, etc.). Metal bldg. located on Perry past Sydney crossing. Phone no. is 747-6700; 4200 Perry. This is where water wells were identified.	
	7. Water in drainage ditch NO property, although not apparently flowing, not stagnant. Lush grasses in some areas.	
	8. Went to University of Houston main campus — M.D. Anderson Library and reviewed and copied selected pages from map and census documents with area population information. UH Library: 743-1050 on Calhoun, downtown Houston. Population information broken down by tract ∴ obtained selected tract info. only.	

III. SITE RECONNAISSANCE (CONTINUED)

DATE/TIME	COMMENTS	SKETCH/ MAP REFERENCE	DATE/TIME

SURFACE WATER PATHWAY

1. Distance to PPE > 2 miles.

~~1~~ 3. Habitat does not exist – residential, commercial industrial area w/i 4 mi radius.

SOIL EXPOSURE PATHWAY

2. No. residences: 15 w/i 200'; highly populated w/i 1/2 mi (too many to count).

3. Day cares – see notes p. 6

4. Offsite run-off – see notes p. 6 & 12-14.

5. Absent – see 3/Surface Water Pathway, above.

AIR PATHWAY

6. Obtained addresses, see p. 14

7. See pp 8-9

8. See 3/Surface Water Pathway, above.

GROUNDWATER PATHWAY

2. Use of Ind. Metal Finishing Wells – see pp 8-9.

V. RECORDS REVIEWED AND DOCUMENTS COLLECTED

A. RECORDS REVIEWED

	SOURCE	DATE	DESCRIPTION
1.	WPC	10/20/92	"Environmental Audit for Wood Protection Company" Prepared by Ott Engineering, August 1988
2.	WPC	10/20/92	"Hydrogeological Study for Wood Protection Company" Prepared by Ott Engineering, March 31, 1982
3.	WPC	10/20/92	", October 1989/1990

B. DOCUMENTS COLLECTED

SOURCE	DATE	DESCRIPTION
No. 1 above		— cover transmittal letter; figure (no. 2 pg cut-off) of sample locations, analytical reports
No. 2 above		— figure 4 (partial-cut off); ~~two~~ three profile figures (no. 2 pg cut-off), figures 7 & 8 — 10, 6 other figures (" " "), water well reports: 360' deep well, 88-1, 89-2, 89-3, 89-4; analytical reports.
No. 3 above		: ~~Fig 7~~ well report: PW-1

Comment: Heading numbers correspond to workplan items under "REQUIRED INFO" (DATA GAPS)

VI: SITE SURVEY NOTES

DATE/TIME	OBSERVATION	SKETCH REFERENCE
10/20/92	0845-1300 1030: Interview/Site Walk-Through: Joel Tigatt; Jim Moncrief	
	WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION	
	1. Property and facility ownership: WPC is wholly owned subsidiary of Osmose. About 1/2 (W side) of property is owned by WPC. Other 1/2 (E side) is owned by Estate of C.E. King and leased to WPC through year 2001. WPC/Osmose does not own Exter Right of way.	16/17
	Property goes only to fenceline (then becomes R.R. right of way)	
	3. Tank Contents	15
	T1 Water (WW-1)	
	T2 K-33 Concentrate (≤ 50% CCA)	
	T3 "	
	T4 "	
	T5 "	
	T6 Water Contaminated w/CCA From Drip Pad	
	T7 K-33 Concentrate (≤50% CCA)	
	T8 CCA Treating Cylinder	
	T9 Portable cylinder worktank	
	T10 CCA Treating Cylinder	
	T11 "	
	T12 Stormwater	
	T13 Water fm. Vacuum Pumps or PW-5	
	~~T14~~	
	Add'l Tank Diesel - 3,000 gal.	
	4. No underground storage tanks.	
	5. Location & areal extent of past drippage/spills: Area of 2000 gallon spill identified in earlier transmitted documents — now covered w/ concrete. Pick-up obvious drippage routinely & dispose through Osmose. Leaking treatment cylinder area identified in sketch.	15

VI. SITE SURVEY NOTES (CONTINUED)

DATE/TIME	OBSERVATION	SKETCH REFERENCE	DATE/TI
	7. Preservative dripping inspected for, picked up, disposed through Osmose.		
	8. See no. 5	15	
	9. No soil affected, ∴ no soil removed; occurred over drip pad area.		1
	10. 7/22/86 Correspondence apparently has typo, should be July 20-22 (not June) when samples were collected. Jim Moneiry verified that this data represented "2000 gal" spill area.		In:
	13. Past Practices: Joel believes no creosote was used; heavy oil PCP, mineral oil PCP. No record of disposal of material prior to 1972. WPC never used PCP.		WA:
	GROUNDWATER PATHWAY		
	3. GTI's 8/26/91 proposed site assessment was not conducted		
	4/5. Obtained copies of selections fm. Off reports referenced in GTI proposal & elsewhere.		
	SURFACEWATER PATHWAY		
	1. On-site drainage: Drippad → recycles sump; stormwater to N storm sewer & S ditch.		
	2. Site drainage ditch present. flows E.		S
	SOIL EXPOSURE PATHWAY		
	6 No. workers at WPC: 24.		
	8. 9. Disposition of soil ~~samp~~ represented by sample no. 5 collected 9/25/90: not known, sampling not known. 12/11/87 analytical rpt: sketch attached does not sp w/; prob. goes w/ 9/80 sampling.		
	10. 4/86 UST sample points - see sketch for tank locations.	17	
	11. 7/21/86 sampling event - use WPC figure, not GTI drawing.		
	13. Rationale for Osmose's request to remove 2-3" topsoil fm Exter right-of-way: Tom Marsh (Osmose) requested		AIR

VI. SITE SURVEY NOTES (CONTINUED)

REMLE	DATE/TIME	OBSERVATION	SKETCH REFERENCE

as conservative approach based on historical practices prior to drip pad installation. No specific reason identified.

14/15. Analytical reports obtained through copies of HH documents.

AIR PATHWAY

1. No releases of hazardous substance to air have occurred except when the tank spilled the ~2000 gallons of CCA earlier described.

Inspection Conducted during Site Survey

WASTE CONTAINMENT / HAZARDOUS SUBSTANCE IDENTIFICATION.

1. Confirmed / corrected site layout plan – see sketches pp 15-17
5. Ground cover inside brick retaining wall is concrete.
11. Most of site is covered w/ concrete with exceptions of laydown areas, which are a limestone fill (~1'); access ways between are concrete. Curbing extends from drip pad N & S and also W on S end. See sketch.
12. ~~Uncovered~~ areas are drip pads; wood stacks. Some white wood is stored under cover.

SOIL EXPOSURE PATHWAY

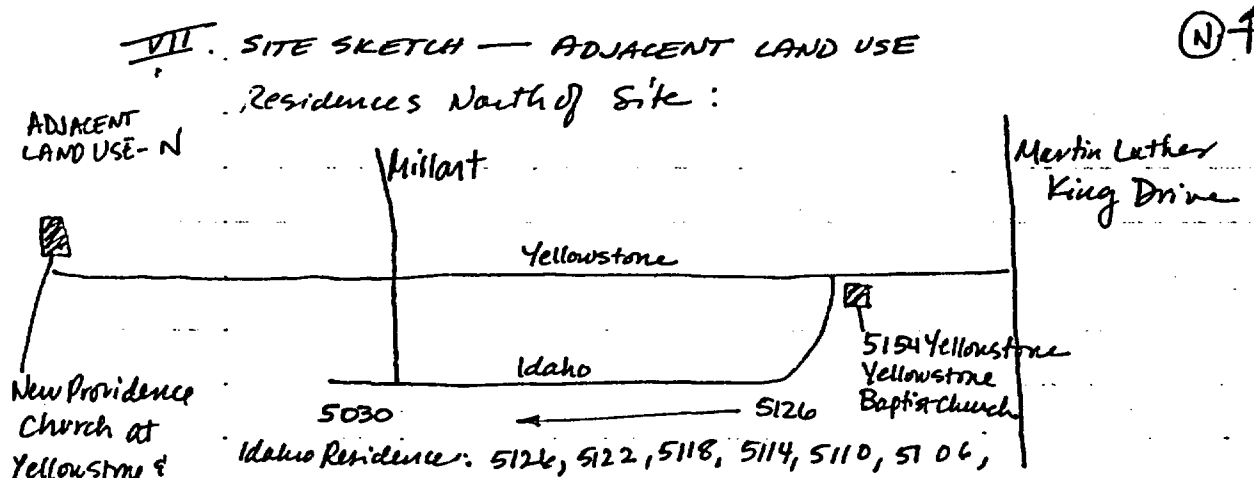
1. Three entries: 2 on 610 Loop feeder (S side of property) one on N side, E end. WPC has had problems with unlawful entry. All 3 gates are locked at night. All property is chainlink fence – 3 strand barbed wire.
7. Saw no stains, evidence of releases, except green-stain on drip pad.

AIR PATHWAY

2. No stains, except on drip pad
3. Tanks closed; cylinders closed except to remove or place wood.

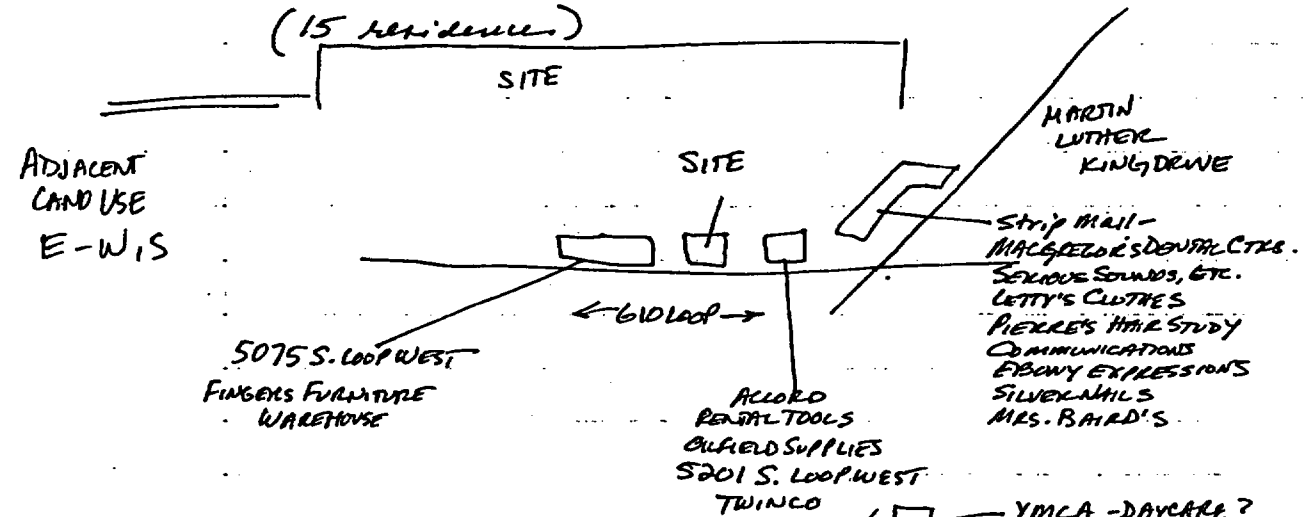
VII. SITE SKETCH — ADJACENT LAND USE

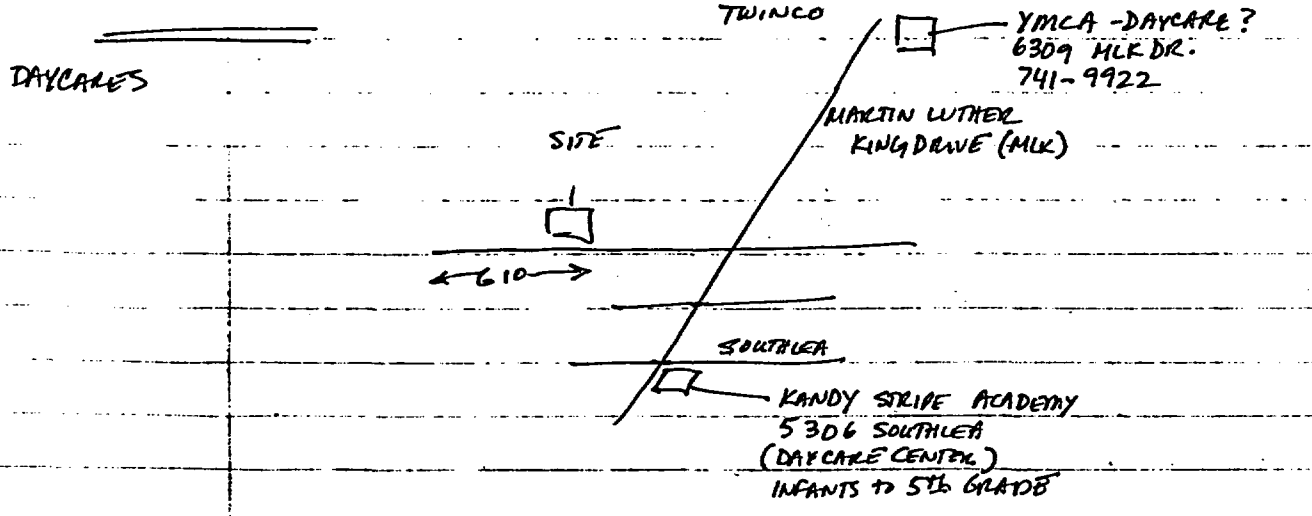
Residences North of Site:



Idaho Residences: 5126, 5122, 5118, 5114, 5110, 5106, 5102, 5058, 5054, 5050, 5046, 5042, 5038, 5034, 5030

(15 residences)





X

~~XI~~. COMMUNICATIONS/INTERVIEWS WITH OWNER/OPERATOR

A. PHONE INTERVIEWS CONDUCTED PRIOR TO FIELD INVESTIGATION

1. Phone interview with General Manager, Wood Protection Company, Houston, TX
Phone No.: 733-7421 Date: 9/22/92
Contact/Title: Joel Tigett, Genl Mgr. Time: 1645
ES Contact: Joyce Bailey
Prepared Questions:
- Existing analytical data for clean-up of spills/leaks/or drippage referenced in agency (TWC/TWDB) records: preservative drippage, leaking treatment cylinder (10/12/82); tank spill (6/30/86); (prior to June, 1980) City of Houston data?

Asked for Max Hoover and was referred to Joel Tigett, President/General Manager for last 2 yrs. Mr. Tigett was not clear on exactly what incidents I was referring to, but stated there are 4 groundwater monitoring wells on site. Quarterly monitoring is scheduled, but not necessarily conducted on schedule. Only sampling conducted for one well with questionable data; other three are not. Soil samples were also collected prior to Tigett's employment with the company.

Everything on treating end of plant is concrete-covered. Lumber storage area is comprised of both concrete/non-concrete areas.

The City of Houston information,

I

COMMUNICATIONS/INTERVIEWS WITH OWNER/OPERATOR (CONTINUED)

which I referenced by date and analytical results and description ("off property (E side)), is not from area that is covered with concrete. Tigett said this was puddle in driveway to Entex.

The groundwater data had been provided to the Texas Water Commission district office in January 1992. I indicated my file search there disclosed data/records up to 1988 only. His contact Linda Kuhn.

Tigett said that WPC is owned by Osmose and is a licensee.

The groundwater sampling was conducted at Osmose's request. Osmose purchased OH Engineering to assist licensees; OH did soil sampling at WPC at Osmose's request. The samples were analyzed by the Osmose Lab. Samples were collected in storage area in July 1986 and January 1987.

I arranged to have the existing analytical data couriered to the ES office on Thursday, September 24, 1992, for pick up at WPC between 2 and 3 pm.

Document were picked up at arranged time. Document listing is maintained in project file.

~~XII~~ COMMUNICATIONS/INTERVIEWS WITH OWNER/OPERATOR (CONTINUED)

2. Informing Joe Tigett of Field Schedule.
10/12/92 2:00 p.m. indicated we would be at the facility on Tues, Wed, Thurs (October 20-22) of next week. On Tues, we will reconcile site information (actual) with information in our records. On Wednesday and Thursday, sampling will be conducted: soil, sediment and groundwater – The former two on & off site. Mr. Tigett asked if anyone should accompany us; he expressed concern that we would speak with new employees no familiar with the site operations. I stated that I did not anticipate. Thus, that we would be interested in historical information regarding the facility. I indicated he, his appointee or ~~none~~ no one could accompany us, and that this was also subject to plant health and safety requirements. I also discussed groundwater sampling with Mr. Tigett, and that we intended to leave ~~process~~ groundwater purge water for reuse in the process, consistent with current sump water and recovery well water utilization. He agreed to this. He indicated that an employee of Osmose would coincidentally be at the facility on ~~Sat~~ Tuesday and might participate in interviews or accompany us.

3. 10/12/92 3:30. Mr. Tigett called to say that Osmose personnel recommended split samples. He inquired as to number of samples and analytical parameters. Sent list via fax to 713/733-3697 at about 3:30pm on 10/12.
10/13/92 At Mr. Tigett's request, refaxed on 10/13; he did not receive 10/12 copy.

X/XII: COMMUNICATIONS / INTERVIEWS WITH OWNER/OPERATOR (CONTINUED)

4. 10/~~13~~14/92 10:25 am. I called Mr. Digitt to let him know that Steve Hamm of the TWC District Office would be accompanying us or be present on Wednesday during the field work. I explained that we were obligated to contact the district office and Mr. Hamm was exercising his option to be there. Mr. Digitt thanked me for letting him know and said he had no problem with Mr. Hamm's present.

He asked about the type of bottles needed for sampling. I said I did not know, and could only tell him what we used for CLP sampling, where samples for organic and inorganic analyses went to different laboratories. I indicated that we used the following:
Ea. Soil sample location: 2-8oz. wide mouth jars with Teflon-lined lids and 1-4oz. wide mouth jar.
Ea Drinking water sample: 2-2.5l amber bottles, 2-4 or 8 0ml VOAs, and 2-500ml plastic bottles, one preserved with acid, the other preserved alkaline. I noted that this was for drinking water sampling, and that we would not be collected drinking water samples — groundwater samples only.

I also said that typically, the laboratory he used would provide the bottles and ~~and~~ preservatives for the required analyses.

I referred him to the fax information regarding number of sample locations.

~~XI~~ ~~XII~~: COMMUNICATIONS / INTERVIEWS WITH OWNER/OPERATOR (CONTINUED)

5. 10/16/92 11:30am. Informed Mr. Tigett that we might begin sampling on Tuesday.
6. 10/20/92 8:30-10:30am. Interview with Mr. Tigett and Jim Moncrief, reviewing data gaps from work plan and outlining layout of site.
7. 12/21/92 10:30 am. Spoke w/ Joel Tigett re:
   a. the 2 former USTs (were pulled): how long were they there? Joel doesn't know, because they were installed prior to WPC's ownership of the property, so before 1972.
   b. The April 1989 sample event referred to in the January 1992 letter to the TNC: where were these samples collected? Under the pumping well, or within that area; within about 10' of the pumping well. Depth? Believed to be ~ 20'. Will confirm.
   c. Contained drip pad washwater: CCA, flameproof, creosote; potentially PCP (depends on past owner's use).

12/21/92 3:35 pm. Joel Tigett, WPC, return call.
- area of contamination was around MW-3 not PW-1 (pumping well); 4/5/89 15 ppm PCP in groundwater (see Groundwater Technology, Inc., 8/26/91, Comprehensive site assessment - proposal, Table II). Could not locate data supporting statement that there was contamination in soil; could have been a misstatement.

Reference 4

Wood Protection Co.

P.O. BOX 330376 • HOUSTON, TEXAS 77233-0376
713/733-7421 • FAX: 713/733-3697
TEXAS INWATS: 1-800-392-5670

AE

CERTIFIED # P 083 002 969

January 30, 1992

Ms. Linda Kuhn
Spill & Emergency Coordinator
Texas Water Commission
5144 East Sam Houston Parkway
Houston, Texas 77015

RE: HISTORICAL GROUNDWATER CONTAMINATION

Dear Ms. Kuhn:

Wood Protection Company is a lumber treating plant started in 1951. The treating plant property is owned by the estate of C.E. King and is leased to Wood Protection Company until the year 2001. Prior to the purchase of the facility by Osmose Wood Preserving Company of America in 1972, wood treating operations had used pentachlorophenol (PCP). Since 1972, only chromated copper arsenate has been used for treating.

In an effort to have this plant lead by example, Osmose encouraged investigations to be conducted in 1986, 1987, 1988, and 1989 to ensure that the facilities operations were not harming the environment. These studies were directed primarily toward investigating for the presence of copper, chromium, and arsenic in the soil and groundwater.

The sampling round conducted on April 5, 1989, included an analysis for PCP and indicated the presence of PCP in soil and groundwater in a small area of the facility. Subsequent investigations were conducted in October 1989, December 1990, April 1991, and December 1991. The highest PCP concentration detected in the groundwater for these studies was 10.8 PPM in December of 1990. A portion of our make-up water is taken from water wells, and the use of this groundwater reduced the concentration to 4.4 PPM by December of 1991.

Reference 5

AU332.12

HYDROGEOLOGICAL STUDY

FOR

WOOD PROTECTION COMPANY

Prepared For:

Wood Protection Company
P.O. Box 330376
Houston, Texas 77233-0376

Prepared By:

Ott Engineering, Inc.
1016 Everee Inn Road
Griffin, Georgia 30223

By: Joan G. Hutton
Joan G. Hutton, M.S.
Senior Hydrogeologist
Project Manager

March 31, 1989
M1010.02

and is described as:

> containing 5.2965 acres of land being Tracts 17Q, 23B, 23B-1, 23C and 23H in the W.C.R.R. Co. Survey, Sect. 1 A-936, recorded in Vol. 46, Pg. 36, Harris County, Texas

4. BACKGROUND

Wood treating operations have been ongoing for almost 40 years, with ownership by Penta-Wood Life Vacuum Treated Company from 1951 to 1972. During this time, pentachlorophenol was the principal wood preservative in use. In 1972 the property was acquired by Osmose Wood Preserving Co. of America, doing business as Wood Protection Company. After acquisition, pentachlorophenol was discontinued and Chromated Copper Arsenate ("CCA") was used.

Preservatives currently used are: (1) Chromated Copper Arsenate-50% (also known as, K-33-C or CCA-C), (2) Flameproof LHC and (3) Sunwood.

CCA is a chemical solution comprised of arsenic pentoxide, copper oxide and chromic acid designed for the pressure impregnation of wood for protection against decay, termites and marine borers. Flameproof LHC is a formulation of fire retardant chemicals (ammoniated inorganic phosphates) and is applied during the pressure treating process. An original Flameproof formulation (a mixture of ammonium sulfate, ammonium phosphate, polybor (a boron compound) and, in some cases, ammonium thiocyanate, a corrosion inhibitor) was used until mid-1982 when its manufacture was discontinued due to excessive hygroscopicity.

Sunwood, a trade name for color stained wood, is a nonhazardous dye applied during pressure treating.

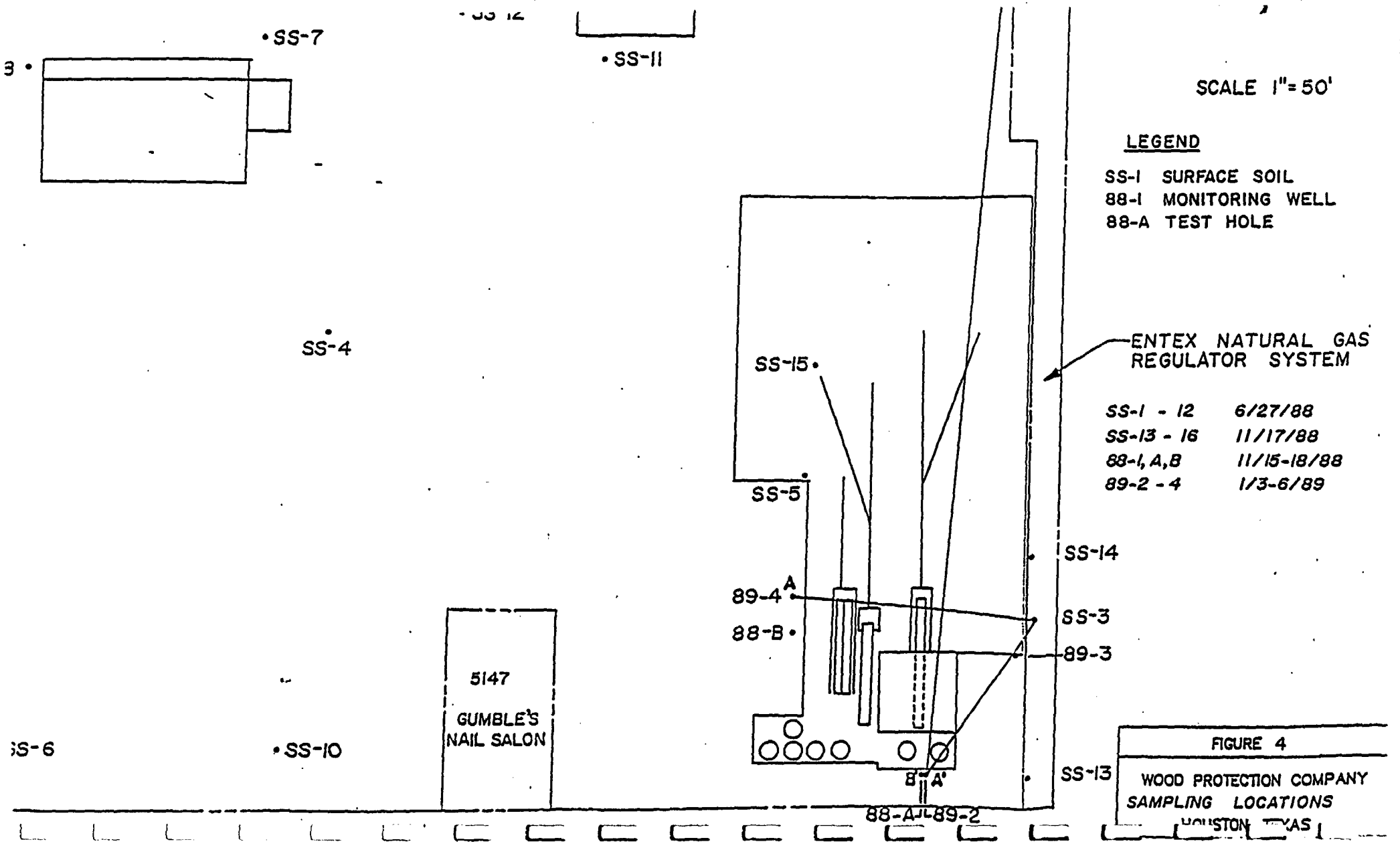
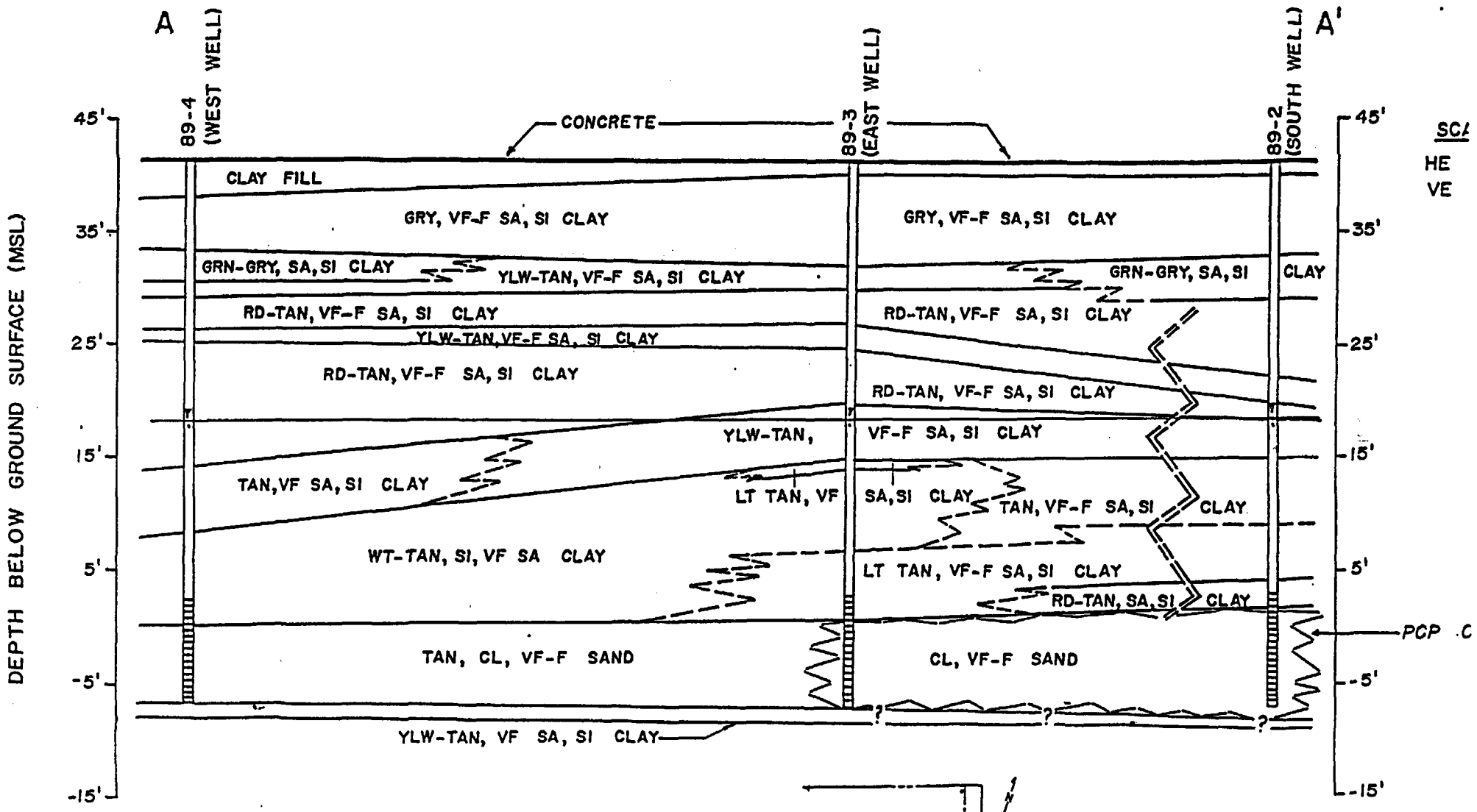
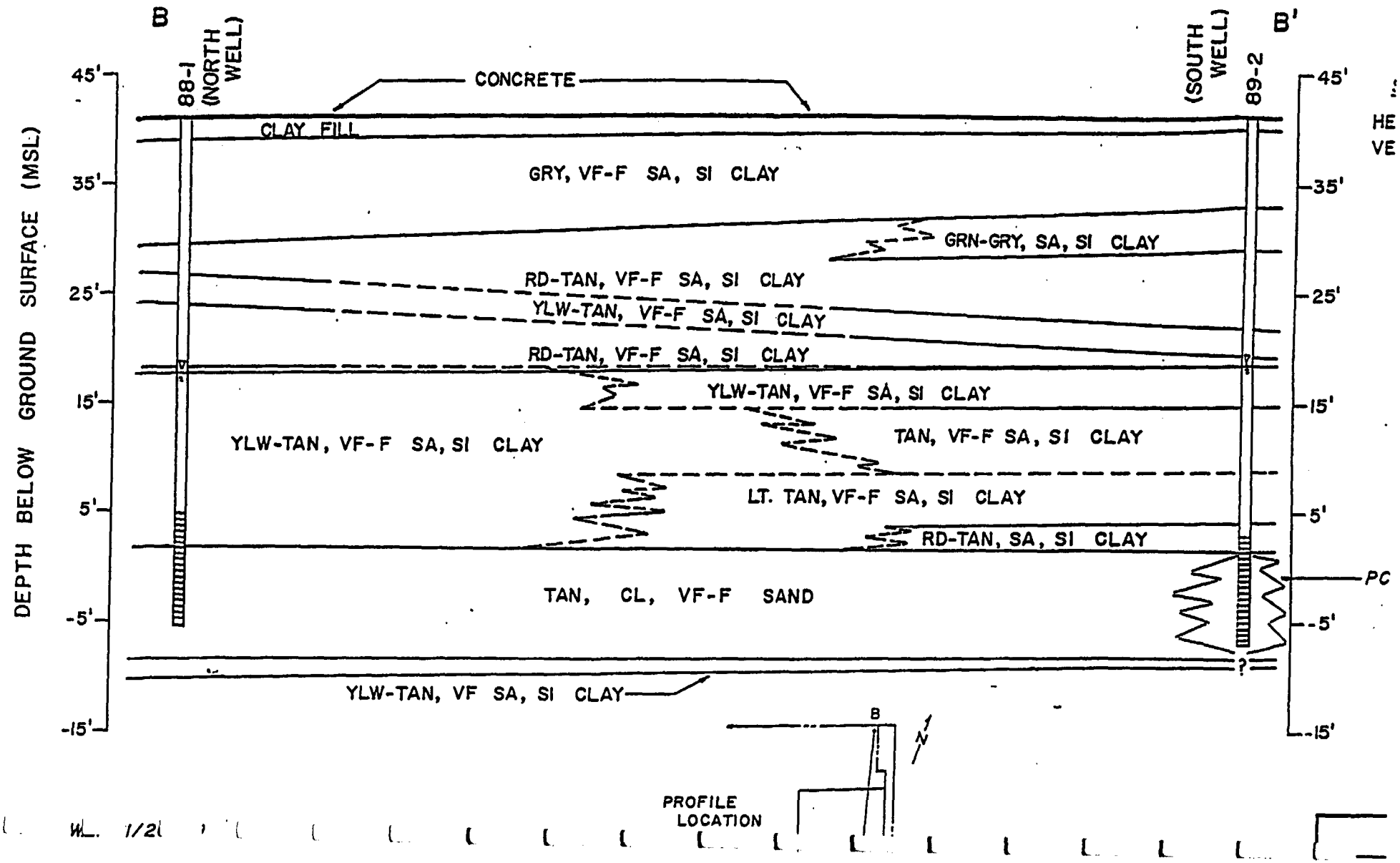


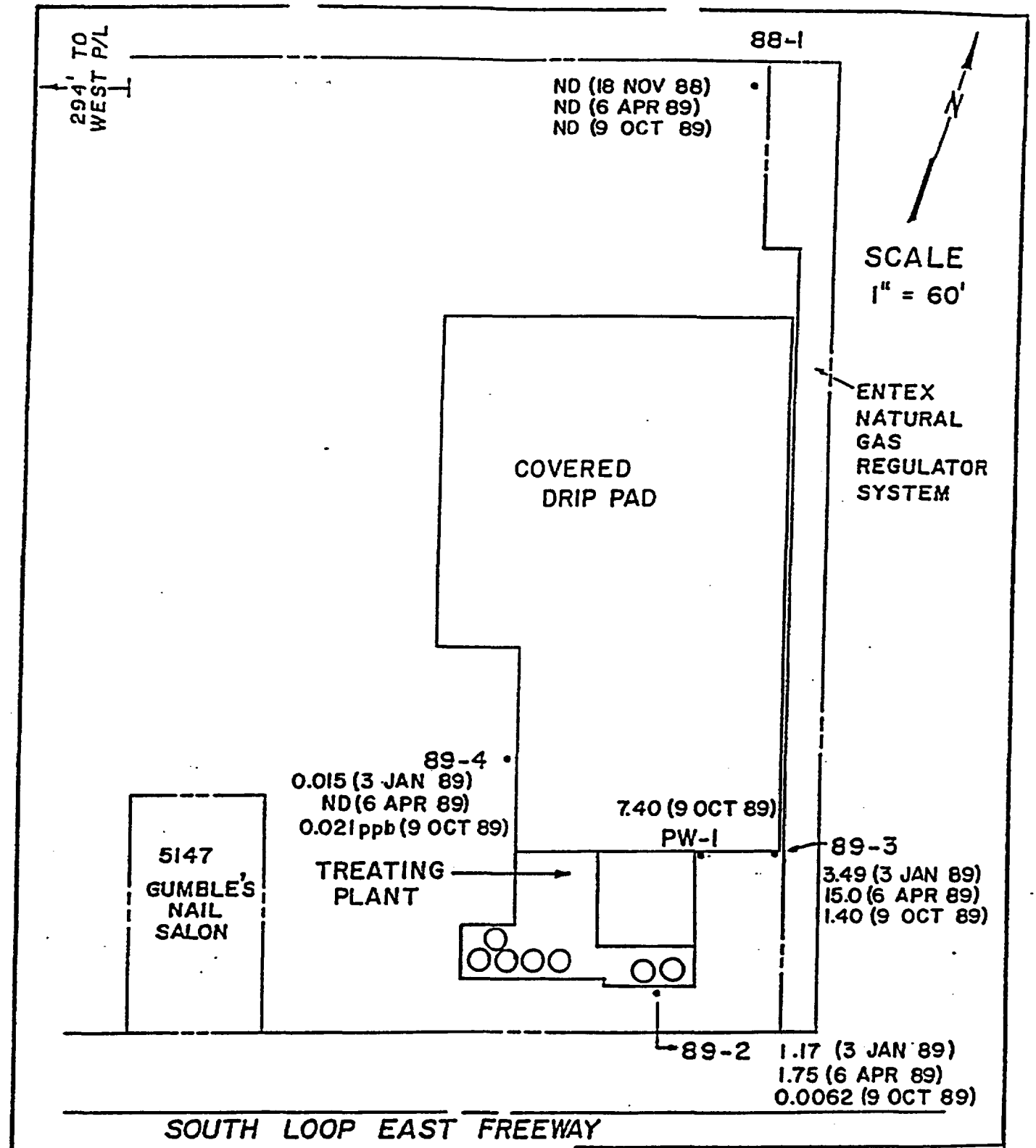
FIGURE 4

WOOD PROTECTION COMPANY
SAMPLING LOCATIONS
HOUSTON, TEXAS


A
A'
89-4 (WEST WELL)
89-3 (EAST WELL)
89-2 (SOUTH WELL)
CONCRETE
DEPTH BELOW GROUND SURFACE (MSL)
45'
35'
25'
15'
5'
-5'
-15'
CLAY FILL
GRY, VF-F SA, SI CLAY
GRN-GRY, SA, SI CLAY
YLW-TAN, VF-F SA, SI CLAY
RD-TAN, VF-F SA, SI CLAY
YLW-TAN, VF-F SA, SI CLAY
RD-TAN, VF-F SA, SI CLAY
YLW-TAN,
VF-F SA, SI CLAY
TAN, VF SA, SI CLAY
LT TAN, VF
SA, SI CLAY
TAN, VF-F SA, SI
CLAY
WT-TAN, SI, VF SA CLAY
LT TAN, VF-F SA, SI CLAY
RD-TAN, SA, SI
CLAY
TAN, CL, VF-F SAND
CL, VF-F SAND
YLW-TAN, VF SA, SI CLAY
PCP

PROFILE


B
B'
88-1 (NORTH WELL)
(SOUTH WELL) 89-2
CONCRETE
CLAY FILL
GRY, VF-F SA, SI CLAY
GRN-GRY, SA, SI CLAY
RD-TAN, VF-F SA, SI CLAY
YLW-TAN, VF-F SA, SI CLAY
RD-TAN, VF-F SA, SI CLAY
YLW-TAN, VF-F SA, SI CLAY
YLW-TAN, VF-F SA, SI CLAY
TAN, VF-F SA, SI CLAY
LT. TAN, VF-F SA, SI CLAY
RD-TAN, SA, SI CLAY
TAN, CL, VF-F SAND
YLW-TAN, VF SA, SI CLAY
PC
DEPTH BELOW GROUND SURFACE (MSL)
45'
35'
25'
15'
5'
-5'
-15'
PROFILE LOCATION
N



LEGEND

- •88-1 2" MONITORING WELL
- •PW-1 4" PUMPING WELL
- PROPERTY LINE
- CENTERLINE ROAD

FIGURE 7

WOOD PROTECTION COMPANY
HOUSTON, TEXAS

PCP IN GROUNDWATER (ppm)

DATE: OCTOBER 1989

JOB NO. M1010.02

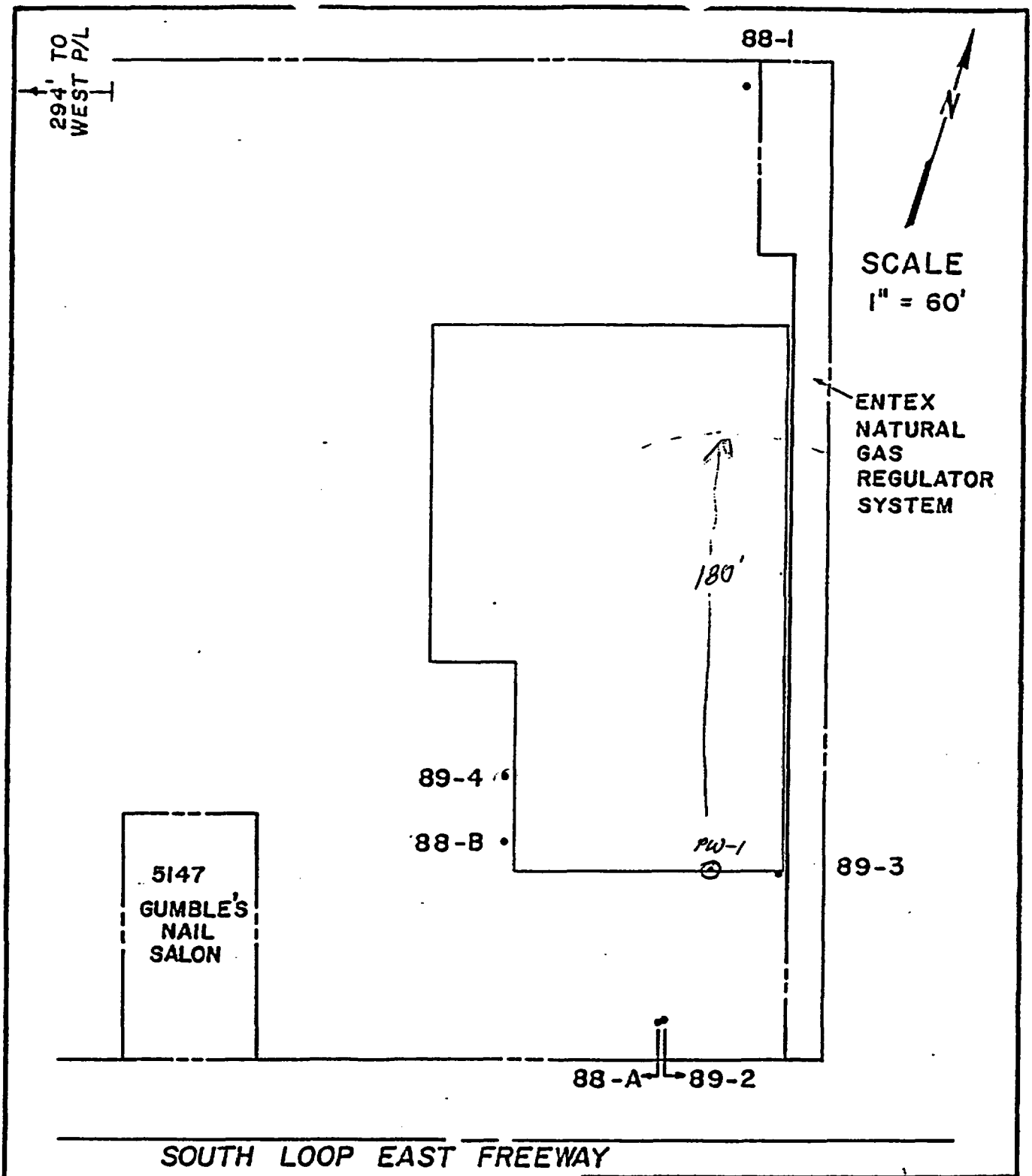


FIGURE 8

WOOD PROTECTION COMPANY
HOUSTON, TEXAS

BLOW-UP, EAST SIDE

DATE: 15 FEBRUARY 1989

JOB NO. M1010.02

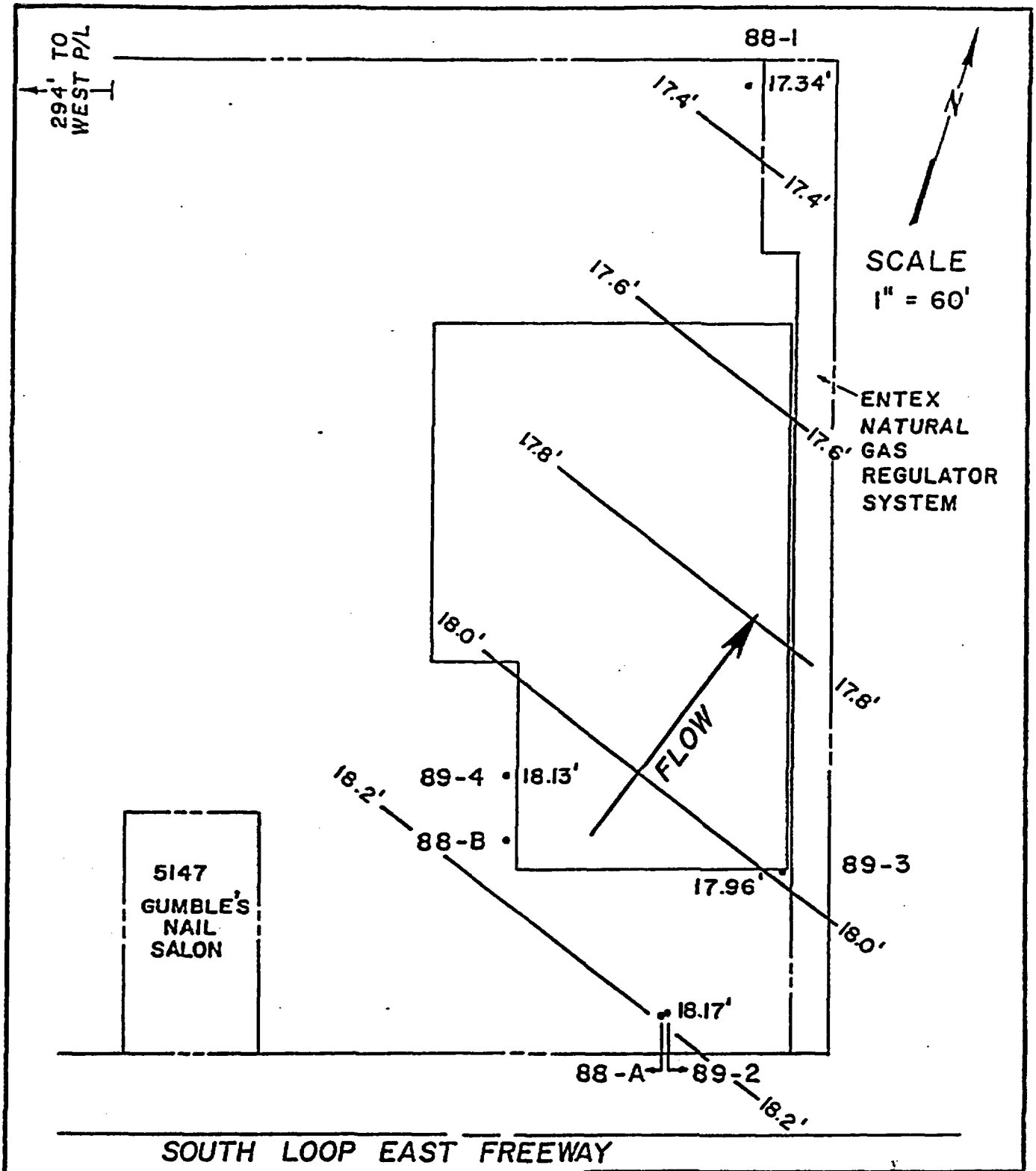


FIGURE 9

WOOD PROTECTION COMPANY
HOUSTON, TEXAS
PIEZOMETRIC SURFACE
20 JAN 89

DATE: 15 FEBRUARY 1989

JOB NO. M1010.02

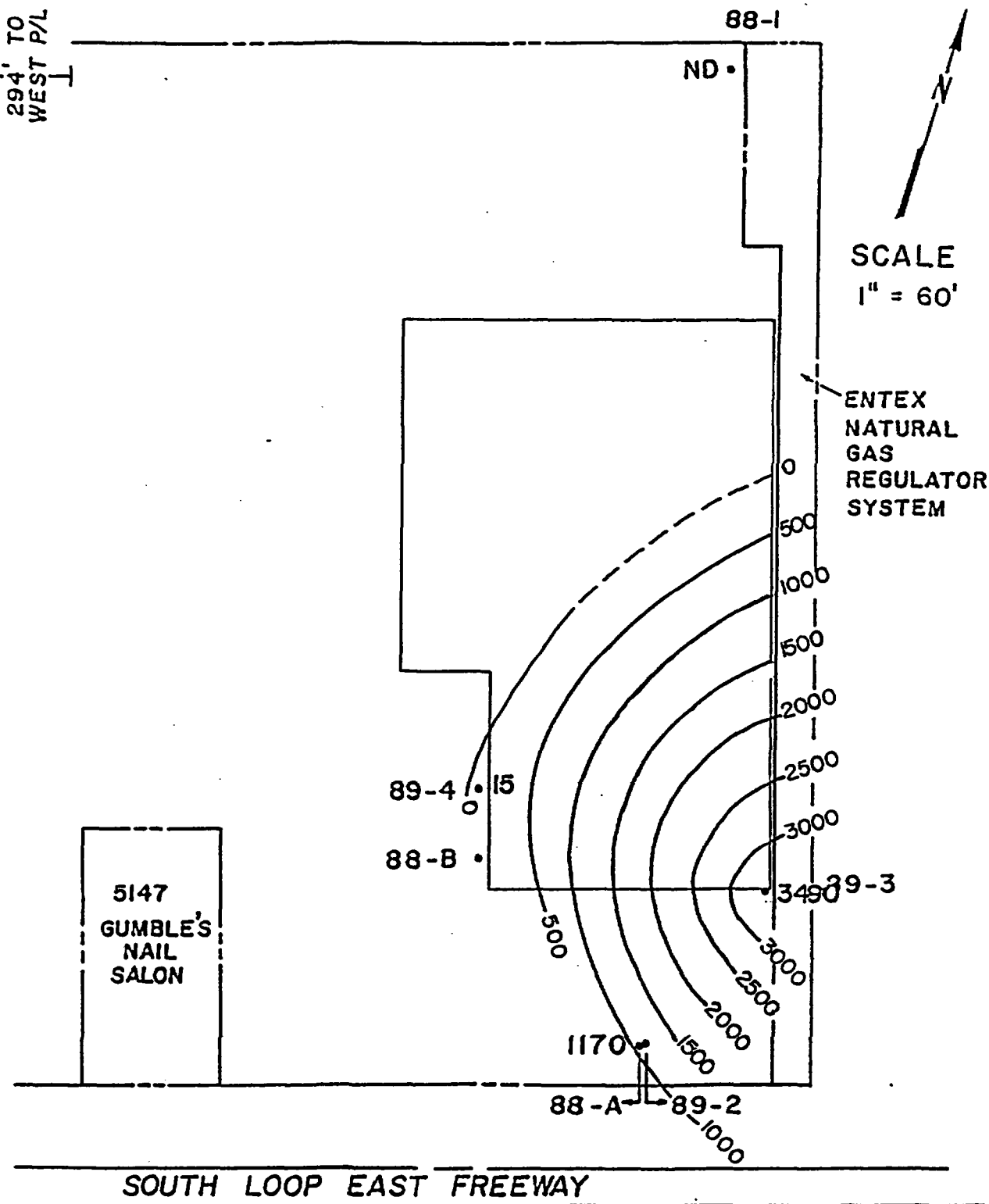


FIGURE 10

WOOD PROTECTION COMPANY
HOUSTON, TEXAS

CONTOUR OF PCP IN GROUNDWATER (ppb)

DATE: 15 FEBRUARY 1989

JOB NO. M1010.02

Reference 7

1509 Main Street, Suite 900
Dallas, Texas
75201-4809

214/744-1641

ICF TECHNOLOGY INCORPORATED

Memorandum

TO: Dave Wineman, Region VI RPO

THRU: K.H. Malone Jr., FITOM

THRU: Tim Hall, ICF - AFITOM

FROM: Heather Schijf, FIT Biologist

DATE: June 17, 1988

SUBJECT: PA Reassessment for the Wood Protection Co., located in Houston, Texas. CERCLA # TXD059345116, TDD # F-6-8804-36, PAN # FTX0735PAA.

The Wood Protection Company is an active facility which treats wood products with chromated copper arsenate (CCA) and a flame retardant containing ammoniated inorganic phosphates. The preservatives are obtained from the Osmose Company located in Griffin, Georgia, who, in addition, presently dispose of any hazardous waste that is generated by the facility. The 10 acre site, located in Houston, TX, has been in operation since 1952 and is currently monitored by the Texas Water Commission under RCRA and CERCLA.

Under RCRA, the facility is considered a small quantity generator of hazardous waste for sump sludge and waste spill material. Due to the presence of a concrete pad, the facility no longer generates waste spill material. Currently, the facility periodically disposes of sump sludge through the Osmose Company. At one time the facility was considered a periodic infrequent shipper and holds an EPA I.D. number for that status (see Attachment A). The plant holds a TWC Solid Waste Registration Permit (# 32010). In the past, waste generation was due to the accumulation of contaminated dirt from preservative drippage. The files imply that the common practice was to remove the spillage for disposal. Complete cleanup procedures since the company began operation in 1952 are unknown.

The facility fell under CERCLA in 1984, when it was identified as a potential hazardous waste site by the Texas Water Commission through a review of their files (see Attachment B). The identification form indicates that the potential exists for soil and groundwater contamination from creosote and its associated toxins. Documentation on the use of creosote at this facility was not available, and it is not known if wood preservatives other than CCA, have been used since the facility began operation in 1952.

SUPERFUND FILE

A compliance monitoring inspection was performed in October of 1982, by the Texas Water Commission (see Attachment C). The inspection report indicated a leaking treatment cylinder, for which a letter of non-compliance was issued (see Attachment D). The report also mentioned that the leakage had contaminated several areas surrounding the collection sump, creating an imminent threat of discharging into state waters. The site sketch and topographic map do not indicate drainage ditches or creeks leading from the site. According to past correspondence, the facility stopped its use of the cylinder until it was repaired. In addition, the TWC compliance report, mentioned that the facility used sulfuric acid to break down accumulated sludge in the sumps. The 1987 site inspection report stated that the facility no longer does this, and currently, any sludge which accumulates, is collected in 55 gallon drums and disposed of through the Osmose Company.

On July 1, 1986, the TWC performed an investigation in response to an anonymous complaint of the facility (see Attachment E). The complaint was due to a 2000 gallon spill of CCA from a 6 inch pipe leading from a tank. A retaining wall surrounding the tank area prevented the material from leaving the site. Twelve inches of top soil contaminated with CCA was removed and placed on plastic sheets to air dry. Once dry, the material was removed by the Osmose Company and shipped to Tennessee for disposal. It is not known if samples were collected to determine the effectiveness of the cleanup. In addition, it is unknown if cement or topsoil currently underlie the tank area.

The last CERCLA action, a site inspection on March 30, 1987 (see Attachment F), was performed by Jones and Neuse, Inc., a contractor for the Texas Water Commission - State Superfund Unit. The site inspection report indicated that the site is an active RCRA facility. Observations during the site visit indicated that waste was managed in an acceptable manner and collected for off-site disposal. Samples were not collected during this inspection.

Past correspondence states that in June of 1980, the facility installed a gently sloping concrete drip-pad to recover all chemical drippage from the wood treating process. The correspondence implies that this was a partial pad which was only present in the treatment area. In addition, the pad collects rainwater to prevent any contaminated runoff (see Attachment G). This rainwater is stored for future use in the preserving process. The rainwater and drippage is collected through a series of drains and sumps, and is recycled back into the process. Used preservative is also recycled through the sumps. In October of 1982, a retaining wall around the tank farm was installed. Drainage control is present in the form of roofing over most of the treatment areas to divert rainfall. The 1987 site inspection report and site sketch imply that the facility property is completely covered with concrete and surrounded by 6 inch curbs. It is not known when the remaining concrete was installed (see Attachment H). Drum storage areas are covered by roofing, and have a concrete base with a 6 inch curb.

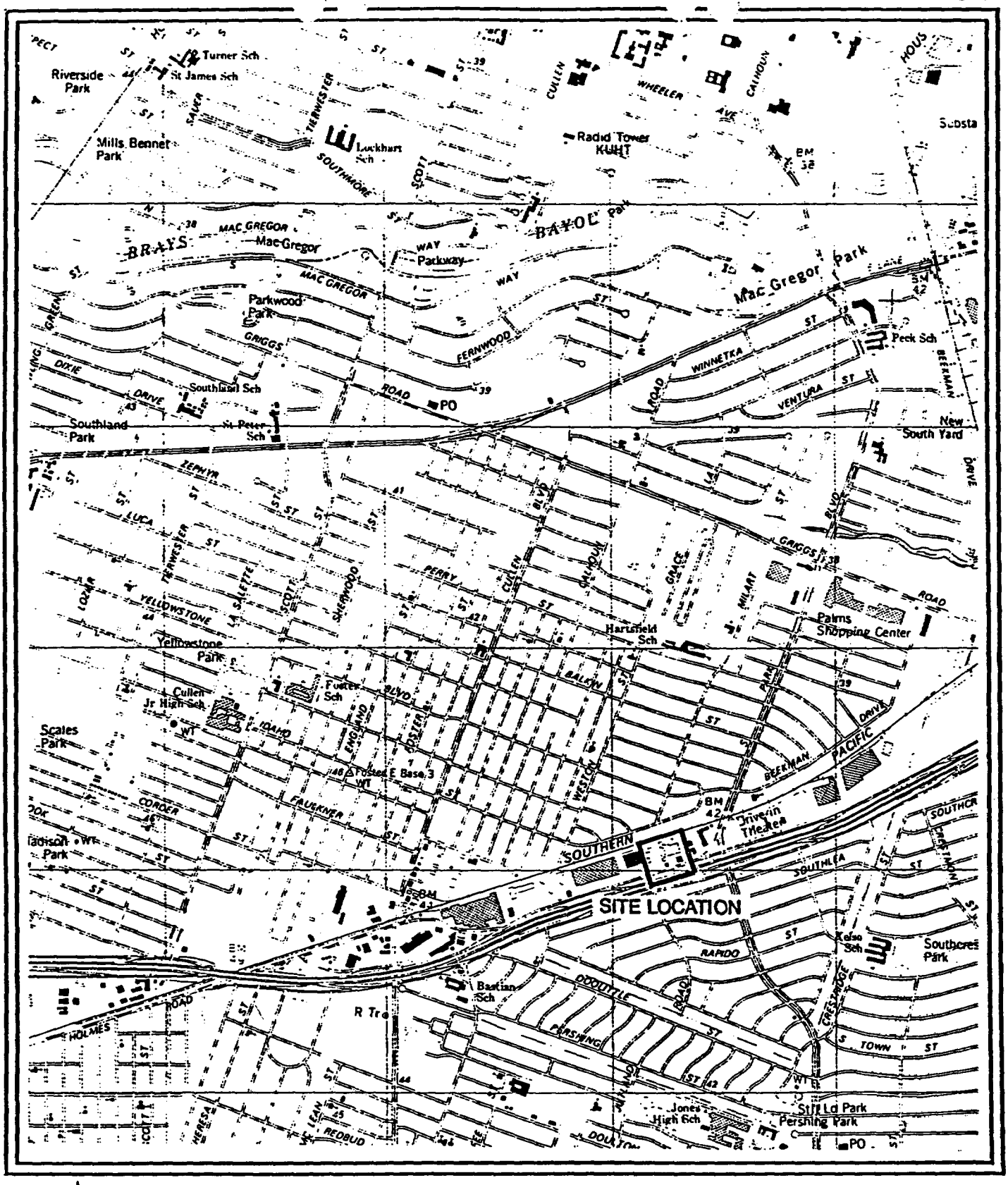
Drinking water for the City of Houston is obtained from both surface water and groundwater, with the general dividing line being Interstate 45. The area west of I-45 is served by groundwater and the area east of I-45 is served by surface water from Lake Houston. There are some areas east of I-45 which also use groundwater. Nine City of Houston wells, with a minimum depth of 460 feet, are located within a 3-mile radius of the facility. Layers of clay and rock are present between the surface and the screen interval. Well logs

obtained for a mile radius of the site indicate the presence of shallow domestic and industrial wells (see Attachment I). A door-to-door well survey would be needed to determine a groundwater population for the 3-mile radius as the majority of the residences are on city water. Currently, the facility does not pose an environmental hazard to the City of Houston wells.

Surface water for the city is obtained from Lake Houston, which is located northeast of the facility. Currently, a route to surface water does not exist. In addition, according to the March 1987, site inspection report, the nearest downslope surface water is a drainage ditch which leads to the Houston Ship Channel. The Channel is not used for drinking, irrigation, or fishing. The 1987 site inspection also reports that contaminant containment adequately protects both groundwater and surface water.

Based on the information available at this time, the facility will not generate an HRS value that is sufficient to qualify for the National Priorities List (NPL). For this reason, a preliminary HRS was not completed. Currently, the site does not pose an environmental hazard due to the presence of proper containment structures. Documentation available does not indicate that the facility used improper cleanup procedures for onsite spills. Therefore, FTT recommends no further CERCLA action. The site is currently active and monitored under the state RCRA program.

ICF



N

0 2000 FT

SCALE 1 : 2400

Site Location Map
WOOD PROTECTION COMPANY
HOUSTON, TX
TDD NO. F-6-8804-36
CERCLIS NO. TXD059345116

QUADRANGLE LOCATION

PARK PLACE, TX

SENDER: Complete is 1 and 2 when additional services are desired, and plete items 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery.

3. Article Addressed to: MS. LINDA KUHN SPILL & EMERGENCY COORDINATOR TEXAS WATER COMMISSION 5144 EAST SAM HOUSTON PARK WAY HOUSTON, TEXAS 77015	4. Article Number P 083 002 969 Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Addressee X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X	
7. Date of Delivery	

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIPT

P 083 002 969

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to	MS LINDA KUHN
Street and No.	SPILL & EMERGENCY COOR
P.O., State and ZIP Code	TEXAS WATER COMMISSION 5144 EAST HOUSTON, TEXAS
Postage	$ .29
Certified Fee	2.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 2.29
Postmark or Date	

PS Form 3800, Feb. 1982 * U.S.G.P.O. 1984-446-014

CERTIFIED MAIL

P 083 002 969

Our present environmental consulting firm, Groundwater Technology, Inc. has reviewed the data from all previous investigations. Their interpretation of this data is that the analytes appear to be localized and sufficient evidence to substantiate offsite migration does not exist.

In 1990, the management of Wood Protection Company changed. In working with Groundwater Technology, the new management could find no record that the above information was supplied to the Texas Water Commission. We feel that we have the situation under control and that there has been no offsite migration. However we also felt that it would be best to share this information with you.

If you have any questions, or if we can meet to share our information with you, please notify us at Wood Protection Company (713-733-7421.

Sincerely,

Joel R. Tigett

Joel R. Tigett
General Manager

Reference 8

OSMOSE

MATERIAL SAFETY DATA SHEET - 300836*CCA 04/24/90 PAGE 1
TRADE NAME: K-33-C(50%)
GENERIC NAME: CCA Type C; Chromated Copper Arsenate

SECTION I

MSDS NUMBER: 300836*CCA

MANUFACTURER .....:Osmose Wood Preserving, Inc.
EMERGENCY PHONE ..:(716) 882-5905
OTHER CALLS .....:CHEMTREC: 800-424-9300
ADDRESS .....:980 Ellicott Street
CITY .....:Buffalo STATE ..:NY ZIP ..:14209
MSDS PREPARED BY .:Teri Muchow
DATE PREPARED ....:April 23, 1990

*** ADDITIONAL INFORMATION ***
EPA Registration Number: 3008-36

H.M.I.S.: Health 3, Flammability 0, Reactivity 1, Personal Protection B

*This mixture contains ARSENIC ACID, CHROMIC ACID, and COPPER OXIDE, chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

*Pesticide applicators are exempt from the OSHA arsenic standard 29 CFR 1910.1018.

D.O.T. CLASSIFICATION: Poison B UN2810 D.O.T. LABEL: Poison

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME .....:K-33-C(50%)
GENERIC NAME .....:CCA Type C; Chromated Copper Arsenate

INGREDIENT NAME	CAS	OSHA PEL	ACGIH TLV	RQ	%
Arsenic Acid (expressed as As2O5)	7778-39-4	0.5 mg/M3 as As	0.2 mg/M3 as As	1#	17.0(
Chromic Acid(water soluble)	1333-82-0	.1 mg/M3* as Cr	.05 mg/M3 as Cr	10#	23.7!
Copper Oxide	1317-39-1	1.0 mg/M3 as Cu	1.0 mg/M3 as Cu	N/A	9.2!

*Acceptable ceiling concentration limit.

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	SPECIFIC GRAVITY (WATER=1)	VAPOR PRESSURE (mm Hg)
>100 C	N/A	1.64	N/A

OSMOSE

TRADE NAME: K-33-C(50%)
GENERIC NAME: CCA Type C; Chromated Copper Arsenate

PERCENT VOLATILE by VOLUME	VAPOR DENSITY (air=1)	EVAPORATION RATE (Butyl Acetate)=1
50 (water)	N/A	N/A

SOLUBILITY IN WATER	REACTIVITY WITH WATER
100%	N/A

APPEARANCE AND ODOR :
Dark red-orange liquid. No odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
N/A	N/A	UPPER = N/A LOWER = N/A	N/A

EXTINGUISHER MEDIA: Water Fog and/or Carbon Dioxide

SPECIAL FIRE FIGHTING PROCEDURES:
This product will not burn; 50% aqueous solution. When heated to decomposition, arsenic may be emitted. If this material is involved in a fire or explosion, carbon dioxide or water may be used as an extinguishing agent. Wear complete fire service protection equipment, including full-face MSHA/NIOSH approved self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Chromic acid content of this product is a strong oxidizing agent; contact with strong reducing agents may cause an explosion. May cause fire on contact with combustible materials. Closed containers may explode when exposed to extreme heat (fire).

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y

CONDITIONS TO AVOID:
Reducing Agents

INCOMPATIBILITY (MATERIALS TO AVOID):
Strong reducing agents. Aluminum and zinc in an acid medium.

HAZARDOUS DECOMPOSITION PRODUCTS:
Under certain conditions where aluminum and zinc (e.g. galvanized steel) are present, arsine gas may be generated.

HAZARDOUS POLYMERIZATION POSSIBLE (Y/N) ? N

OSMOSE

TRADE NAME: K-33-C(50%)
GENERIC NAME: CCA Type C; Chromated Copper Arsenate

CONDITIONS TO AVOID:
N/A

SECTION VI - HEALTH HAZARDS

ROUTES OF ENTRY: The principal routes of exposure for this solution are by skin or eye contact. If the pesticide application process generates mist or particles, inhalation is an additional significant route of exposure. This solution is highly corrosive, as indicated by its pH. Skin or eye contact may result in severe burns. Chronic skin exposure may result in skin ulcers. Inhalation of this solution is highly irritating, and acute exposure by inhalation may result in chemical pneumonitis.

SIGNS AND SYMPTOMS OF -
ACUTE OVEREXPOSURE:
Highly irritating to skin and eyes. Repeated dermal exposure may cause dermatitis. Toxic by ingestion, causes gastroenteritis, esophageal pain, vomiting and anuria or oliguria.

CHRONIC OVEREXPOSURE:
Repeated dermal exposure may cause dematitis.

MEDICAL CONDITIONS GENERALLY
AGGRAVATED BY EXPOSURE:
Individuals with an existing (or a history of) disease of the skin, kidney, liver, lungs or nervous system may be at greater risk of developing either acute or chronic health effects.

CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN

NATIONAL TOXICOLOGY PROGRAM (Y/N): N	IARC MONOGRAPHS (Y/N): N	OSHA (Y/N): N

*** ADDITIONAL INFORMATION ***

For CARCINOGEN information, see Chronic Effects Notes, page 4.

Toxicological Information: Oral LD50 - >50 mg/kg
Dermal LD50 - <200 mg/kg

EMERGENCY AND FIRST AID PROCEDURES
EMERGENCY PHONE NUMBER OF MANUFACTURER: (716) 882-5905

1. INHALATION: For acute inhalation, remove the victim from exposure, restore breathing and seek medical attention immediately.

2. EYE CONTACT: Immediately flush with large quantities of water. Seek medical attention as soon as possible.

3. SKIN CONTACT: Immediately flush skin with large volumes of water. Seek medical attention as soon as possible.

4. INGESTION: Immediately seek medical attention; do not induce vomiting. If it appears that the victim may not receive medical attention within 15 minutes, and if conscious, give one glass of milk, preferably containing 2 ounces of milk of magnesia or 3 egg whites, or give lime water or 1 tabelspoon salt in warm water; induce vomiting.

*** ADDITIONAL INFORMATION ***

NOTES TO PHYSICIAN: Treat for arsenic pentoxide (As_2O_5) and chromium trioxide (CrO_3) exposure. Severe arsenic poisoning from occupational exposure is unlikely. If it should occur, administer BAL (dimercaprol) 10% in oil, IM, 3 mg/kg for each ijection - day 1 and 2, every four hours; day 3, every 6 hours; day 4 - 14, every 12 hours. Consider gastric lavage (if vomiting has not already occurred).

CHRONIC EFFECTS

IARC, NTP and OSHA do not consistently distinguish among arsenic or chromium compounds, but list inorganic arsenic and chromium and certain specific chromium compounds as human carcinogens. Such listings have been based upon cancer in human populations following long term consumption of inorganic trivalent arsenic, inhalation and skin contact with inorganic trivalent arsenical compounds and the combined inhalation of arsenic trioxide, sulfur dioxide and other particulates from ore smelting in arsenic trioxide protection. The ACGIH has not listed inorganic arsenic as a carcinogen, but has listed the production of arsenic trioxide as a process which may lead to the development of cancer. In addition, cancers in humans have followed long term occupational exposure to certain nonwater soluble hexavalent chromium.

This product does not contain trivalent arsenic or nonwater-soluble hexavalent chromium compounds. Furthermore, epidemiology studies and cross sectional health studies of treating plant workers would indicate that this product is not a carcinogen when used in accordance with customary practices found in the wood preserving industry.

For pesticide applicators, read and understand the label thoroughly. The EPA PEL program is part of the label.

MATERIAL SAFETY DATA SHEET - 300836*CCA 04/24/90 PAC
TRADE NAME: K-33-C(50%)
GENERIC NAME: CCA Type C; Chromated Copper Arsenate

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
Engineering controls are the preferred method for controling exposure to chemicals. If enginering controls are not feasible, then personal protective equipment should be utilized. Read Osmose Operation Manual.

OTHER PRECAUTIONS:
Launder contaminated clothing before reuse. If interior of shoes are contaminated, either directly or through penetration, delayed skin burns may occur, therefore discard. READ PRODUCT LABEL.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Avoid contact with solution. Prevent spread of the spill or leak. Recover or neutralize free standing liquid with Osmose Neutralizing Compound or sawdust. Collect absorbent and contaminated soil in DOT approved containers. This material is toxic to fish and other wildlife, do not allow it to contaminate waterways. Individuals involved in clean-up should be protected from contact with the solution by using appropriate protective equipment.

WASTE DISPOSAL METHODS:
Dispose in accordance with all Federal (Resource Conservation and Recovery Act), State and Local laws. Excess chemical and waste material collected from a release or spill must be disposed of in an approved hazardous waste disposal site in accordance with RCRA guidelines. Containers may be triple rinsed and then buried in a sanitary landfill or removed to a drum reclaimer. The RQ for this material is one pound. In the event of a spill exceeding the RQ, the same must be reported to the National Response Center (1-800-424-8802).

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION:
When respiratory exposure can exceed 0.01 mg/m3, 29 CFR 1910.1018 states that a half-mask air purifying respirator equipped with high efficiency-particulate filters is recommended. When environmental airborne concentrations are greater than this level, consult 29 CFR 1910.1010 for guidelines and appropriate respiratory protection.

VENTILATION REQUIREMENTS:
N/A

LOCAL EXHAUST:
Sufficient

OSMOSE

TRADE NAME: K-33-C(50%)
GENERIC NAME: CCA Type C: Chromated Copper Arsenate

MECHANICAL:
N/A

SPECIAL:
N/A

OTHER:
N/A

PROTECTIVE GLOVES:
29 CFR 1910.1018 requires that workers wear gloves (NBR, natural rubber, neoprene, coated vinyl or PVC).

EYE PROTECTION:
Chemical goggles and face shield.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:
An apron and other equipment necessary to avoid dermal contact.

WORK/HYGENIC PRACTICES:

*** ADDITIONAL INFORMATION ***

SARA/TITLE III HAZARD CATEGORIES

Immediate (Acute) Health:	YES	Reactive Hazard:	NO
Delayed (Chronic) Health:	YES	Sudden Release of Pressure:	NO
Fire Hazard:	NO		

N/A = Not Applicable

NOTICE: The information herein is given in good faith but no warranty, expressed or implied, is made, and Osmose Wood Preserving, Inc. expressly disclaims liability from reliance on such information.

Information on this form is furnished for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissimination of all or any part of this information for any other purpose may result in a violation of law or constitute grounds for legal action.

Derivation: (a) Sulfuric acid is added to a solution of sodium dichromate and the product is crystallized out; (b) chromite is fused with soda ash and limestone and then treated with sulfuric acid; (c) electrolysis.
Grade: Technical, CP.
Hazard: Powerful oxidizing agent, may explode on contact with reducing agents, may ignite on contact with organic materials. A poison. Corrosive to skin. TLV: 0.05 mg/m³ of air. A human carcinogen.
Use: Chemicals (chromates, oxidizing agents, catalysts), chromium plating intermediate, medicine (caustic), process engraving, anodizing, ceramic glazes, colored glass, metal cleaning, inks, tanning, paints, textile mordant, etchant for plastics.

chromic bromide. $CrBr_3$.
Properties: Black crystals, soluble in boiling water, insoluble in cold water unless chromous salts are added.
Derivation: Passage of bromine vapor over pulverized chromium at 1000C.
Use: Olefin polymerization catalyst.

chromic chloride. (chromium chloride; chromium trichloride; chromium sesquichloride).
CAS: 10025-73-7. (a) $CrCl_3$ or (b) $CrCl_3 \cdot 6H_2O$.
Properties: (a) Violet crystals, d 1.76, mp 1150C, sublimes at approximately 1300C. Insoluble in water and alcohol. (b) Greenish-black or violet deliquescent crystals, depending on whether or not chlorine is coordinated with the chromium, d 1.76, mp 83C. Soluble in water and alcohol, insoluble in ether.
Derivation: (a) By passing chlorine over a mixture of chromic oxide and carbon. (b) By the action of hydrochloric acid on chromium hydroxide.
Hazard: A poison. TLV: 0.5 mg/m³ in air.
Use: Chromium salts, intermediates, textile mordant, chromium plating including vapor plating, preparation of sponge chromium, catalyst for polymerizing olefins, waterproofing.

chromic fluoride. (chromium fluoride; chromium trifluoride). CAS: 7788-97-8.
$CrF_3 \cdot 4H_2O$ or $CrF_3 \cdot 9H_2O$.
Properties: Fine, green crystals; d (anhydrous): 3.8; mp greater than 1000C; bp (sublimes) 1100–1200C. Insoluble in water and alcohol, soluble in hydrochloric acid.
Derivation: Interaction of chromium hydroxide and hydrofluoric acid.
Grade: Technical, high purity (CrF_3).
Hazard: Irritant to skin and eyes, especially in solution. TLV: 0.5 mg/m³ of air.
Use: Printing and dyeing woolens, mothproofing, halogenation catalyst.

chromic hydroxide. (chromic hydrate; chromium hydroxide; chromium hydrate). $Cr(OH)_3$.
Properties: Green, gelatinous precipitate; decomposes to chromic oxide by heat. Insoluble in water, soluble in acids and strong alkalies.
Derivation: By adding a solution of ammonium hydroxide to the solution of a chromium salt.
Use: Guignet's green, catalyst, tanning agent, mordant.

chromic nitrate. (chromium nitrate).
CAS: 13548-38-4. $Cr(NO_3)_3 \cdot 9H_2O$.
Properties: Purple crystals, soluble in alcohol and water, mp 60C, decomposes 100C.
Derivation: By the action of nitric acid on chromium hydroxide.
Hazard: May ignite organic materials on contact, may be explosive when shocked or heated, powerful oxidizer. Very toxic.
Use: Catalyst, corrosion inhibitor.

chromic oxide. (chromium(III) oxide; chromia; chromium sequioxide; green cinnabar).
CAS: 1308-38-9. Cr_2O_3.
Properties: Bright-green, extremely hard crystals; d 5.2; mp 2435C; bp 4000C; insoluble in water, acids, and alkalies.
Derivation: (a) By heating chromium hydroxide, (b) by heating dry ammonium dichromate, (c) by heating sodium dichromate with sulfur and washing out the sodium sulfate.
Hazard: Toxic by ingestion and inhalation. TLV: 0.5 mg/m³ of air.
Use: Metallurgy, green paint pigment, ceramics, catalyst in organic synthesis, green granules in asphalt roofing, component of refractory brick, abrasive.

chromic phosphate. (chromium phosphate).
CAS: 7789-04-0. (a) $CrPO_4 \cdot 6H_2O$; (b) $CrPO_4 \cdot 4H_2O$.
Properties: (a) Violet crystals, d 2.12 (14C); (b) green crystals, soluble in acids, insoluble in water.
Derivation: (a) Interaction of solutions of chromium chloride and sodium phosphate; (b) by mixing chrome alum and disodium hydrogen phosphate. Violet, amorphous powder (not the hexahydrate) is formed which becomes crystalline on contact with water. On boiling, it is converted into green crystalline hydrate.
Use: Paint pigment, catalyst.

chromic sulfate. (chromium sulfate).
CAS: 10101-53-8. (a) $Cr_2(SO_4)_3$; (b) $Cr_2(SO_4)_3 \cdot 15H_2O$; (c) $Cr_2(SO_4)_3 \cdot 18H_2O$.
Properties: (a) Violet or red powder; (b) dark-green amorphous scales; (c) violet cubes. D

– Hawley's Condensed Chemical Dictionary, 11th ed. 1987

Reference 9

AV

Wood Protection Co.

P.O. BOX 330376 • HOUSTON, TEXAS 77233-0376
713/733-7421 • FAX: 713/733-3697
TEXAS INWATS: 1-800-392-5670

July 20, 1991

Mr. Gus Staats
Osmose Wood Preserving
P. O. Drawer O
Griffin, Ga. 30224

Dear Gus:

In the spring of 1988, Wood Protection Company, located in Houston, Texas preformed an environmental audit of our property. At this time it was recommended we drill four (4) monitor wells around our treating plant. After the first set of samples were taken it was recommended to add a fifth (5) well, this well being capable of pumping ground water to a recovery tank.

Over the years these five (5) wells have been sampled numerous times by different people and each time the same well received a slightly different code name. At this time I would like to clarify these names and to rename them for future reference. I have supervised this project from the start and have taken many of the samples myself. For this reason the following information will be documented as such.

Well Number 88-1 was drilled on November 15, 1988 to a depth of fifty-one feet. This well is in the very Northeast corner of Wood Protection property. This well was first sampled on November 18, 1988 and labeled "Sample No. 88-1". On October 9, 1989 it was labeled "Sample 88-1". On April 6, 1990 it was labeled "Well No 88-1". On December 13, 1990 it was labeled "Sample ID # 1". From this point forward this well well be referred to as Monitor Well #1 or MW-1.

Well Number 89-2 was drilled on January 3, 1989 to a depth of fifty feet. This well is south of the treating plant. This well was first sampled January 6, 1989 and labeled "Well No. 89-2". On October 9, 1989 it was labeled "Sample 89-2". On April 6, 1990 it was labeled "Well No. 89-2". On December 13, 1990 it was labeled "Sample ID #2". From this point forward this well will be referred to as Monitor Well #2 or MW-2.

Well Number 89-3 was drilled on January 4, 1989 to a depth of forty-nine feet five inches. This well is located East of the treating plant. This well was first sampled on January 6, 1989 and labeled "Well No. 89-3". On October 9,1989 it was labeled "Sample 89-3". On April 6, 1990 it was labeled "Well No. 89-3". On December 13, 1990 it was labeled "Sample ID #3". From this point forward this well will be referred to as Monitor Well #3 or MW-3.

Well Number 89-4 drilled on January 5, 1989 to a depth of forty-nine feet. This well is West of the treating plant. This well was first sampled on January 6, 1990 and labeled "Well No. 89-4". On October 9, 1989 it was labeled "Sample 89-4". On April 6, 1990 it was labeled "Well No. 89-4". On December 13, 1990 it was labeled "Sample ID #4". From this point forward this well will be referred to as Monitor Well #4 or MW-4.

Well Number 89-5 was drilled September 25, 1989 to a depth of fifty feet. This well is adjacent to the Northeast corner of the treating plant building. This well was first sampled on October 9, 1989 and labeled "PW-1". On April 18, 1991 it was labeled "Sample IS #1 -MW5. From this point forward this well will be referred to as "Pumping Monitor Well -5" or "PMW-5".

Wood Protection Company has on its property one water well for process water drilled to a depth of three hundred feet (300). It was also sampled on April 18, 1991 and labeled "Sample ID #3-WW-1". From this point forward it will be referred to as WW-1.

If you have any questions please feel free to call.

Sincerely,

Jim Moncrief

Jim Moncrief
Production Supervisor

Reference 10

FAX 813 223-9332
TWX 810 876-9134
THORNT LAB TPA

THORNTON LABORATORIES, INC.
1145 EAST CASS STREET
TAMPA, FLORIDA 33601 - 2880
MARINE, ANALYTICAL AND ENVIRONMENTAL SERVICES
HRS #84147 & HRS #E84100

TELEPHONE (813) 223-9702
P.O. BOX 2880

24-Jan-1989

Report For: Ott Water Engineering
P.O. Box 1587
Griffen, GA
30224

Sample Identification:

Groundwater
Attn: Joan Hutton
Project: M1010.02 Location: Houston Well No. 89-3 Water depth ----
Date 1-6-89 Sampled by Joan Hutton

Date Received: January 9 1989

Laboratory Number: 702922

CERTIFICATE OF ANALYSIS

Method	Parameter	Result*	Standard Detection Limit-Units
EPA 120.1	Specific Conductance	1100	1 umhos/cm
EPA 150.1	pH Value	7.2	
EPA 206.3	Arsenic (As)	0.056	0.005 mg/L
	Arsenic (As), Dissolved	D	0.005 mg/L
EPA 218.1	Chromium (Cr)	0.11	0.005 mg/L
	Chromium (Cr), Dissolved	0.005	0.005 mg/L
EPA 218.4	Chromium, Hexavalent (Cr)	D	0.01 mg/L
EPA 220.1	Copper (Cu)	0.054	0.005 mg/L
	Copper (Cu), Dissolved	0.014	0.005 mg/L

* A letter D indicates that none of that parameter was found at the standard detection limit. Values followed by D indicate that a different detection limit was determined for this sample.

THORNTON LABORATORIES, INC.

Bruce L. Cummings

Reference 11

GROUNDWATER TECHNOLOGY, INC.
1213 West Loop North, Suite 100. Houston, TX 77055 U.S.A. (713) 680-1515
Fax: (713) 680-2701

August 26, 1991

Mr. Joel Tigett
Wood Protection Co.
5151 S. Loop East
Houston, Texas 77233

RE: Comprehensive Site Assessment - Proposal
Wood Protection Company
5151 S. Loop East
Houston, Texas 77233

Dear Mr. Tiggett:

As you requested, I have developed a plan for a Comprehensive Site Assessment at the above referenced site. The assessment is directed towards delineation of pentachlorophenol concentrations resulting from operations conducted at the facility prior to 1972, when the facility was purchased by Osmose Wood Preserving Co. of America. Following the acquisition, treatment operations utilized chromated copper arsenate instead of pentachlorophenol.

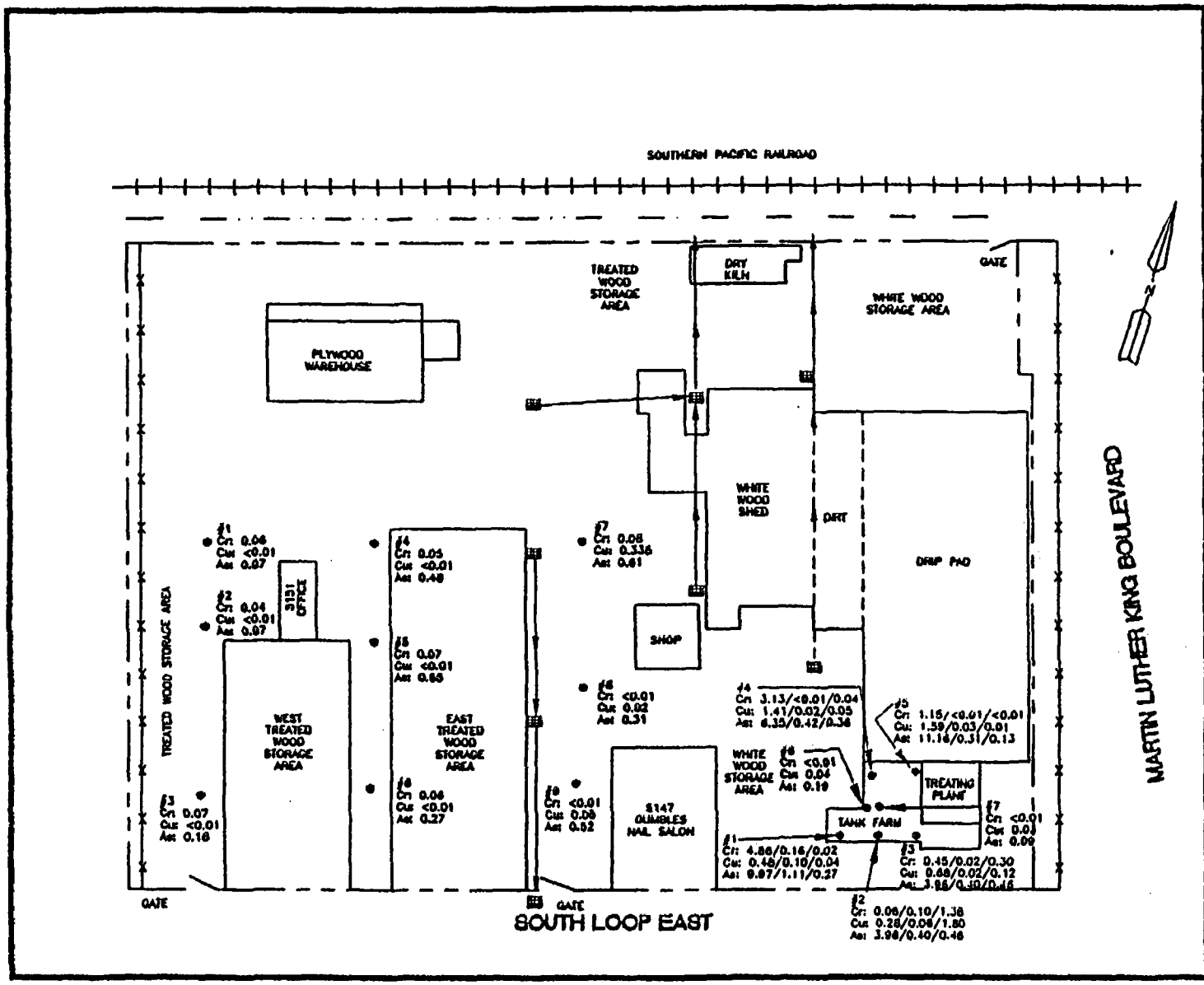
An environmental monitoring program has been conducted since July, 1986 to ensure that no environmental impact has occurred as the result of the facility operations. Several soil sampling surveys have been conducted, specifically addressing chromated copper arsenate. These surveys were conducted in July, 1986, October and September, 1986 and January, 1987. The results of these surveys are summarized in Table 1 and analytical results versus sample locations are indicated in Figure 1. No significant concentrations of Cr, As or Cu were identified by these extensive surveys.

Ott Engineering, Inc. conducted several investigations during 1988 and 1989 which targeted deeper subsurface conditions relative to soil and or groundwater contamination. The results of the investigation indicated a small area of pentachlorophenol concentrations in the soil and groundwater, resulting from operations conducted prior to 1972. A sampling round was conducted on April 5, 1989 which included analyses for pentachlorophenol, Cr, As, Cu, pH and Conductivity. Although no significant Cr, As, or Cu concentrations were reported, a pentachlorophenol concentration of 15 ppm was reported for the sample collected from monitor well 89-3. Pentachlorophenol concentrations reported for the remaining groundwater samples were below or near the method detection limits, except for the MW-2 sample which was reported as 1.55 ppm.

TABLE 1
CUMULATIVE ANALYTICAL RESULTS - SOIL
CHROMATED COPPER ARSENATE
WOOD PROTECTION COMPANY
5151 S. LOOP EAST
HOUSTON, TEXAS

LOCATION	DATE	DEPTH	Cr (ppm)	Cu (ppm)	As (ppm)	
1A	7-21-86	SURFACE	4.86	0.48	9.97	INITIAL TREATMENT AREA ASSESSMENT (7-21-86)
1B	7-21-86	12"	0.16	0.10	1.11	
1C	7-21-86	24"	0.02	0.04	0.27	
2A	7-21-86	SURFACE	0.06	0.28	3.79	
2B	7-21-86	12"	0.10	0.06	0.45	
2C	7-21-86	24"	1.38	1.80	7.81	
3A	7-21-86	SURFACE	0.45	0.68	3.96	
3B	7-21-86	12"	0.02	0.02	0.40	
3C	7-21-86	24"	0.30	0.12	0.46	
4A	7-21-86	SURFACE	3.13	1.41	6.35	
4B	7-21-86	12"	<0.01	0.02	0.42	
4C	7-21-86	24"	0.04	0.05	0.36	
5A	7-21-86	SURFACE	1.15	1.59	11.16	
5B	7-21-86	12"	<0.01	0.03	0.31	
5C	7-21-86	24"	<0.01	0.01	0.13	
South Tank #1	9-9-86	20'	<0.01	<0.01	0.16	RANDOM SAMPLE LOCATIONS TREATMENT AREA (8-19-86/9-9-86)
South Tank #2	9-9-86	20'	<0.01	<0.01	0.20	
1	9-9-86	12"	<0.01	0.04	0.30	
2	9-9-86	12"	<0.01	0.01	0.15	
3	9-9-86	12"	<0.01	0.02	0.48	
4	9-9-86	12"	<0.01	0.02	0.22	
5	9-9-86	12"	<0.01	0.03	0.49	
6	9-9-86	4'	<0.01	0.04	0.19	
7	9-9-86	4'	<0.01	0.03	0.09	
8	9-9-86	12"	<0.01	0.03	0.13	
9	9-9-86	12"	<0.01	0.03	0.10	
10	9-9-86	12"	<0.01	<0.01	0.17	
6	8-19-86	12"	2.90	0.03	0.32	
7	8-19-86	12"	2.78	0.05	0.21	
8	1-7-87	12"	<0.01	0.02	0.31	

LOCATION	DATE	DEPTH	Cr (ppm)	Cu (ppm)	As (ppm)	
MCL			5.00	NA	5.00	
11	1-7-87	12"	0.06	<0.01	0.07	STACKS IN SW CORNER OF PROPERTY (1-7-87)
2	1-7-87	12"	0.04	<0.01	0.07	
3	1-7-87	12"	0.07	<0.01	0.16	
4	1-7-87	12"	0.05	<0.01	0.48	
5	1-7-87	12"	0.07	<0.01	0.65	
6	1-7-87	12"	0.06	<0.01	0.27	
7	1-7-87	12"	0.08	0.35	0.61	
8	1-7-87	12"	<0.01	0.02	0.31	
9	1-7-87	12"	<0.01	0.05	0.52	
MCL			5.00	N/A	5.00	



LEGEND

- SAMPLE DATE: 01/07/87 DEPTH: 12"
- SAMPLE DATE: 07/21/86 DEPTH: SURFACE/12"/24"
- SAMPLE DATE: 09/09/86 DEPTH: 4'
- DRAINAGE DITCH
- STORM DRAIN

0 50 100

SCALE IN FEET

FIGURE 1

GROUNDWATER TECHNOLOGY

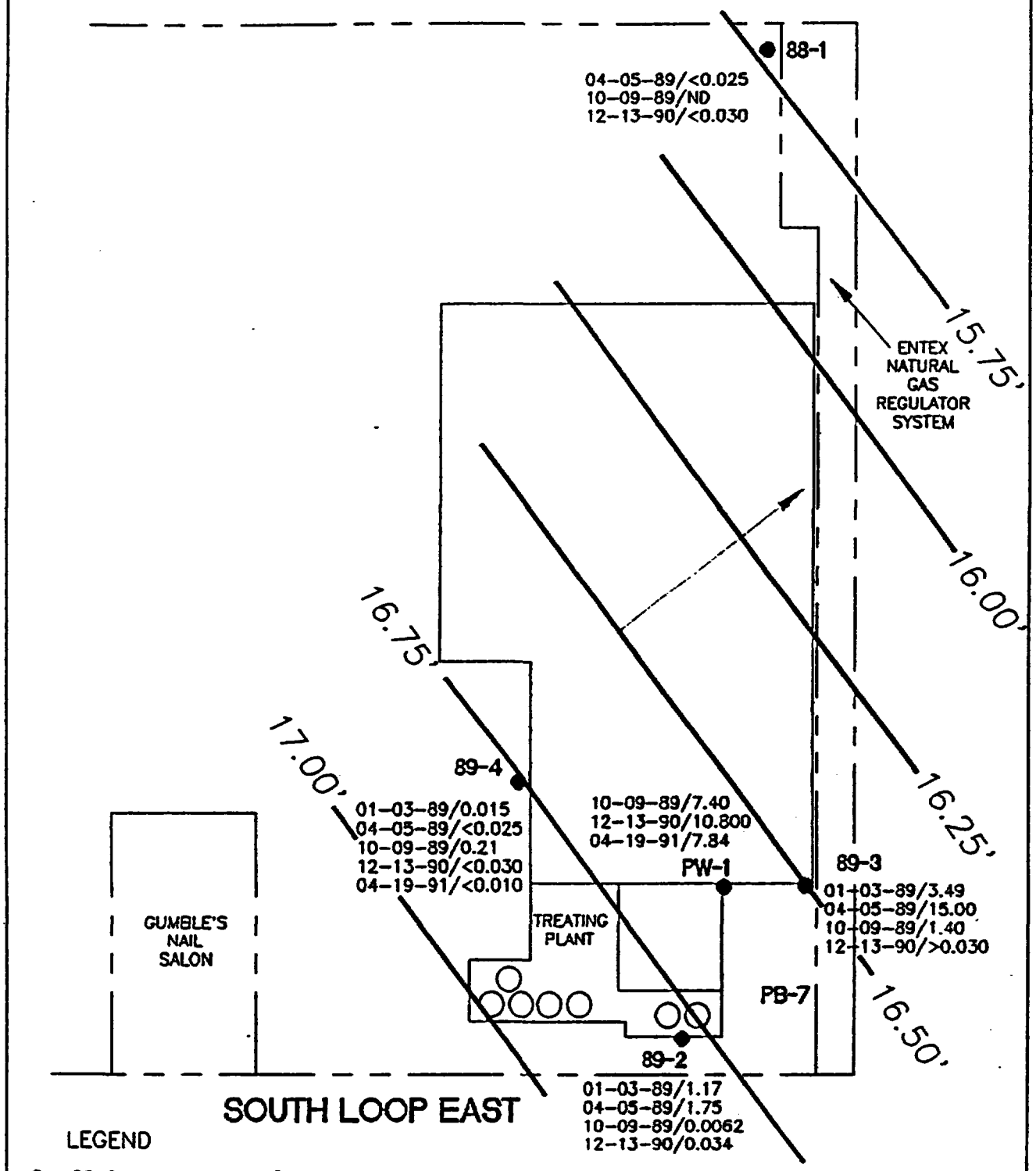
SITE NAME/LOCATION: WOOD PROTECTION COMPANY
LOCATION: 5151 SOUTH LOOP EAST
HOUSTON, TEXAS

TITLE: CHROMATED COPPER ARSENATE DISTRIBUTION MAP (SOILS)

CLIENT: WOOD PROTECTION	SAMPLE DATE:
DATE: 7-25-91	PROJECT NO:
FILE: sloope2.dwg	DRAWN BY: D. CORCORRAN

TABLE II
CUMULATIVE ANALYTICAL RESULTS-GROUNDWATER
WOOD PROTECTION COMPANY
5151 S. LOOP EAST
HOUSTON, TEXAS

SAMPLE LOCATION	SAMPLE DATE	PARAMETER					
		PCP (ppm)	Cr (ppm)	Cu (ppm)	As (ppm)	pH	CONDUCTIVITY $\mu\Omega$/cm
88-1	11-18-88	ND					
	01-03-89	NS					
	04-05-89	<.025	0.017	0.018	<0.005	7.1	1000
	10-09-89	ND					
	12-13-90	<0.030					
	04-19-91	NS					
89-2	01-03-89	1.17					
	04-05-89	1.75	0.008	0.013	<0.005	7.2	980
	10-09-89	0.0062					
	12-13-90	0.034					
	04-19-91	NS					
89-3	01-03-89	3.49					
	04-05-89	15.00	0.006	0.014	0.009	7.1	1100
	10-09-89	1.40					
	12-13-90	<0.030					
	04-19-91	NS					
88-4	01-03-89	0.015					
	04-05-89	<0.025	0.005	0.010	<0.005	7.2	920
	10-09-89	0.21					
	12-13-90	<0.030					
	04-19-91	<0.010					
PW-1	01-03-89	NS					
	04-05-89	NS					
	10-09-89	7.40					
	12-13-90	10.800					
	04-19-91	7.840					
	MCL(3-90)	100	5	NA	5	NA	NA



LEGEND

- ● 89-2 EXISTING 2" MONITORING WELL
- ● PW-1 EXISTING 4" PUMPING WELL
- 01-03-89/1.17 PENTACHLOROPHENOL CONCENTRATION IN ppm
- —17.00'— POTENTIOMETRIC SURFACE CONTOUR

0 60
SCALE IN FEET

WOOD PROTECTION COMPANY

FIGURE 2

PENTACHLOROPHENOL CONCENTRATION MAP (GROUNDWATER)

sloope1.dwg

LOCATION: 5151 SOUTH LOOP EAST
HOUSTON, TEXAS 77233

GAUGING DATE: 10-89

GROUNDWATER TECHNOLOGY

A pumping well, PW-1, was installed and another round of sampling was conducted in October, 1989. The pentachlorophenol concentrations reported for pumping well PW-1 were 7.40 ppm. The concentrations reported for the other samples analyzed indicated a significant decrease in pentachlorophenol concentrations. Additional groundwater sampling was conducted in December, 1990 and April, 1991. Concentrations reported for the samples collected from the pumping well were 10.80 ppm and 7.84 ppm, respectively. Pentachlorophenol concentrations reported for the remaining 4 monitor wells are below or near the Method Limit of Detection. Table II is a summary of analytical results reported for the period of November, 1988 through April, 1991. Figure 2 is a map of the site indicating the reported concentrations and the sample locations. Potentiometric surface contours are from the report issued by Ott Engineering, Inc. in December, 1989. Figure 3 is a graph of the reported concentrations which clearly demonstrates the decreasing pentachlorophenol concentration reported for the monitor wells installed in 1988 and 1989. Please note that none of these reported concentrations exceed current regulatory levels.

Well logs submitted by Ott Engineering, Inc. indicate that the site is underlain by a clay-silty clay which was encountered to depths of 33 feet to 43 feet below the ground surface. One soil sample collected during installation of pumping well PW-1 was analyzed for pentachlorophenol and concentrations of 460 ppm were reported. This sample was collected at the interval of 22 feet to 24 feet below ground surface.

Beneath the clay-silty clay zone, a sand was reported. The depth at the top of the sand varied from 33 feet to 43 feet below ground surface. The sand interval continued to a depth of approximately 50 feet, where it was underlain by a clay/silt. All borings were terminated when the potential aquitard was encountered, in order to prevent contamination of a deeper aquifer.

A pump test conducted during the investigation by Ott Engineering, Inc. indicated that transmissivity in the upper aquifer (sand) was 1,645 gpd/ft and that storativity was 2.68×10^{-4}. The estimated hydraulic conductivity was 25 feet/day. The radius of influence of the pumping well at 2.5 gpm was 328 feet in the direction of gradient and 104 feet in a down-gradient direction.

Ott Engineering, Inc. indicated that pentachlorophenol contaminated groundwater has probably migrated off-site beyond the radius of influence of the pumping well. What was not observed in the conclusions were the probable concentrations of the pentachlorophenol which had migrated off-site. Based on the results of the groundwater sample analyses conducted November, 1988 through April, 1991 the indications are that with the exception of the pumping well PW-1, pentachlorophenol concentrations have decreased dramatically in all monitor wells. Concentrations exceeding the MCL of 100 ppm for pentachlorophenol have never been reported at this facility and are unlikely. Mobility of pentachlorophenol is extremely low (<0.001 X Water Mobility) and migration over a long distance in a relatively short time frame would be unlikely. The off-site concentrations would probably be minimal at

Pentachlorophenol Distribution
(Groundwater)
Wood Protection Co.

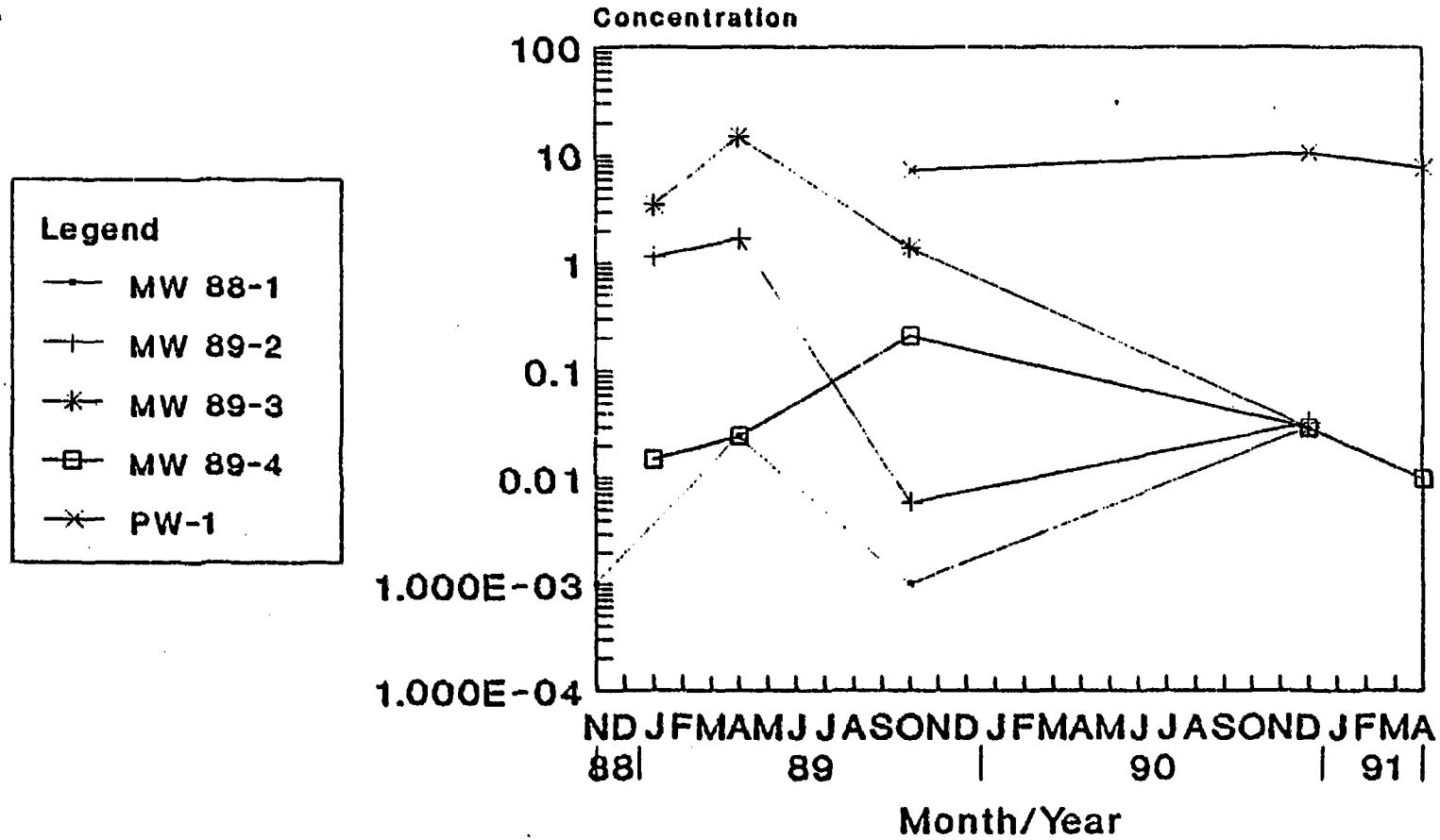


Figure 3

MCL : 100 ppm.

this site in regards to concentration levels and current regulatory standards, since pentachlorophenol concentrations are relatively low close to the old PCP treatment area.

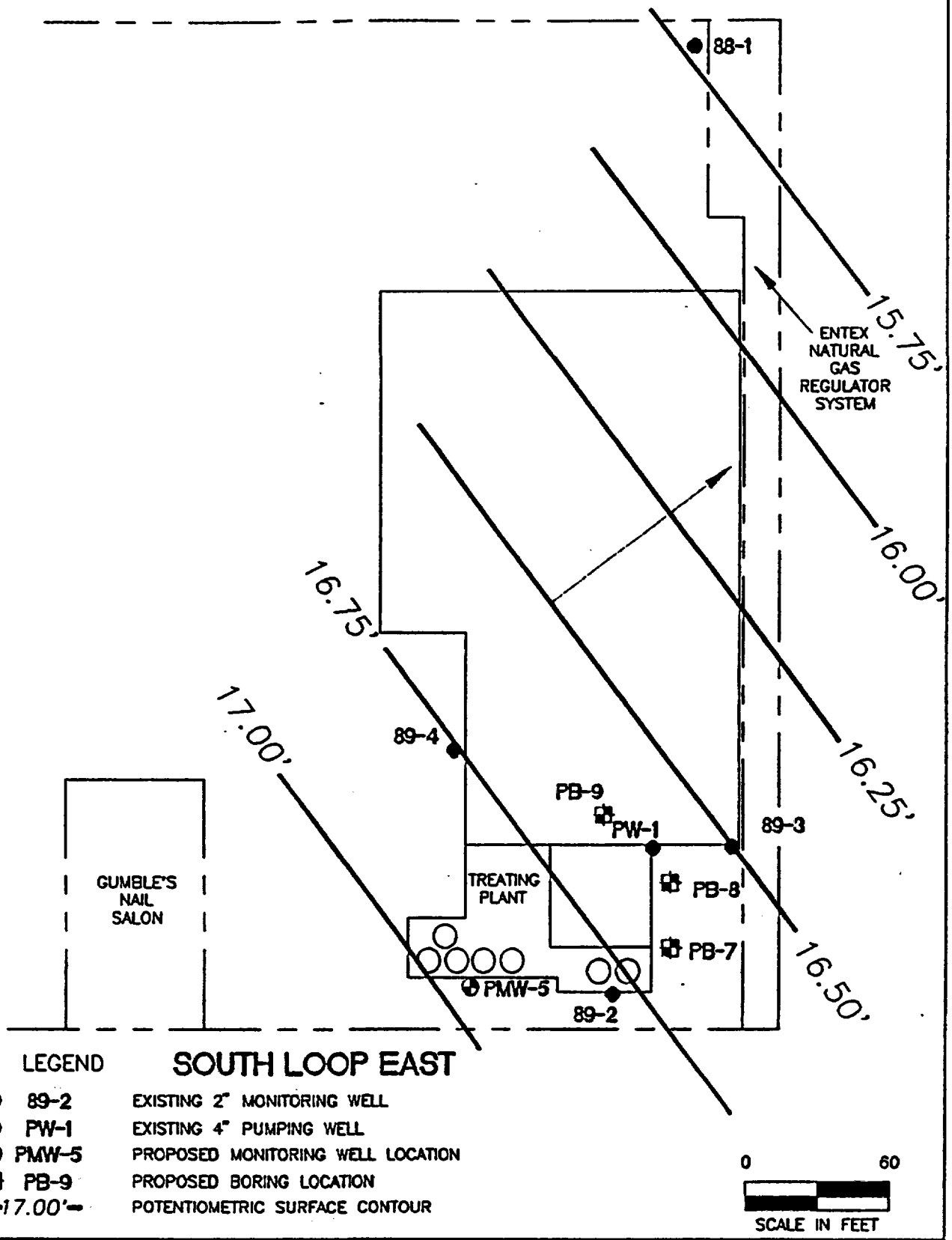
Ott Engineering, Inc. recommended installation of a additional monitor well approximately 100-150 feet down-gradient of the site in order to determine pumping well effectiveness and as a monitoring location to assess pentachlorophenol concentrations in the groundwater. Since the report by Ott Engineering, Inc. was issued in 1989, the pentachlorophenol concentrations in monitor well 89-3 have decreased to a point where it can be used to monitor for migration of the pentachlorophenol off-site, effectively eliminating the need for an off-site monitor well location.

Pentachlorophenol concentrations have been identified in the soil and groundwater at the Wood Protection Company facility. Pentachlorophenol concentrations reported for the April 15, 1991 sampling event indicate maximum concentrations of 7.84 ppm in pumping well PW-1 and minimal concentrations in the remaining wells. Soil contamination exceeding the MCL of 100 ppm is known to extend to a depth of 22-24 feet at the PW-1 location and probably extends beneath the treatment facilities currently in use. Significant soils contamination in the vicinity of monitor well 89-2 is unlikely based on the results of the groundwater sample analyses reported from 1988 through 1991.

Groundwater Technology, Inc. proposes installation of three soil borings to a depth of 25 feet to assess soil contamination in the vicinity of the recovery well which are required to estimate soil volumes to be treated if remediation is necessary. The depth of these soil borings will be increased if contamination extends further than expected. An up-gradient monitor well is proposed southwest of the recovery well (Figure 4) which will be used to monitor background groundwater quality data. This monitor well will be constructed with a screened interval from 45 feet to 30 feet and a 4" I.D. Schedule 40 PVC Riser will be installed to the surface. The screen will be 15 feet of 4" I.D. Schedule 40 No. 10 Slot Screen. Figure 5 illustrates the construction details of the proposed monitor well.

GTI will utilize soil and groundwater sampling, shipping, and chain-of-custody procedures in accordance with EPA and State protocols. Analytical procedures will be in accordance with EPA publication SW-846, Third Edition; "Procedures for Analyzing Soils and Groundwater".

Chemical analyses are proposed for both groundwater samples and soil samples to be collected during the project. Soil samples will be collected at 5 foot intervals during installation of each soil boring (including the proposed 55 foot boring for the monitor well). These samples will be analyzed for hydrocarbons and phenols utilizing analytical methods by a GC/FID Hydrocarbon Fingerprint (Modified EPA Method 8015) and EPA Method 8040 respectively. One round of groundwater sampling will be conducted for all monitor wells, including the recovery well, and these samples will also be analyzed by the previously referenced methods. Two additional samples will be collected from the recovery well for analyses of Total Metals and Pentachlorophenol.



WOOD PROTECTION COMPANY

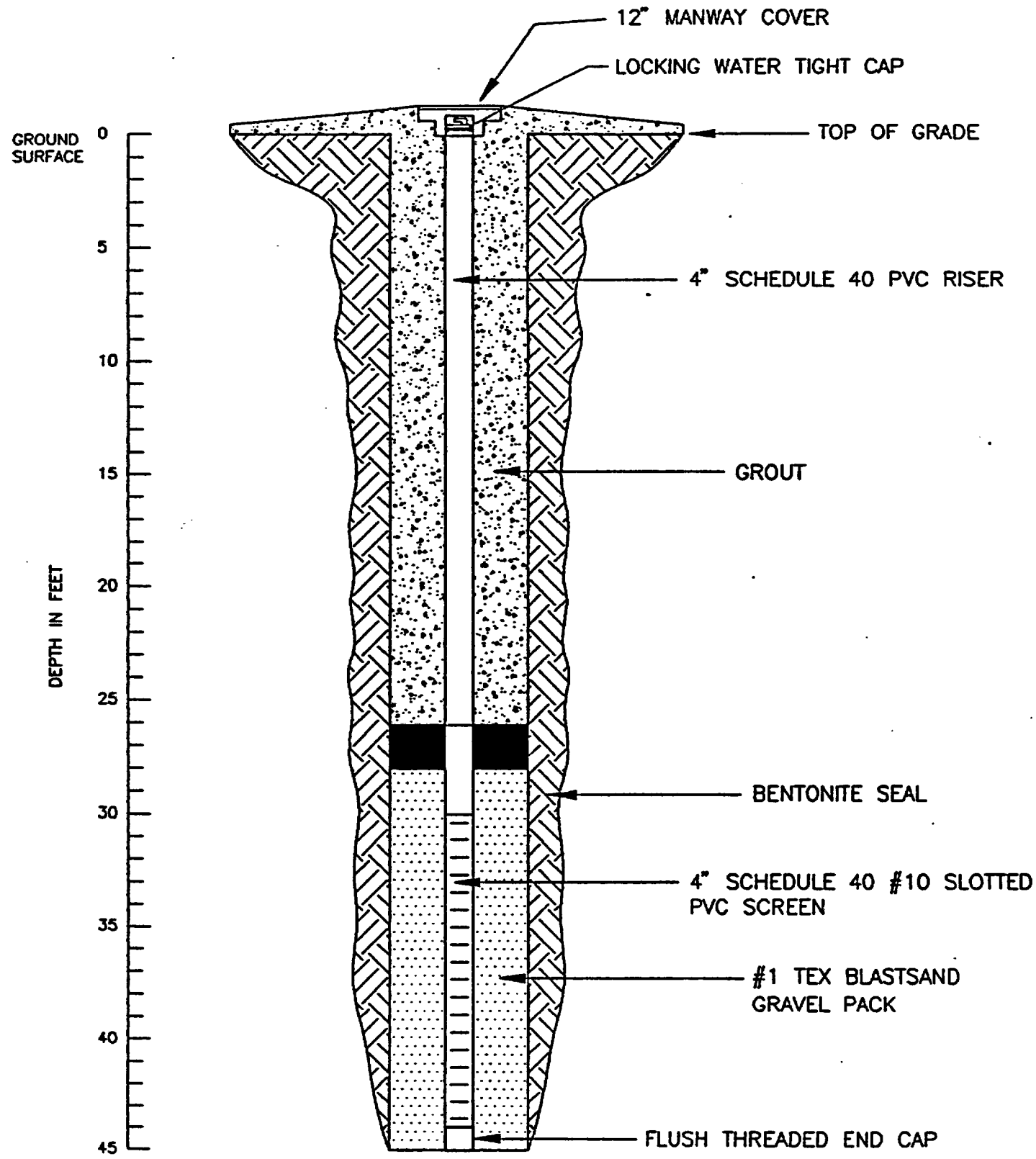
FIGURE 4

sloope1.dwg

PROPOSED MONITOR WELL AND BORING LOCATION MAP

LOCATION: 5151 SOUTH LOOP EAST
HOUSTON, TEXAS 77233

GROUNDWATER TECHNOLOGY



* NO HORIZONTAL SCALE

PROPOSED MONITOR WELL CONSTRUCTION DETAILS
WOOD PROTECTION COMPANY

5151 SOUTH LOOP EAST
HOUSTON, TEXAS

FIGURE 5

GROUNDWATER TECHNOLOGY

Prior to groundwater sample collection, each monitor well will be manually purged of three well volumes or until dry using a properly cleaned PVC bailer. This evacuation procedure allows representative groundwater to enter the well. Groundwater samples collected for Phenol analysis will be placed in one liter, amber glass bottles pre-cleaned using EPA Level 1 protocol. Samples collected for GC/FID Hydrocarbon Fingerprint analysis will be placed in one liter, clear glass bottles precleaned using EPA Level 1 protocol and preserved with hydrochloric acid to a PH of <2. Samples collected for priority pollutant metals analyses will be stored in one liter plastic containers and acidified to a PH <2 with nitric acid. All groundwater samples will be stored on ice and transported to the laboratory following strict chain-of-custody documentation.

This proposal is comprehensive and the sampling for metals is to establish background concentrations to monitor current operations. Remedial design will be proposed after confirmation of the extent of contamination.

Thank you for the opportunity to submit this proposal and should you have any questions or comments please call me at (713) 680-1515.

Sincerely,

GROUNDWATER TECHNOLOGY, INC.

Robert R. Witherspoon

Robert R. Witherspoon, P.G.
Geologist

RRW:maw

Enclosures

Reference 13

AU332.12

ENVIRONMENTAL AUDIT

FOR

WOOD PROTECTION COMPANY

Prepared For:

Wood Protection Company
P. O. Box 33376
Houston, Texas 77233

Prepared By:

Ott Engineering, Inc.
1016 Everee Inn Road
Griffin, Georgia 30223

August 1988
M1010.01

OTT WATER ENGINEERS, INC.
1016 Everee Inn Road P.O. Box 1587 Griffin, GA 30224
Atlanta (404) 584-0574
Griffin (404) 228-2328

September 1, 1988
M1010.01

Mr. Marc Hoover
Wood Protection Company
P. O. Box 33376
Houston, TX 77233

Dear Mr. Hoover:

Enclosed are two copies of the Environmental Audit Report which we prepared for your plant. We enjoyed visiting your facility on June 27, 1988, to perform the audit and we appreciate the help you and your staff gave us.

Please do not hesitate to call us if you have any questions concerning the audit, or if you need any assistance in the future. We hope to have the opportunity to work with you again soon.

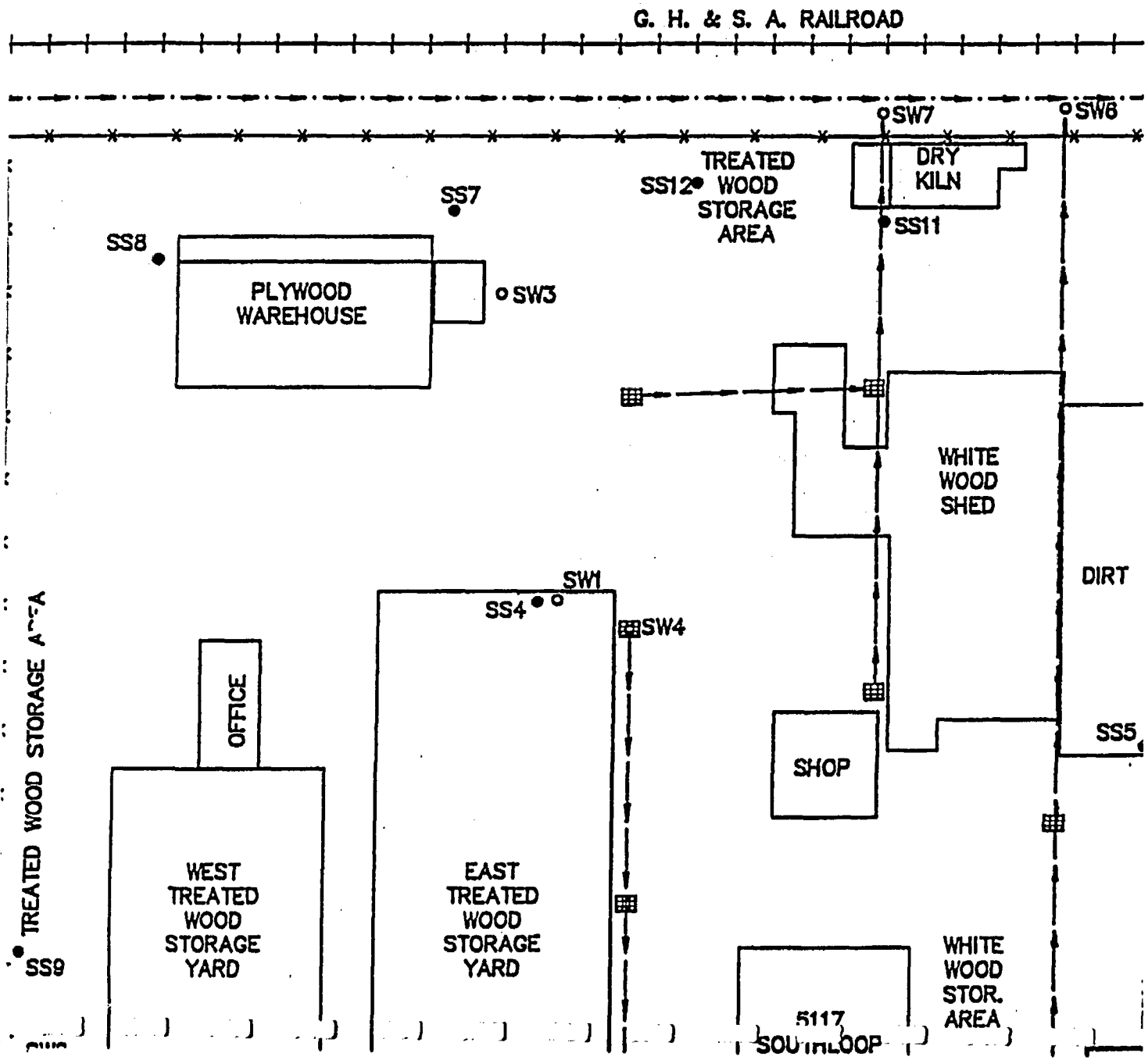
Sincerely,

Ronald F. Ott, Ph.D., P.E.
President

Randall P. Whitmore
Project Manager

RFO/sma

Enclosures


G. H. & S. A. RAILROAD
SW7
SW6
TREATED WOOD STORAGE AREA
SS12
DRY KILN
SS11
SS7
SS8
PLYWOOD WAREHOUSE
SW3
WHITE WOOD SHED
DIRT
SW1
SS4
SW4
OFFICE
SHOP
SS5
TREATED WOOD STORAGE AREA
SS9
WEST TREATED WOOD STORAGE YARD
EAST TREATED WOOD STORAGE YARD
WHITE WOOD STOR. AREA
5117 SOUTHLOOP

pace laboratories, inc.

R 'ORT OF LABORATORY ANAL iS

Offices:
Minneapolis, Minnesot
Tampa, Florida
Coralville, Iowa

Ott Water Engineers
1016 Everee Inn Road
P.O. Box 1587
Griffin, GA 30224

August 01, 1988
PACE Project Number: 880628500

Attn: Mr. Randall Whitmore

H1010.01

Date Sample(s) Collected: 06/27/88
Date Sample(s) Received: 06/28/88

PACE Sample Number:			168450	168460	168470
			TX01SW01	TX01SW02	TX01SW03
Parameter	Units	MDL	062788	062788	062788
Arsenic, Total	ug/L	1	1700	1300	1700
Arsenic, Dissolved	ug/L	1	1070	1100	1300
Chromium, Total	mg/L	0.05	0.30	0.24	0.37
Chromium, Dissolved	mg/L	0.05	0.05	0.08	0.06
Chromium, Hexavalent	mg/L	0.02	ND	ND	ND
Chromium, Trivalent	mg/L	0.05	0.30	0.24	0.37
Copper, Total	mg/L	0.01	0.58	0.40	0.95
Copper, Dissolved	mg/L	0.01	0.28	0.17	0.24
Specific Conductivity	umhos/cm	1	730	500	570
pH		0.1	8.2	8.2	7.6

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168480	168490	168500
			TX01SW04	TX01SW05	TX01SW06
Parameter	Units	MDL	062788	062788	062788
Arsenic, Total	ug/L	1	1600	4200	1700
Arsenic, Dissolved	ug/L	1	1600	3800	1400
Chromium, Total	mg/L	0.05	0.08	ND	0.14
Chromium, Dissolved	mg/L	0.05	ND	ND	0.13
Chromium, Hexavalent	mg/L	0.02	ND	ND	0.09
Chromium, Trivalent	mg/L	0.05	0.08	ND	0.05
Copper, Total	mg/L	0.01	0.05	0.10	0.18
Copper, Dissolved	mg/L	0.01	0.04	0.10	0.17
Specific Conductivity	umhos/cm	1	730	930	420
pH		0.1	8.0	7.5	7.8

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168510
			TX01SW07
Parameter	Units	MDL	062788
Arsenic, Total	ug/L	1	1800
Arsenic, Dissolved	ug/L	1	890
Chromium, Total	mg/L	0.05	1.0
Chromium, Dissolved	mg/L	0.05	ND
Chromium, Hexavalent	mg/L	0.02	ND
Chromium, Trivalent	mg/L	0.05	1.0
Copper, Total	mg/L	0.01	1.2
Copper, Dissolved	mg/L	0.01	0.02
Specific Conductivity	umhos/cm	1	605
pH		0.1	7.3

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168520	168530	168540
			TX01SS05	TX01SS05	TX01SS06
Parameter	Units	MDL	062788-17	062788-29	062788-4
Arsenic, Total	mg/kg	0.05	320	140	42
Chromium, Total	mg/kg	2.5	890	490	2200
Chromium, Hexavalent	mg/kg	1.0	ND	ND	ND
Chromium, Trivalent	mg/kg	2.5	890	490	2200
Copper, Total	mg/kg	0.25	190	10	100
pH		1.0	8.4	8.3	10.9

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168550	168560	168570
			TX01SS06	TX01SS07	TX01SS08
Parameter	Units	MDL	062788-11	062788-0	062788-0
Arsenic, Total	mg/kg	0.05	10	70	380
Chromium, Total	mg/kg	2.5	49	110	670
Chromium, Hexavalent	mg/kg	1.0	ND	ND	ND
Chromium, Trivalent	mg/kg	2.5	49	110	670
Copper, Total	mg/kg	0.25	10	53	310
pH		1.0	9.1	9.0	8.7

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168580	168590	168600
			TX01SS09	TX01SS10	TX01SS0
Parameter	Units	MDL	062788-0	062788-0	062788-(
Arsenic, Total	mg/kg	0.05	300	320	-
Chromium, Total	mg/kg	2.5	500	980	-
Chromium, Hexavalent	mg/kg	1.0	ND	ND	-
Chromium, Trivalent	mg/kg	2.5	500	980	-
Copper, Total	mg/kg	0.25	380	300	-
Soil Sieve			-	-	ATTACHE
pH		1.0	8.8	9.0	-

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168610	168620	168630
			TX01SS01	TX01SS01	TX01SS02
Parameter	Units	MDL	062788-4	062788-12	062788-0
Arsenic, Total	mg/kg	0.05	210	93	1300
Chromium, Total	mg/kg	2.5	570	18	2500
Chromium, Hexavalent	mg/kg	1.0	ND	ND	ND
Chromium, Trivalent	mg/kg	2.5	570	18	2500
Copper, Total	mg/kg	0.25	200	11	2900
pH		1.0	6.3	5.1	7.4

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168640	168650	168660
			TX01SS03	TX01SS04	TX01SS04
Parameter	Units	MDL	062788-0	062788-4	062788-19
Arsenic, Total	mg/kg	0.05	1500	280	9.5
Chromium, Total	mg/kg	2.5	2100	350	13
Chromium, Hexavalent	mg/kg	1.0	ND	ND	ND
Chromium, Trivalent	mg/kg	2.5	2100	350	13
Copper, Total	mg/kg	0.25	1200	91	4.4
pH		1.0	8.4	8.9	8.7

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168670	168680	168690
			TX01SS05	TX01SS11	TX01SS1
Parameter	Units	MDL	062788-5	062788-0	062788-2
Arsenic, Total	mg/kg	0.05	360	220	140
Chromium, Total	mg/kg	2.5	3300	1000	530
Chromium, Hexavalent	mg/kg	1.0	ND	ND	ND
Chromium, Trivalent	mg/kg	2.5	3300	1000	530
Copper, Total	mg/kg	0.25	320	270	120
pH		1.0	8.2	7.8	8.7

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168700 TX01SS12
Parameter	Units	MDL	062788-15
Arsenic, Total	mg/kg	0.05	2.0
Chromium, Total	mg/kg	2.5	4.4
Chromium, Hexavalent	mg/kg	1.0	ND
Chromium, Trivalent	mg/kg	2.5	4.4
Copper, Total	mg/kg	0.25	5.6
pH		1.0	8.1

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			208990	209000	209010
			TX01SS0506	TX01SS0206	TX01SS030
			2788-17	2788-0	2788-0
Parameter	Units	MDL	Leachate	Leachate	Leachate
			(1)	(1)	(1)
Arsenic	ug/L	20	950	7800	7100
Chromium	mg/L	0.1	ND	ND	0.1
Copper	mg/L	0.01	0.11	5.9	1.6

MDL Method Detection Limit
(1) All analysis performed on EP Toxicity Leachate.
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			209020 TX01SS0506 2788-5
Parameter	Units	MDL	Leachate (1)
Arsenic	ug/L	20	180
Chromium	mg/L	0.1	ND
Copper	mg/L	0.01	0.20

MDL Method Detection Limit
(1) All analysis performed on EP Toxicity Leachate.
ND Not detected at or above the MDL.

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my direct supervision.

Peggy F. Gaskill for

Thomas L. Halverson
Inorganic Chemistry Manager

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Ott Water Engineers
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August 01, 1988
PACE Project Number: 880628500

Attn: Mr. Randall Whitmore

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Date Sample(s) Collected: 06/27/88
Date Sample(s) Received: 06/28/88

PACE Sample Number:			168450	168460	168470
			TX01SW01	TX01SW02	TX01SW03
Parameter	Units	MDL	062788	062788	062788
Arsenic, Total	ug/L	1	1700	1300	1700
Arsenic, Dissolved	ug/L	1	1070	1100	1300
Chromium, Total	mg/L	0.05	0.30	0.24	0.37
Chromium, Dissolved	mg/L	0.05	0.05	0.08	0.06
Chromium, Hexavalent	mg/L	0.02	ND	ND	ND
Chromium, Trivalent	mg/L	0.05	0.30	0.24	0.37
Copper, Total	mg/L	0.01	0.58	0.40	0.95
Copper, Dissolved	mg/L	0.01	0.28	0.17	0.24
Specific Conductivity	umhos/cm	1	730	500	570
pH		0.1	8.2	8.2	7.6

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168480	168490	168500
			TX01SW04	TX01SW05	TX01SW0
Parameter	Units	MDL	062788	062788	062788
Arsenic, Total	ug/L	1	1600	4200	1700
Arsenic, Dissolved	ug/L	1	1600	3800	1400
Chromium, Total	mg/L	0.05	0.08	ND	0.14
Chromium, Dissolved	mg/L	0.05	ND	ND	0.13
Chromium, Hexavalent	mg/L	0.02	ND	ND	0.09
Chromium, Trivalent	mg/L	0.05	0.08	ND	0.05
Copper, Total	mg/L	0.01	0.05	0.10	0.18
Copper, Dissolved	mg/L	0.01	0.04	0.10	0.17
Specific Conductivity	umhos/cm	1	730	930	420
pH		0.1	8.0	7.5	7.8

MDL Method Detection Limit
ND Not detected at or above the MDL.

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August 01, 1988
PACE Project Number: 880628500

PACE Sample Number:			168510 TX01SW07
Parameter	Units	MDL	062788
Arsenic, Total	ug/L	1	1800
Arsenic, Dissolved	ug/L	1	890
Chromium, Total	mg/L	0.05	1.0
Chromium, Dissolved	mg/L	0.05	ND
Chromium, Hexavalent	mg/L	0.02	ND
Chromium, Trivalent	mg/L	0.05	1.0
Copper, Total	mg/L	0.01	1.2
Copper, Dissolved	mg/L	0.01	0.02
Specific Conductivity	umhos/cm	1	605
pH		0.1	7.3

MDL Method Detection Limit
ND Not detected at or above the MDL.

Reference 14

COPY

OSMOSE WOOD PRESERVING CO.
GRIFFIN OFFICE

July 1, 1986

Mr. Marc Hoover
Wood Protection Co.
P. O. Box 33376
Houston, TX 77233

Dear Marc:

We have received results of the three Personnel Monitoring samples collected on March 20 and March 21, 1986. These samples represent personnel monitoring samples for Mr. Gaye Turner, Mr. Michael Winzo and Mr. James Antee, respectively.

As information, we are enclosing a copy of our Research Report, which lists the sampling data, the analytical results and a conclusion or comparison between these results and the OSHA Permissible Exposure Limit of ten (10) micrograms per cubic meter.

Please note that the samples for your facility are well below the Permissible Exposure Limit (PEL) for arsenic of ten (10) micrograms per cubic meter. In fact, the results for your facility are also below the five (5) micrograms per cubic meter level for arsenic. With this in mind, the EPA Wood Preserving Industry RPAR Agreement does not require further Personnel Monitoring unless triggered by the PEL Checklist.

The attached Personnel Monitoring has been completed in accordance with the Permissible Exposure Limit section of the EPA-Wood Preserving Industry RPAR Agreement, published in final form in the January 10, 1986 Federal Register. As part of this Agreement, the results of these analyses are to be retained in files at your plant for inspection by EPA or OSHA and also forwarded by July 10, 1986, to the following:

U. S. Environmental Protection Agency
Office of Pesticides & Toxic Substances
Office of Compliance Monitoring (EN-342)
401 M Street, S.W.
Washington, DC 20460

COPY

OSMOSE WOOD PRESERVING CO.
GRIFFIN, GA.

With this in mind, we are enclosing a draft of a cover memo which you may choose to use in forwarding this information to the above address. It is also required that all records submitted be certified by the employer as accurate and in compliance with all calibration, analytical and sampling requirements outlined in this program. With this in mind, we are enclosing a separate attachment containing a draft statement which you may choose to use for this purpose.

We would appreciate your reviewing the enclosed information, and if accurate to the best of your knowledge, preparing and signing the necessary documents and forwarding them to EPA as soon as possible. We have prepared this information in an effort to help you meet your requirements under the Permissible Exposure Limit Section of the RPAR Agreement.

As additional information, RPAR requires plants showing less than five (5) micrograms per cubic meter and not requiring additional monitoring to prepare an annual PEL Checklist (see our Environmental Newsletter - RPAR Update - dated April 23, 1986) and forward it to EPA. Essentially, this checklist will assess any changes in production, spill controls, material handling procedure, etc., which may be reasonably expected to increase the potential inorganic arsenic exposure. If any items on the PEL Checklist are answered in the affirmative, Personnel Monitoring (PEL) will be required within three (3) months. The RPAR Agreement also requires plant facilities to maintain the monitoring reports and PEL Checklist reports in their files. Copies of these annual records must be submitted to the U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances Office of Compliance Monitoring (EN-342), 401 M Street S.W., Washington, DC 20460. As stated above, all records submitted must be certified by the employer as being accurate and in compliance with this program.

We hope this information is helpful. If there are any questions, please feel free to call me in Griffin at (404)228-8434.

Best regards,

Thomas A. Marr, P.E.
Manager, Environmental Engineering

TAM:kds
Enclosures

om the
RESEARCH DIVISION
OSMOSE 980 ELLICOTT STREET/BUFFALO, N. Y. 14209/716-882-5905

22-1491B

subject: ASSAY OF THREE AIRBORNE ARSENIC SAMPLES

date: APR. 3, 198
REF. 135-29

Three airborne arsenic monitor samples received from Tom Marr were acid-digested, diluted with demineralized water to 100 mls and analyzed for arsenic by Atomic Absorption Spectroscopy by the graphite furnace method. The samples were described as follows:

Sample #AS8017
Plant: WPC Houston
Date: March 20, 1986
Time: 8:50 a.m. - 4:09 p.m.
Job: Forklift operator
Individual: Gaye Turner
Exposure: 7 hours, 19 minutes
Non-smoker

Sample #AS8018
Plant: WPC Houston
Date: March 20, 1986
Time: 8:52 a.m. - 4:15 p.m.
Job: Forklift operator
Individual: Michael Winzo
Exposure: 7 hours, 23 minutes
Smoker

Sample #AS8022
Plant: WPC Houston
Date: March 21, 1986
Time: 8:50 a.m. - 4:09 p.m.
Job: Treating operator
Individual: James Antee
Exposure: 7 hours, 13 minutes
Smoker

RESULTS

Sample	TWA (8 Hrs) ug As/m^3 air
AS8017	1.91
AS8018	0.65
AS8022	0.84

CONCLUSION

The OSHA standard limits workplace exposure to 10 micrograms of airborne inorganic arsenic per cubic meter of air on an eight hour time-weighted average. All the samples were well below this OSHA limit.

Ronald G. Kiekbusch
Analyst
Research Division

RGK:mab