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Office of
Emergency and
Remedial Response

EPA/ROD/R04-86/012
Sept 1986

EPA

Superfund
Record of Decision:

Mowbray Engineering, AL

TECHNICAL REPORT DATA

(Please read Instructions on the reverse before completing)

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15. SUPPLEMENTARY NOTES

16. ABSTRACT

The Mowbray Engineering Company (MEC) site consists of a 3-acre swamp located in Greenville, Butler County, Alabama. The study area evaluated in the RI/FS also included the MEC plant property located across the street from the swamp. The MEC site lies in the 100-year floodplain of the Tanyard Branch, and is saturated most of the year. An aquifer underlying the site supplies 11,400 residents with potable water. Since the early 1940s,MEC has been in the business of repairing electrical transformers. Waste oils generated from this process were dumped onto the ground behind the plant. Oil was also allowed to flow into a city storm sewer drain and ultimately into the swamp. Dumping and other discharges continued until the mid 1970s. A fish kill occurred in 1975 in Tanyard Branch. As a result, MEC installed two underground storage tanks to collect oils for resale and prevent future spills. In 1980 another fish kill occurred, and the state sampled soils to determine the exact source of contamination. PCBs were detected in swamp soils at 500ppm, leading to EPA removing the top six inches of swamp soil and disposing the wastes in an approved offsite hazardous waste facility. The MEC site was listed on the NPL in 1982, and RI/FS activities were initiated in January, 1985, following discovery of PCBs in concentrations of 1,737ppm in soils contained in the storm water drainage pathway. The primary contaminants of concern are PCBs.

(See Attached Sheet)

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Mowbray Engineering, AL Contaminated Media: soils Key contaminants: PCBs, oils		

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EPA/ROD/R04-86/012
Mowbray Engineering, AL

16. ABSTRACT (continued)

The selected remedial action includes: excavation, removal and disposal of the underground storage tanks located on the MEC property; treatment or disposal of waste oils encountered in the swamp area and in the underground storage tanks by a TSCA-approved method; drainage diversion of surface runon around the swamp area; excavation of soils contaminated above 25ppm PCBs and either offsite or onsite incineration, or onsite stabilization/solidification of these soils. Infrared incineration is preferred, but if operating parameters deem this technology impractical, solidification/stabilization will be performed. The remedy also includes grading and revegetating the swamp; proper closure of the abandoned onsite city supply well in accordance with Alabama Department of Environmental Management well closure regulations; and O&M involving maintenance of the drainage diversion ditch, the revegetated area and possibly the solidified matrix. Estimated capital cost of the remedy is $1.2-2.0 million for offsite incineration, $1.1-1.8 million for onsite incineration, and $750,000 for solidification/stabilization. All costs include O&M activity costs.

RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

SITE

Mowbray Engineering Company
Greenville, Alabama

DOCUMENTS REVIEWED

I am basing my decision primarily on the following documents describing site specific conditions and the analysis of cost-effectiveness of remedial alternatives for the Mowbray Engineering Company site:

- Remedial Investigation and Feasibility Study Draft Report for Mowbray Engineering Company site

- Public Health Evaluation of the Mowbray Engineering Company in Greenville, Alabama

- Agency for Toxic Substances and Disease Registry Health Assessment for Mowbray Engineering Company Site

- Summary of Remedial Alternative Selection

- Responsiveness Summary

- Department of the Interior Release from Claims for Damages to the Natural Resources under DOI Trusteeship.

- Alabama Department of Environmental Management review comments

DESCRIPTION OF SELECTED REMEDY

The selected alternative for the Mowbray Engineering Company (MEC) site includes:

- Excavation, removal, and disposal of the underground storage tanks located on the MEC property.

- Treatment or disposal of waste oils encountered in the swamp area and in the underground storage tanks by a TSCA-approved method.

- Drainage diversion of surface runon around the contaminated swamp area.

- Excavation of soils contaminated above 25 ppm PCBs and either offsite incineration, onsite incineration, or onsite stabilization/solidification of these soils. Incineration with an infrared-type incinerator is the preferred option, but operating parameters are not fully known for this technology. Should actual experience with this type of unit prove unsatisfactory, the contaminated soils will be stabilized/solidified onsite.

- Grading and revegetation of the contaminated swamp area.

- Proper closure of the abandoned onsite city supply well (in accordance with Alabama Department of Environmental Management well closure regulations).

- Operation and maintenance (O&M) activities will include annual maintenance of the drainage diversion ditch, the revegetated area and, possibly, monitoring and maintenance of the solidified matrix. Other O&M activities may be identified during the detailed design of the remedy.

DECLARATIONS

Consistent with the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) and the National Contingency Plan (40 CFR Part 300), I have determined that the remedy described above provides adequate protection of public health, welfare, and the environment. The State of Alabama has been consulted; however, they do not agree with the remedy.

I have also determined that the action being taken is appropriate when balanced against the availability of Trust Fund monies for use at other sites. In addition, the selected remedy is the cost-effective remedial action that provides for complete destruction or fixation of the contaminants, and is necessary to protect public health, welfare or the environment.

SEP 25 1986

Date

Jack E. Ravan

Jack E. Ravan
Regional Administrator

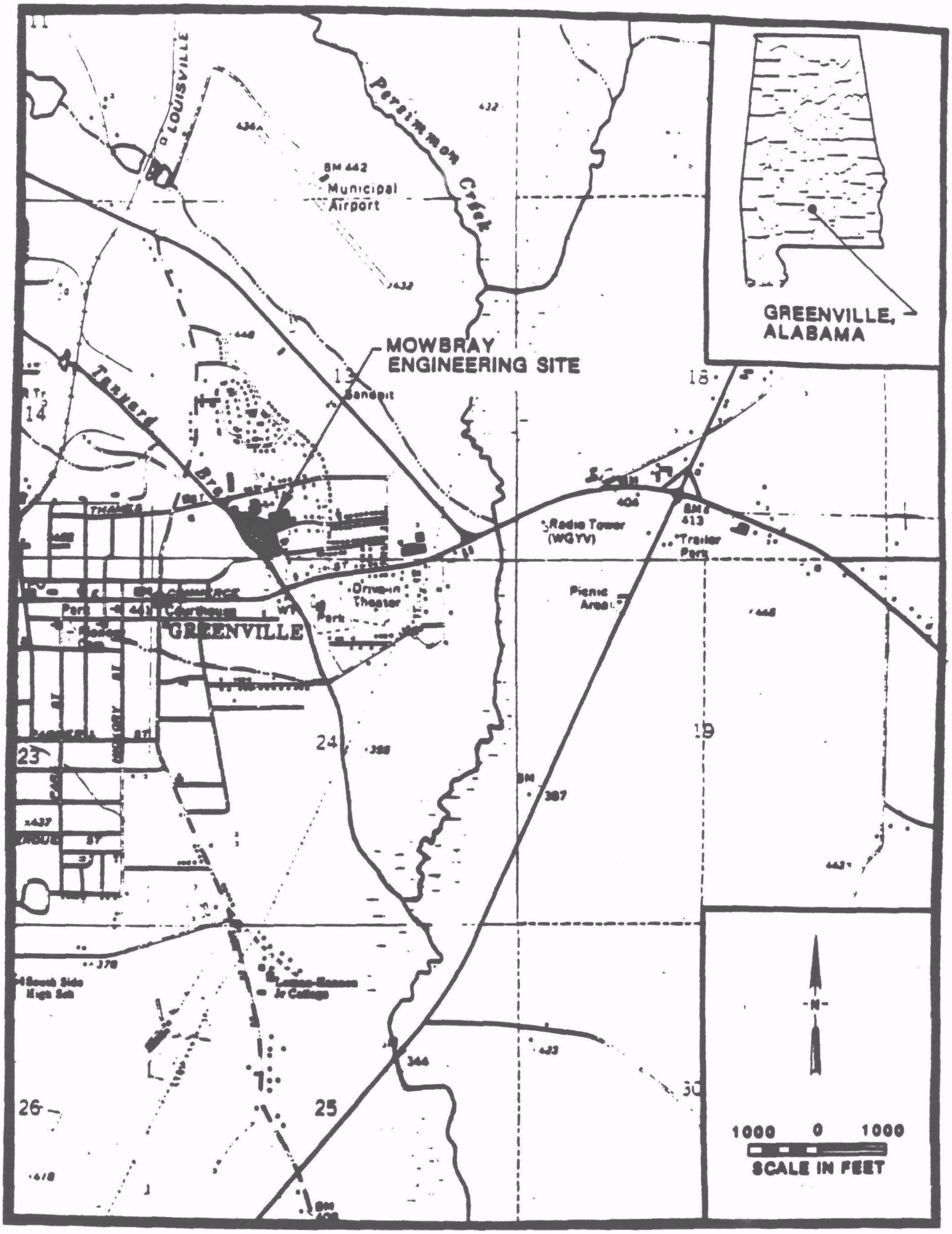

Figure 1-1. Site Location Map.
Mowbray Engineering Company Site.
Greenville, Alabama.

RECORD OF DECISION
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION
MOWBRAY ENGINEERING COMPANY SITE
GREENVILLE
BUTLER COUNTY, ALABAMA

I. SITE LOCATION AND DESCRIPTION

The Mowbray Engineering Company (MEC) Superfund site consists of an approximate three-acre swamp located on Beeland Street in Greenville, Butler County, Alabama (Figure 1-1). The actual study area investigated in the Remedial Investigation (RI) and Feasibility Study (FS) includes this swamp area and the MEC plant property located across Beeland Street from the swamp (latitude 31°49'25"N and longitude 86°36'48"W). The swamp area is bordered on the north by a parking area adjacent to the Greenville Apparel Company and on the south and southwest by First Street and Tanyard Branch. The company property is bordered on the west by Beeland Street and by Second Street on the south. The Alabama Power Company (APC) is located across Beeland Street from the swamp and across Second Street from the plant (Figure 1-2). The study area, which is less than half a mile from downtown Greenville, lies in the 100 year floodplain of Tanyard Branch.[1] The swamp and Tanyard Branch represent a topographic low for the area, which receives surface drainage from the surrounding watershed. The population of Greenville is approximately 8,069 (Census Bureau, 1984 estimate).

The upland area in the northeast corner of the swamp is covered by a stand of loblolly pine with a thick growth of understory shrubs. The northwest corner of the swamp, adjacent to Tanyard Branch, is saturated a majority of the time and is covered with a dense growth of wetland grasses and swamp oak. The central portion of the swamp, comprising the affected area, is essentially denuded of surface vegetation and is stained with a black oily substance, while the southern portion is covered with a diverse group of weeds and underbrush and small pines.

The geologic formations of the Greenville area consist of beds of unconsolidated clay, sandy clay, sand, gravel, chalk, marl, and limestone, which are part of the Cretaceous and Tertiary Systems (Carter et. al, 1949). The principle aquifer in the Greenville area is the Ripley Formation. This aquifer is comprised of several sand layers, sandstone, sandy limestone, and interbedded clay. The aquifer, which supplies Greenville's four city wells with 200-600 gallons per minute, lies approximately 450 feet below land surface (bls) and serves approximately 11,400 people. The formation of the site above the aquifer is characterized by alternating layers of rock and clay. The first significant clay layer, which is approximately 37 feet thick, lies from 18 to 55 feet bls. Immediately below this clay layer lies 20 feet of highly permeable strata characterized by rock, boulders, and limestone.

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[1] May 1, 1980, National Flood Insurance Program (NFIP) Floodway Map for Greenville, Alabama

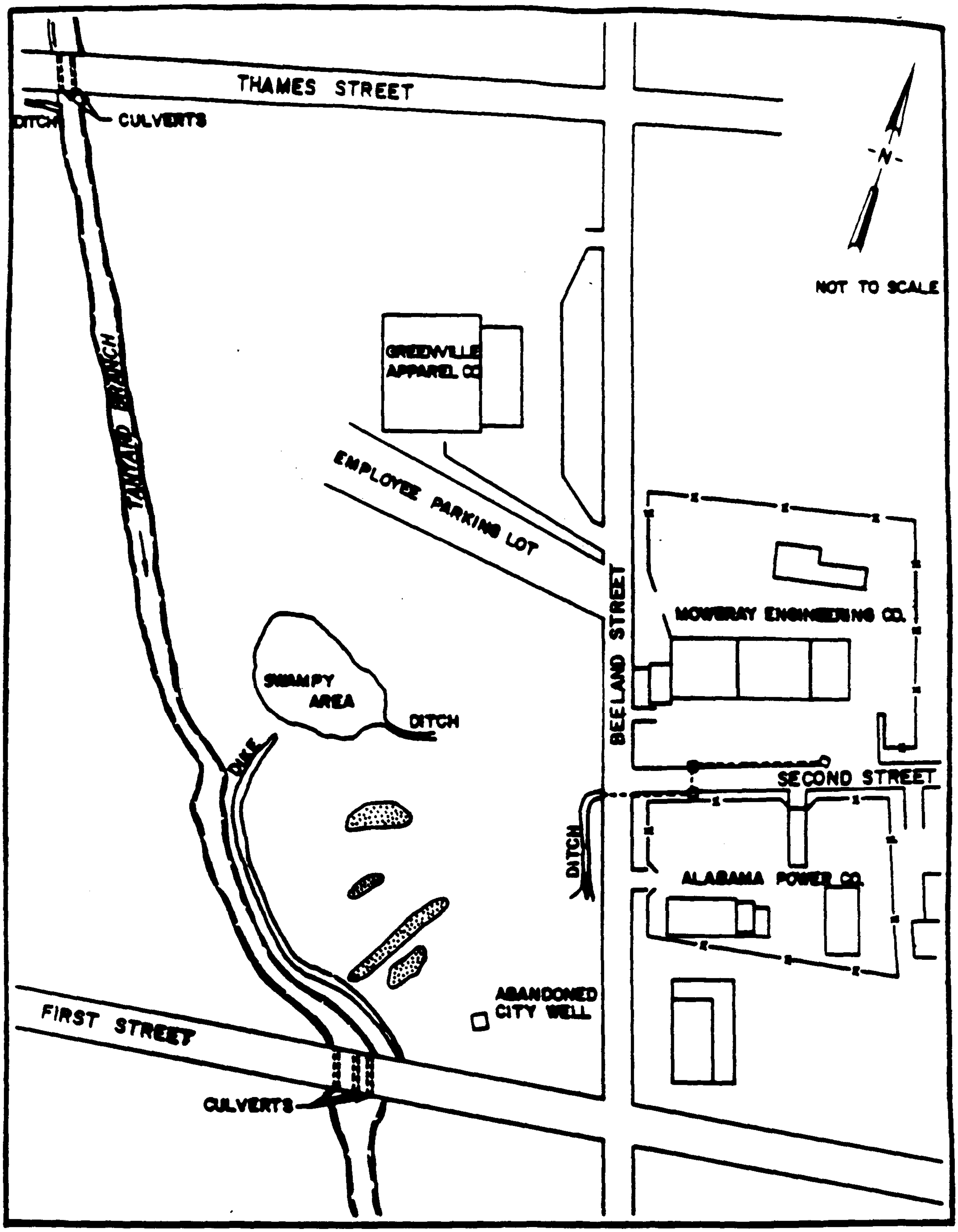

Figure 1-2. Site Map.
Mowbray Engineering Company Site.
Greenville, Alabama.

Area of stained soils

II. SITE HISTORY

Since the early 1940's, MEC has been in the business of repairing electrical transformers. The company was first located in downtown Greenville, but in the mid 1950's, moved to its present location in a residential/light industrial area on the outskirts of the Greenville business district. From that time, MEC disposed of waste transformer oil by dumping it onto the ground behind the plant. The oil was allowed to flow into a city storm sewer drain at the property and ultimately into the swampy area across Beeland Street from the MEC plant. MEC continued discharging in this manner until the mid-1970's. Between 1955 and 1974, the company drained, repaired, and refilled an annual average of approximately 1,000 used transformers, each containing approximately nine gallons of oil.

In May 1975, a major fish kill in Tanyard Branch was traced to an overflow of waste oils from a MEC holding tank. As a result, EPA and the Alabama Water Improvement Commission (AWIC) sampled and analyzed soils from the swamp for PCBs. At that time, only trace amounts of PCBs were found so no further action was taken by the state. In late 1975, MEC installed two underground storage tanks to collect the waste oil for resale and to prevent future spills.

In 1980, following a second spill and fish kill, the state sampled and found soil PCB levels of approximately 500 mg/kg. During February 1981, EPA responded to the situation on an emergency (spill) basis (under Section 311 of the Clean Water Act (CWA)) and conducted an extensive sampling investigation to determine the extent of contamination in the swamp and to delineate an area for possible removal of contaminated soil to an acceptable level (maximum 50 mg/kg PCBs). Following completion of this investigation, EPA officials proceeded to remove the top six inches of contaminated soil from the swamp. The contaminated soils were sent to an approved, offsite hazardous waste facility. In August 1981, after removal of the soil, EPA collected three surface samples from around the study area to verify that PCB levels were below 50 mg/kg. Analytical results from the three samples revealed a maximum concentration of 19 mg/kg.

Also in February 1981, personnel from the U.S. Food and Drug Administration (FDA) collected catfish, which are bottom feeders, from Tanyard Branch downstream of the site and concluded that PCB concentrations in edible tissue were below the FDA level (2.0 mg/kg). In addition, EPA collected samples of root systems of bullrush (Scirpus sp.) growing in the northwest corner of the swamp to determine if the plants were concentrating PCBs. The analyses of the root systems from two separate plants growing in the water saturated soils indicated levels of PCBs above background in the short, thick rhizomes of the plants. Concurrently with the extent of contamination survey of the swamp, EPA's Environmental Services Division, Ecology Branch, conducted an ecological survey of Tanyard Branch and Persimmon Creek, which joins with Tanyard Branch approximately one mile downstream of the site. The results of this investigation showed that the Tanyard Branch was almost completely devoid of biota from below the swamp to its confluence with Persimmon Creek. Two miles below the confluence, Persimmon Creek biota appeared to be normal.

In February 1981, the Centers for Disease Control (CDC) requested assistance from National Institute for Occupational Safety and Health (NIOSH) to evaluate occupational exposures to PCBs by employees at MEC. Based on the data collected in this study, NIOSH concluded that workers did not appear to be exposed to excessive levels of PCBs; however, NIOSH recommended that workers reduce skin exposure to transformer oil as much as possible (NIOSH, 1981 and 1982).

In 1982, the MEC site was listed on the National Priorities List with a ranking score of 53.67.

No further investigations occurred at the site until November 1983, when grab soil samples were collected from the swamp by the Alabama Department of Environmental Management (ADEM) during a routine inspection at MEC. One of the soil samples collected from the storm water drainage pathway through the site was reported to have a PCB concentration of 1,737 mg/kg. This triggered renewed interest in the site at the federal level.

In February 1984, the EPA Field Investigation Team (FIT), conducted a site inspection of the swamp to characterize existing conditions and to prepare a detailed sampling study plan to determine the possibility and extent of recontamination of the swamp. In April 1984, FIT conducted a sampling investigation of the swamp and found that soils and groundwater in the swamp were contaminated with PCBs (Aroclor 1260) at levels similar to those measured prior to EPA's 1981 cleanup of the site.

In January 1985, EPA received approval to begin remedial activities and authorized Camp Dresser & McKee (CDM) to conduct a Remedial Investigation/ Feasibility Study (RI/FS) at the MEC site. In March 1985, CDM conducted a general site reconnaissance and collected soil and sediment samples from the Alabama Power Company (APC) property and from Tanyard Branch and Persimmon Creek. Since all samples were below the detection limit (1.0 mg/kg) for PCBs, the APC was ruled out as a potential source of PCB contamination to the swamp.

In August 1985,the RI Work Plan prepared by CDM received approval by EPA, and a Public Meeting was held to present it to the public and to receive comments. Subsequently, the field work began and was completed in November 1985. The combined RI and FS Report was completed in July 1986 and was presented to the public for comment on August 12, 1986 at the FS Public Meeting.

III. CURRENT SITE STATUS

The initial review of existing information highlighted several deficiencies in the data base for the MEC site that needed to be corrected before site remedies could be adequately evaluated. Therefore, the primary objective of the remedial investigation was to collect an adequate amount of data from soil, ground water, surface water, and stream sediment samples to eliminate these data gaps. Limited geological data were also collected during the installation of monitor wells.

Surface Water/Sediment

Surface water samples collected both upstream and downstream of the site in Tanyard Branch and Persimmon Creek (Figure 3-1) were found to contain no contaminants above 1980 EPA Water Quality Criteria (Table 3-1). Stream sediment samples collected upstream of the site in both streams were found to contain no contaminants, although both downstream samples from the same streams were found to contain very low levels of PCB. Samples collected from downstream Tanyard Branch showed PCBs at 0.52 mg/kg, and samples collected from downstream Persimmon Creek contained levels of PCBs at 0.45 mg/kg (Table 3-2).

Groundwater

A total of four permanent monitor wells were installed at, or near, the MEC site study area to evaluate migration via groundwater in the water table zone (Figure 3-2). Only one monitor well, MW-2, was found to contain PCB in groundwater samples. A sample from MW-2, located near the point where waste oil from the MEC plant discharged into the swamp, was found to contain 2.4 ug/l Arochlor 1260. However, the water samples collected from all the monitor wells were unfiltered, and it is likely that the PCBs, which are nearly insoluble in water, may have been adsorbed onto the clay particles collected with the water samples.

Monochlorobenzene and dichlorobenzene were detected in MW-3 at 200.0 and 3.0 ug/l, respectively. Bis (2-ethylhexyl) phthalate was detected in samples from all the monitor wells including MW-1, the upgradient background well. Carbon disulfide was found in MW-1 (3.2 ug/l) and MW-2 (8.5 ug/l). This, however, is not considered to be site-specific due to the low levels and presence in both the upgradient and downgradient wells. Table 3-3 presents the results of the monitor well sample analyses.

The sampling of a Greenville public water supply well currently in use showed no PCBs; a trace quantity of phenol (5ug/l) was the only chemical found in this well.

Soil

A total of 46 temporary boreholes were installed within the study area to evaluate the areal and vertical distribution of contaminants and to determine if the buried tanks had been leaking. Thirty temporary boreholes were drilled in the swamp disposal area (Figure 3-3) and sixteen at the MEC transformer processing area (Figure 3-4).

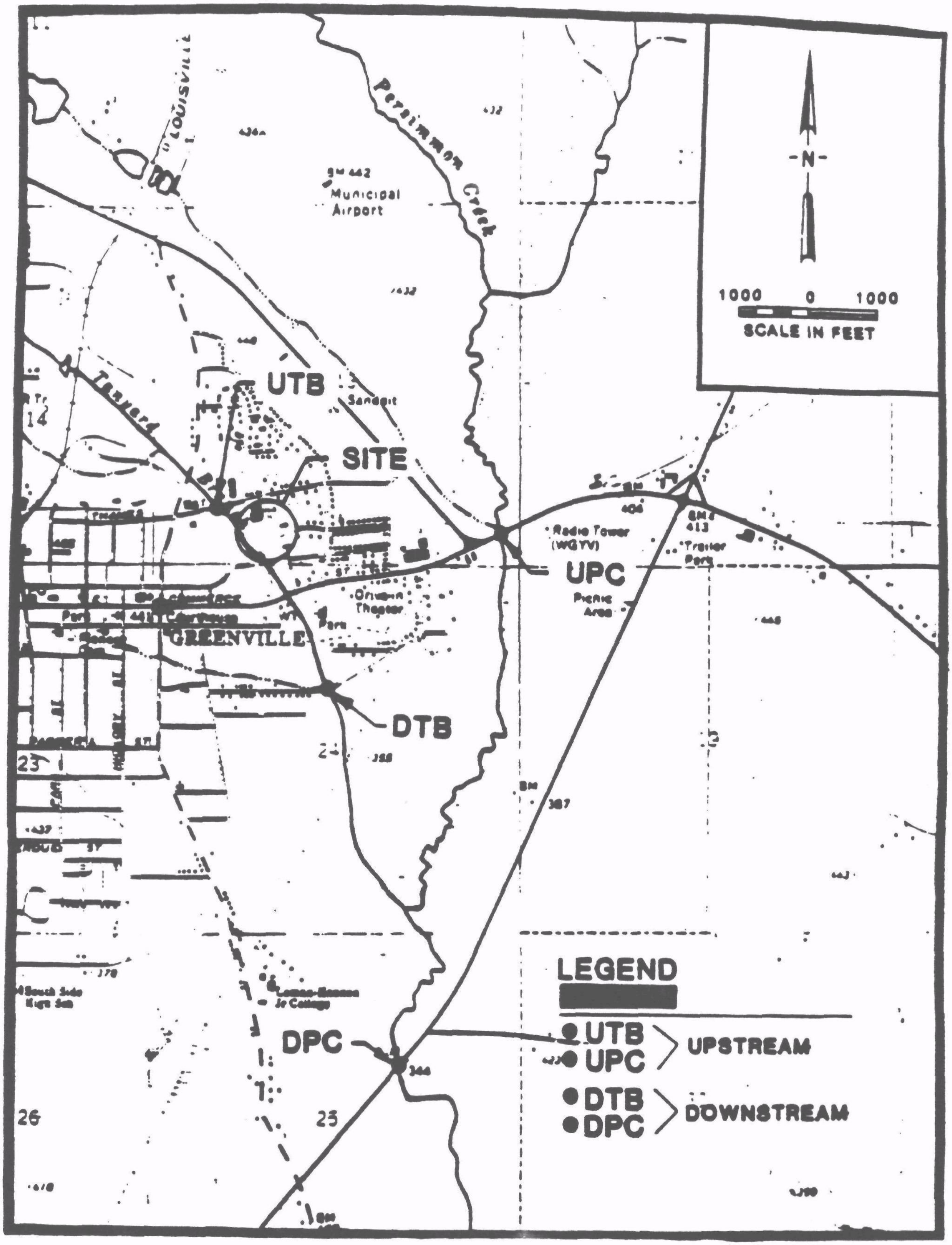

Figure 3-1. Water Quality and Sediment Sampling. Mowbray Engineering Company Site. Greenville, Alabama.

Table 3-1. Organic Compounds Detected in Surface Water Samples, CLP Laboratory

Sample	Parameter (ug/l) Carbon Disulfide	Total Xylenes
MEC UPC	4.5J	10u
MEC DTB	10u	7.0J

u = none detected; value is minimum quantitation limit
J = estimated value

Table 3-2. Organic Compounds Detected in Surface Sediment Samples, CLP Laboratory

Sample	Parameter (mg/kg) PCB Aroclor 1260
MEC UPC	0.22u
MEC DPC	0.45
MEC UTB	0.21u
MEC DTB	0.52

u = none detected; value is minimum quantitation limit

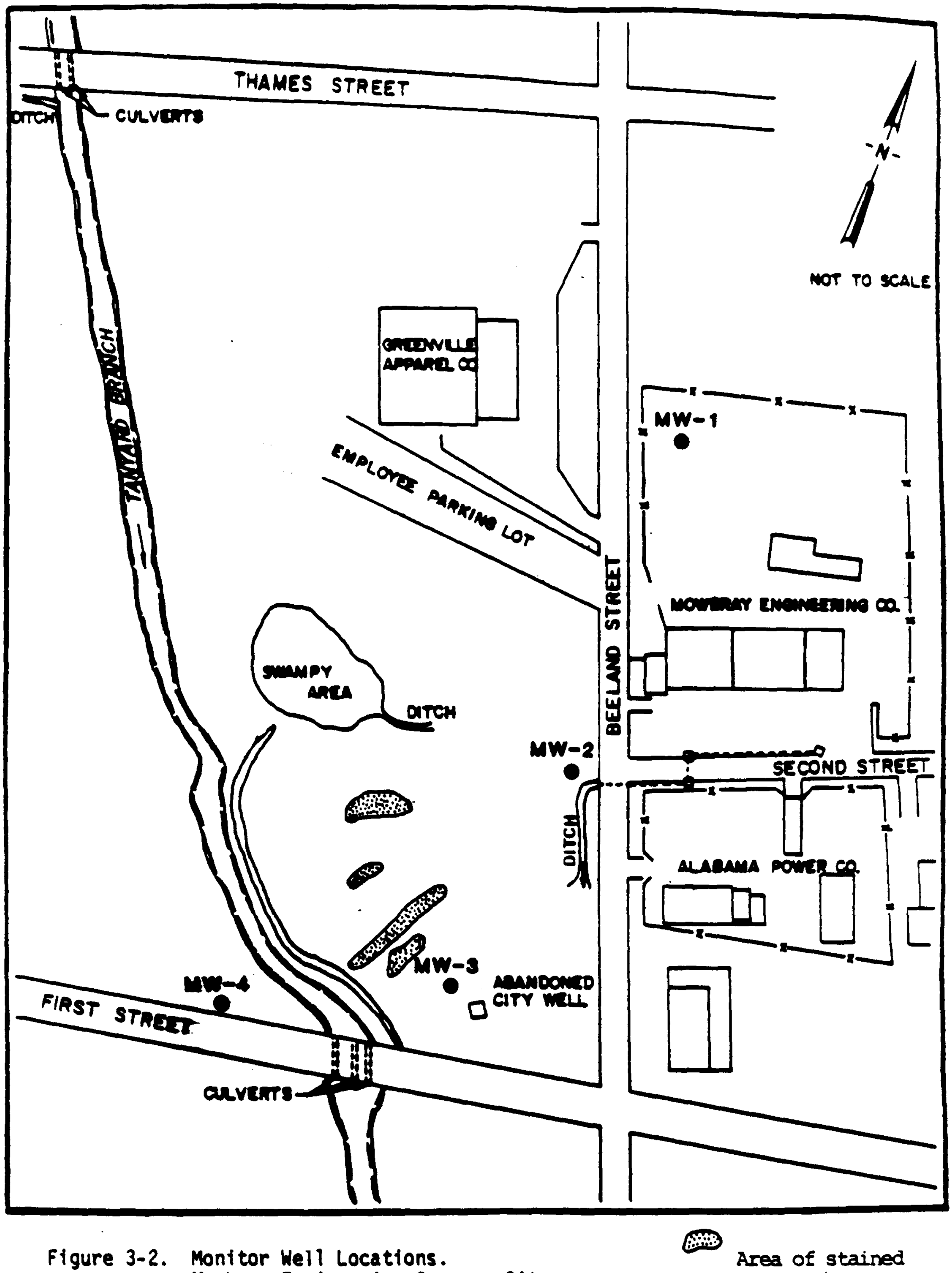

Figure 3-2. Monitor Well Locations.
Mowbray Engineering Company Site.
Greenville, Alabama.

Table 3-3. Analytical Results for Water Samples from Permanent Monitor Wells, CLP Laboratory

Parameters (ug/l)	Sample Location MW-1	MW-2	MW-3	MW-4
PCB (Aroclor 1260) *	1.0u	2.4	1.0u	1.0u
Bis(2-Ethylhexyl) Phthalate	26	2J	3J	5J
Carbon Disulfide	3.2J	8.5J	10.0u	10.0u
1,4-Dichlorobenzene	10u	10u	8.2J	10u
1,1-Dichloroethane	10u	10u	3.3J	10u
Chlorobenzene	10u	10u	220	10u

u = none detected; value is minimum quantitation limit
J = estimated value

* PCB (Aroclor 1260) not detected in all monitor well samples by the on-site laboratory.

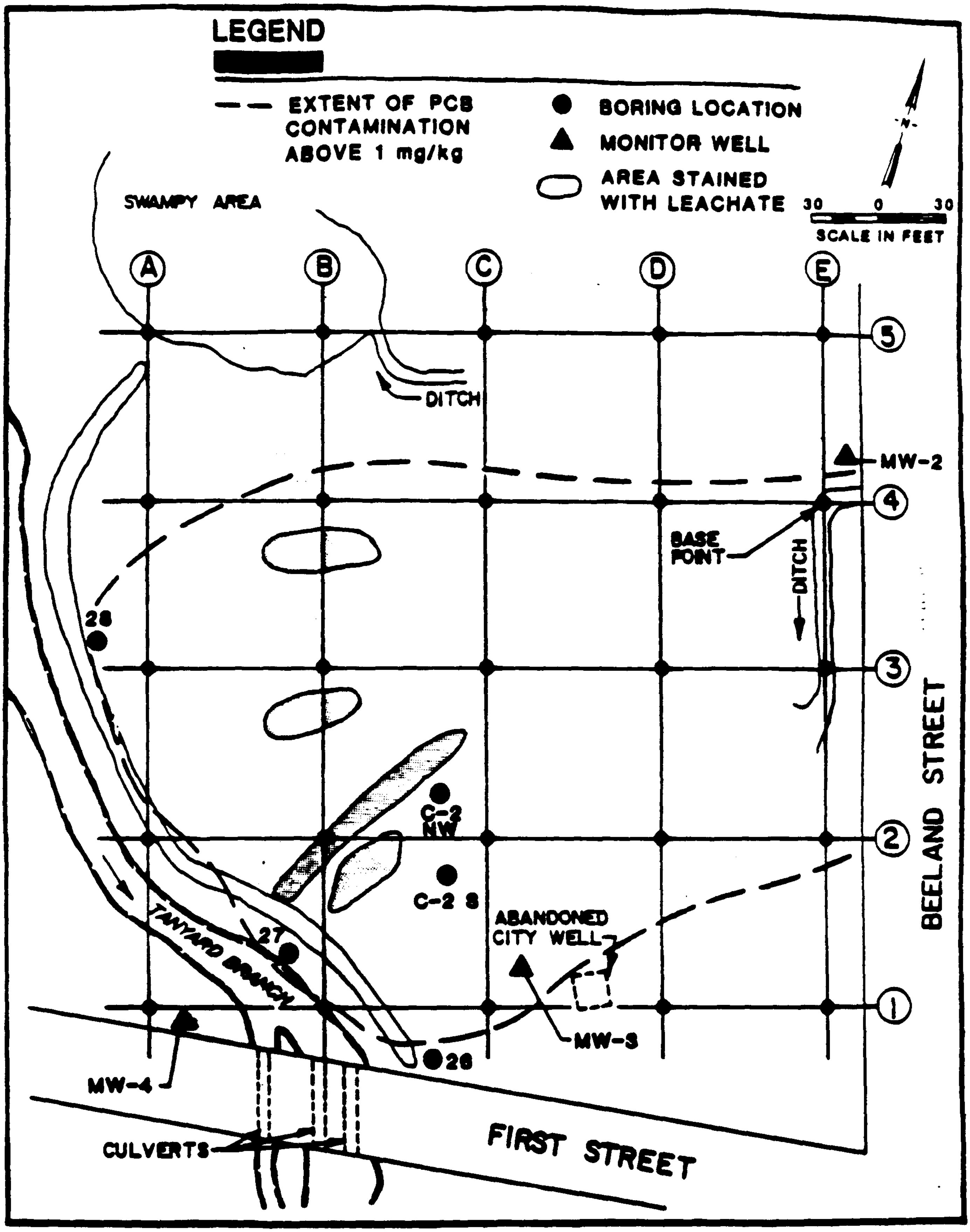

Figure 3-3. Disposal Area Sampling Locations.
Mowbray Engineering Company Site.
Greenville, Alabama.

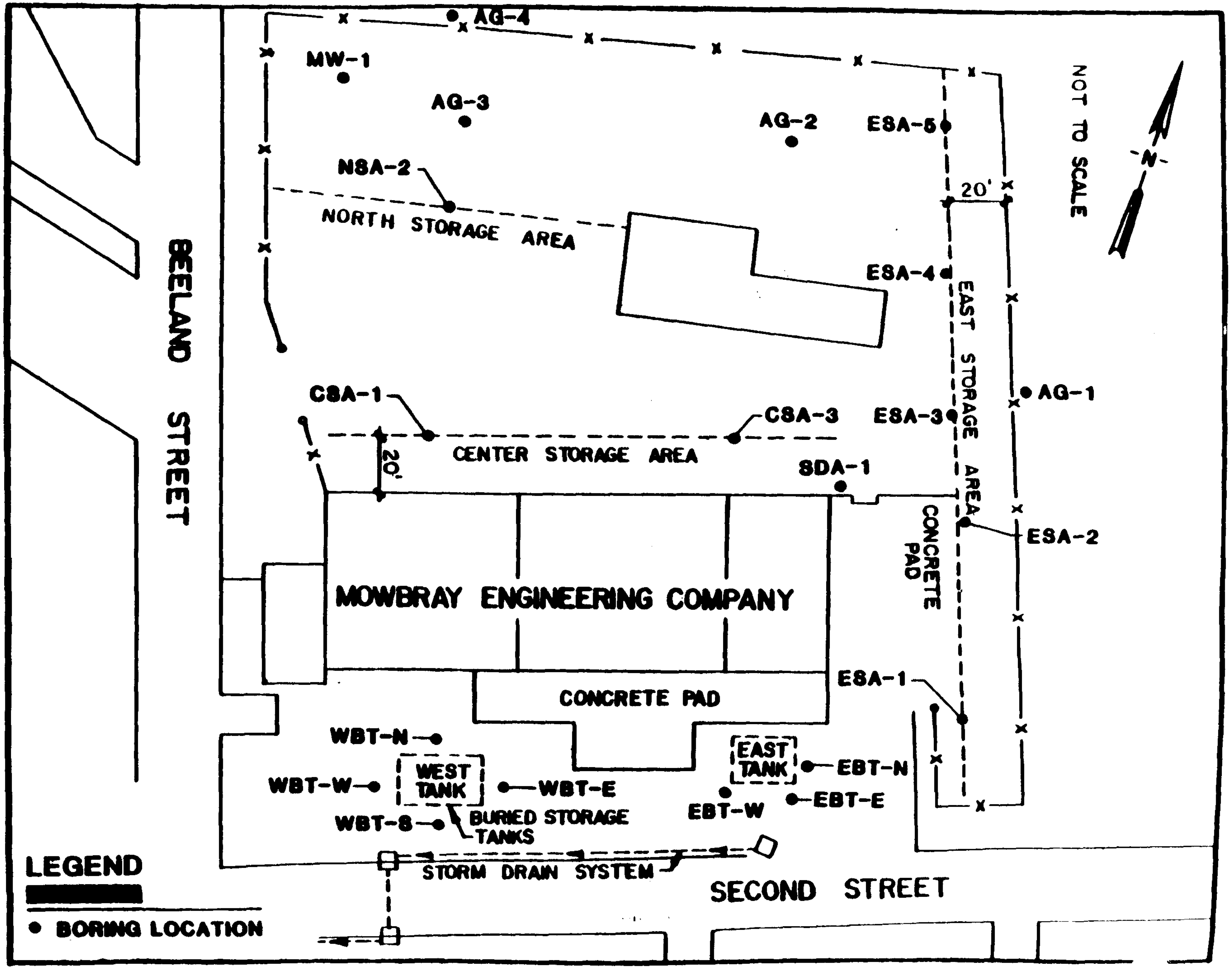

Figure 3-4. Transformer Processing Area Sampling Locations. Mowbray Engineering Company Site. Greenville, Alabama.

Results of soil sample analyses revealed the presence of PCB (Arochlor 1260) in both the MEC transformer processing area and in the swamp disposal area west of Beeland Street. Levels of PCB in the soil samples range from 54 mg/kg to trace amounts in the swamp disposal area and from 62 mg/kg to trace amounts in the transformer processing area.

Other chemical compounds detected in soils from the processing area include 1, 2, 4-trichlorobenzene at levels up to 16 mg/kg, and several polynuclear aromatic hydrocarbons (PAHs) at levels up to 15 mg/kg in the near surface. Several metals were present at levels well within values typically found in soils of the United States (Connor and Shacklette, 1975). Tables 3-4, 3-5, and 3-6 present the soil sample results from the on-site laboratory and the CLP laboratory for the processing area.

A similar suite of PAH compounds at levels of approximately 1 mg/kg total was detected in soils from the swamp disposal area. Bis (2-ethylhexyl) phthalate was detected, but its source may be attributed to its use in electrical equipment. Low levels of phenol, chloroform, dichloroethane, and trichloroethanes were detected. No dioxins, which may be formed by heating chlorinated compounds, were detected. Tables 3-7, 3-8, and 3-9 present the results of soil sample analyses from the onsite laboratory and the CLP laboratory, respectively, for the swamp disposal area.

A pocket of oil was encountered approximately nine feet below ground surface during the drilling of borehole C-2 in the swamp disposal area. A sample was collected at this location for analysis for PCB, and the results showed a concentration of PCBs at 1500 mg/kg. To determine the extent of this oil layer, two offset borings, C2-NW and C2-S, shown on Figure 3-3, were drilled. Oil was not observed during the drilling of the two offset borings, which were hydraulically downgradient from C-2. On the basis of these borings, and other borings in the swamp in general, the presence of oil is thought to be localized and not wide-spread.

Geologic

Although no deep wells were installed during this investigation, the data collected during the drilling program shows that a clayey sand unit interbedded with a clay layer of variable thickness overlies a fairly thick black clay that is believed to act as a confining layer in this area. Additional well logs, supplied by the State of Alabama, for the Greenville area as well as a log of an abandoned city well located in the swamp area show multiple clay layers, up to 42 feet thick, in the top 100 feet bls around the Mowbray site (Table 3-10). The presence of such clay confining layers indicates that the primary aquifer for this region at a depth of over 400 feet bls is protected from contamination.

Chemical of Concern

Based on the environmental sampling, PCBs are considered to be the only potentially significant chemical found at the site based on the frequency of detection, concentrations detected, and inherent toxicity. Several PAHs were detected in the soils on the MEC property and the swamp disposal area; however, since PAHs are formed naturally by combustion they are

Table 3-4. Analytical Results for Soil Samples from Transformer Processing Area, Onsite Laboratory

Sample	PCB (Aroclor 1260) (mg/kg) Sample Depth										
	1'	3'	5'	10'	15'	20'	25'	30'	35'	40'	45'
WBT-N	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WBT-E	9.3	ND	ND	1.0	6.8	ND	ND	ND	ND	ND	ND
WBT-S	36.1	29.0	ND	ND	9.6	ND	ND	ND	ND	ND	ND
WBT-W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EBT-N	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EBT-E	6.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EBT-W	61.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CSA-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CSA-2											
CSA-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA-1											
NSA-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NSA-3											
ESA-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ESA-2	ND	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
ESA-3	ND	ND									
ESA-4	ND	ND									
ESA-5	ND	ND									
SDA-1	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	
AG-1	ND										
AG-2	ND										
AG-3	ND										
AG-4	ND										

ND = none detected (minimum quantitation limit = 1 mg/kg)
Blank spaces indicate no sample collected.

Table 3-5. Organic Compounds Detected in Soil Samples from Transformer Processing Area, CLP Laboratory

Compounds (mg/kg)	ESA-1			ESA-2			ESA-4	ESA-5	EBT-N			EBT-E		EBT-W	
Sample Number / Depth	1'	3'	3'*	1'	3'	5'	1'	1'	1'	3'	10'	1'	3'	1'	3'
Moisture Percent	13	13	13	13	13	8	15	16	15	19	17	12	14	14	14
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C6 Alkyl-octahydroindene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PCB 1260 (Aroclor 1260)	1	0.49	0.11	2.4C	1.6J	0.72JN	0.46	0.18	46C	0.21	0.3	14C	0.97	37C	0.74C
Fluoranthene	0.38u	0.6u	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Pyrene	0.38u	0.6u	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Benzo (A) Anthracene	0.38u	0.6u	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Chrysene	0.38u	0.6u	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Benzo (B and/or K) Fluoranthene	0.38u	0.49J	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Benzo-A-Pyrene	0.38u	0.21J	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Indeno (1,2,3,-CD) Pyrene	0.38u	0.26J	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Benzo (GHI) Perylene	0.38u	0.25J	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Benzyl Butyl Phthalate	0.38u	0.17J	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Total Xylenes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	0.38u	0.6u	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Di-N-Butyl-Phthalate	0.38u	0.6u	0.38u	0.38u	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
Total Trichlorobenzenes	0.38u	-	0.38u	0.38c	23uJ	22u	0.39u	0.39u	23u	0.41u	0.4u	0.37u	0.38u	23u	0.38u
4,4'-DDT (P,P'-DDT)	0.01u	0.2u	0.01u	0.03u	0.28u	0.26u	0.01u	0.01u	0.28u	0.01u	0.01u	0.05u	0.01u	0.28u	0.01u

Table 3-5. Organic Compounds Detected in Soil Samples from Transformer Processing Area, CLP Laboratory (continued)

Compounds (mg/kg)	EBT-W	WBT-E			WBT-N		WBT-S				SDA-1		AG-1	CSA-1	CSA-3
Sample Number / Depth	5'	1'	3'	15'	1'	3'	1'	3'	3'*	20'	1'	3'	1'	1'	1'
Moisture Percent	22	14	15	9	10	10	16	10	9	19	13	16	14	10	10
Toluene	0.23	-	-	-	-	-	-	-	5.6uJ	-	-	-	-	-	-
C6 Alkyl-octahydroindene	-	-	-	-	-	-	-	-	-	-	8JN	-	-	-	-
PCB 1260 (Aroclor 1260)	7.3c	27C	0.72	6	2.2C	0.09u	61C	41C	62C	0.17	8.6	1	0.09u	0.33	0.15
Fluoranthene	0.68u	2.3u	0.39u	22u	0.37u	0.37u	24u	22u	0.6u	0.41u	12	0.39u	0.39u	0.39u	0.35u
Pyrene	0.68u	2.3u	0.39u	22u	0.37u	0.37u	24u	22u	0.6u	0.41u	9.5	0.39u	0.39u	0.39u	0.35u
Benzo (A) Anthracene	0.68u	2.3u	0.39u	22u	0.37u	0.37u	24u	22u	0.6u	0.41u	8.7	0.39u	0.39u	0.39u	0.35u
Chrysene	0.68u	2.3u	0.39u	22u	0.37u	0.37u	24u	22u	0.6u	0.41u	8.6	0.39u	0.39u	0.39u	0.35u
Benzo (B and/or K) Fluoranthene	0.68uJ	2.3u	0.39u	22u	0.37u	0.37u	24u	22u	0.6uJ	0.41u	15	0.39u	0.39u	0.39u	0.35u
Benzo-A-Pyrene	0.68u	2.3u	0.39u	22u	0.37u	0.37u	24u	22u	0.6u	0.41u	7.8u	0.39u	0.39u	0.39u	0.35u
Indeno (1,2,3,-CD) Pyrene	0.68u	2.3u	0.39u	22u	0.37u	0.37u	24u	22u	0.6u	0.41u	7.3J	0.39u	0.39u	0.39u	0.35u
Benzo (GHI) Perylene	0.68u	2.3u	0.39u	22u	0.37u	0.37u	24u	22u	0.6u	0.41u	7J	0.39u	0.39u	0.39u	0.35u
Benzyl Butyl Phthalate	0.68u	2.3u	0.39u	22u	0.37u	0.37u	24u	22u	0.6u	0.41u	7.8u	0.39u	0.39u	0.39u	0.35u
Total Xylenes	0.01u	-	-	-	-	-	-	-	1.1JN	-	-	-	-	-	-
1,2,4-Trichlorobenzene	0.68u	2.3u	0.18J	22u	0.37u	0.37u	16J	6.8J	5.6	0.41u	7.8u	0.39u	0.39u	0.39u	0.35u
Di-N-Butyl-Phthalate	2uJ	2.3u	0.39u	22u	0.37u	0.24J	24u	22u	0.6u	0.41u	7.8u	0.39u	0.39u	0.39u	0.35u
Total Trichlorobenzenes	-	2.3u	0.39u	22u	0.37u	0.37u	3.2J	22u	-	0.41u	7.8u	0.39u	0.39u	0.39u	0.35u
4,4'-DDT (P,P'-DDT)	0.22u	0.28u	0.01u	0.26u	0.01u	0.01u	0.58u	0.27u	1.9u	0.01u	0.05u	0.01u	0.01	0.01u	0.01u

- Not analyzed for
u Material was analyzed, but not detected. The number is minimum quantitation limit.
J estimated value
R [illegible] re unusable
C [illegible] afirmed

*QA/QC samples

Table 3-6. Metals Detected in Soil Samples from Transformer Processing Area, CLP Laboratory

Parameter (mg/kg)	Sample Number Depth			
	WBT-S 3'	EBT-W 5'	ESA-1 3'	NSA-2 3'
Moisture Percent	10	21	22	7
Arsenic	5.5J	42J	19J	3.0u
Barium	7.4	18	66	4.1
Chromium	16	68	37	4.7
Copper	3.2	8.7	6.3	1.0u
Lead	4.4	20	12	4.5
Antimony	28J	120J	62	3.0u
Strontium	-	-	-	5.6
Vanadium	47	260	130	12
Yttrium	-	-	-	1.6
Zinc	10	72	35	2.8
Aluminum	5100J	16000J	8700J	3900
Manganese	85	540	760	19
Calcium	88	140	360	160
Magnesium	150	350	250	230
Iron	20000	110000	56000	5700
Sodium	41	47	19u	100u
Potassium	540	590	290	-
Beryllium	0.60u	2.4	0.71	1.0u
Nickel	6.1u	40	19	2.0u
Cobalt	3.3u	3.8u	5.5	-

- = not analyzed for
u = none detected; value is minimum quantitation limit
J = estimated value

Table 3-7. Analytical Results for Soil Samples from Swamp Area, Onsite Laboratory

	PCB (Aroclor 1260) (mg/kg) Sample Depth									
Sample	1'	3'	5'	10'	15'	20'	25'	30'	35'	40'
A1	ND	ND	ND	ND	ND	ND	ND	ND		
A2	ND	ND	ND	ND						
A3	6.0	ND	ND	ND	ND	ND	ND			
A4	ND	ND	ND	ND	ND	ND	ND			
A5	ND	ND	ND	ND	ND	ND	ND			
B1	2.0	ND	ND							
B2	2.6	ND	ND	ND	ND	ND	ND			
B3	4.8	ND	ND	ND	ND	ND	ND			
B4	14.0	1.9	ND	ND	ND	ND	ND			
B5	ND	ND	ND	ND	ND	ND	ND			
C1	1.8	ND	ND	ND	ND	ND	ND	ND		
C2	15.5	10.0	19.4	ND	ND	ND	ND	ND		
C3	3.0	6.6	ND	ND	ND	ND	ND	ND		
C4	9.0	6.9	1.8	ND	ND	ND	ND	ND		
C5	ND	ND	ND	ND	ND	ND	ND	ND		
D1	ND	ND	ND	ND	ND	ND	ND	ND	ND	
D2	ND	2.0	31.7	ND	ND	ND	ND	ND		
D3	2.5	3.0	3.9	10.2	ND	ND	ND	ND		
D4	18.0	25.0	18.1	ND	ND	ND	ND	ND	ND	ND
D5	ND	ND	ND	ND	ND	ND	ND	ND	ND	
E1	ND	ND	ND	ND	ND	ND	ND	ND	ND	
E2	ND	ND	9.9	ND	ND	ND	ND	ND	ND	
E3	ND	5.0	8.3	4.2	ND	ND	ND	ND	ND	
E4	1.5	5.0	ND	7.0	1.2	ND	ND	ND	ND	
E5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C2-S	7.8	ND	7.3	ND	ND					
C2-NW	21.4	4.4	9.0	ND	ND					
26	ND	ND	ND	ND	ND	ND	ND	ND	ND	
27	2.2	ND								
28	7.2	ND								

ND = none detected (minimum quantitation limit = 1 mg/kg)
Blank spaces indicate no sample collected.

Table 3-8. Organic Compounds Detected in Soil Samples from Swamp Disposal Area, CLP Laboratory

Compound (mg/kg)	A1 1'	A1 5'	A2 1'	A2 3'	A2 10'	A3 1'	A3 3'	A3 10'	A3 10'*	A4 1'	A4 5'	A5 1'	A5 3'	B1 1'	B1 3'
Moisture Percent	26	17	47	38	39	27	28	28	50	31	22	36	51	38	26
Toluene	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-
Decosanol	-	-	-	-	-	-	-	5JN	-	-	-	-	-	-	-
Perylene	-	-	-	-	-	-	-	4JN	-	-	-	-	-	-	-
C6 Alkyl-octahydroindene	-	-	50JN	-	-	-	-	-	-	-	0.4JN	-	-	-	0.5JN
PCB 1260 (Aroclor 1260)	0.19u	0.10u	4.9	0.15	0.13u	8.2	1.2C	0.31uJ	0.16u	0.13	0.6	0.74	0.16u	5.8	0.75C
C4 Alkyl-phenanthrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis (2-Ethylhexyl) Phthalate	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
C6 Octa-hydroindene	-	-	-	-	-	-	2JN	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	0.01u	-	-	-	-	-	-	-
Naphthalene	0.38u	0.39u	36u	0.54u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Phenanthrene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Fluoranthene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Pyrene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Benzo (A) Anthracene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Chrysene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Benzo (B and/or K) Fluoranthene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Benzo-A-Pyrene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Indeno (1,2,3-CD) Pyrene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Benzo (GHI) Perylene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Methyl Ethyl Ketone	-	-	-	-	-	-	-	0.4u	-	-	-	-	-	-	-
Polychlorinated Bi-Phenyl (Non Mol-Arochlor)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl-Anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluorene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
Benzyl Butyl Phthalate	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
4-Methylphenol	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u
1,1 Dichloroethane	-	-	-	-	-	-	-	0.01u	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	0.01u	-	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-	-	0.01u	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	0.01u	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	0.38u	0.39u	36u	0.51u	0.54u	27u	0.44u	1.7uJ	0.73u	0.48u	0.44u	0.52u	0.73u	31u	0.44u

Table 3-8. Organic Compounds Detected in Soil Samples from Swamp Disposal Area, CLP Laboratory (continued)

	Sample Number Depth														
	B1	B2			B3			B4			B5		C1		
Compound (mg/kg)	5'	1'	3'	5'	1'	3'	15'	1'	3'	5'	1'	3'	1'	3'	3'*
Moisture Percent	35	33	29	24	16	23	14	17	24	17	18	18	13	22	20
Toluene	-	0.01J	-	-	-	-	-	-	-	-	-	-	-	-	0.01u
Docosanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C6 Alkyl-octahydroindene	-	-	7JN	-	-	2JN	1JN	-	-	-	-	-	-	-	-
PCB 1260 (Aroclor 1260)	9C	14	3C	0.31	29	1.6C	0.5	54C	8.9	0.17	0.23	0.1u	0.18u	0.1u	0.05u
C4 Alkyl-phenanthrene	-	-	-	0.5JN	-	-	-	-	-	30JN	-	-	-	-	-
Bis (2-Ethylhexyl) Phthalate	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.2uJ	0.1J	0.43u
C6 Octa-hydroindene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	0	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	0.51u	29u	0.44u	0.43u	24u	0.18J	0.39U	24u	27u	0.39u	0.41u	0.39u	0.38u	0.44u	0.43u
Phenanthrene	0.51u	29u	0.44u	0.43u	24u	0.6	0.39u	24u	27u	0.39u	0.41u	0.39u	0.1J	0.44u	0.43u
Fluoranthene	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.24J	0.44u	0.43u
Pyrene	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.23J	0.44u	0.43u
Benzo (A) Anthracene	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.12J	0.44u	0.43u
Chrysene	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.14J	0.44u	0.43u
Benzo (B and/or K) Fluoranthene	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.17J	0.44u	0.43u
Benzo-A-Pyrene	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.12J	0.44u	0.43u
Indeno (1,2,3-CD) Pyrene	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.07J	0.44u	0.43u
Benzo (GHI) Perylene	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.09u	0.44u	0.43u
Methyl Ethyl Ketone	-	0.25uJ	-	-	-	-	-	-	-	-	-	-	-	-	0.09J
Polychlorinated Bi-Phenyl (Non Hal-Arochlor)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl-Anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluorene	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.38u	0.44u	0.43u
Benzyl Butyl Phthalate	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.38u	0.44u	0.43u
4-Methylphenol	0.51u	29u	0.44u	0.43u	24u	0.44u	0.39u	24u	27u	0.39u	0.41u	0.39u	0.38u	0.44u	2.2u
1,1 Dichloroethene	-	0.01u	-	-	-	-	-	-	-	-	-	-	-	-	0.1u
1,1,1-Trichloroethane	-	0.01u	-	-	-	-	-	-	-	-	-	-	-	-	0.1u
Total Xylenes	-	0.01u	-	-	-	-	-	-	-	-	-	-	-	-	0.1u
Trichloroethylene	-	0.01u	-	-	-	-	-	-	-	-	-	-	-	-	0.1u
1,2,4-Trichlorobenzene	0.51u	29u	0.44u	0.43u	24u	0.44u	0	24u	27u	0.39u	0.41u	0.39u	0.38u	0.44u	

Table 3-8. Organic Compounds Detected in Soil Samples from Swamp Disposal Area, CLP Laboratory (continued)

	Sample Number Depth														
	C2			C3			C4		C5		D1	D2			D3
Compound (mg/kg)	1'	3'	15'	1'	3'	15'	1'	3'	1'	3'	3'	1'	3'	10'	1'
Moisture Percent	22	19	20	11	12	18	7	16	8	14	14	12	20	17	14
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Docosanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C6 Alkyl-octahydroindene	50JN	20JN	-	-	40JN	0.2JN	-	10JN	-	-	-	-	10JN	-	-
PCB 1260 (Aroclor 1260)	17	12	0.10J	8	10	0.15	28C	5.4	0.17u	0.09u	0.09u	0.37	4.5C	0.42	37C
C4 Alkyl-phenanthrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis (2-Ethylhexyl) Phthalate	24u	24u	0.39u	30	24u	0.39u	21u	24u	.36u	0.14J	0.53	0.39u	0.44u	0.39u	27u
C6 Octa-hydroindene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Phenanthrene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Fluoranthene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Pyrene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Benzo (A) Anthracene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Chrysene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Benzo (B and/or K) Fluoranthene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Benzo-A-Pyrene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Indeno (1,2,3-CD) Pyrene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Benzo (GHI) Perylene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
Methyl Ethyl Ketone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated BI-Phenyl (Non Hal-Arochlor)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl-Anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluorene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	-	27u
Benzyl Butyl Phthalate	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
4-Methylphenol	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u
1,1 Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloro-ethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylenes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichloro-benzene	24u	24u	0.39u	24u	24u	0.39u	21u	24u	0.36u	0.39u	0.39u	0.39u	0.44u	0.39u	27u

Table 3-8. Organic Compounds Detected in Soil Samples from Swamp Disposal Area, CLP Laboratory (continued)

	Sample Number Depth													
	D3	D4				E2	E3		E4				E5	
Compound (mg/kg)	3'	1'	3'	5'	10'	1'	1'	3'	1'	1'*	1'*	3'	1'	5'
Moisture Percent	14	8	8	17	18	9	14	16	24	34	23	17	10	6
Toluene	-	-	-	-	-	-	-	-	-	0.002J	-	-	0.01u	-
Docosanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perylene	-	-	-	-	—	-	-	-	-	-	-	-	-	-
C6 Alkyl-octahydroindene	20Jn	-	-	-	-	-	-	-	-	-	-	20JN	-	-
PCB 1260 (Aroclor 1260)	2.9	50C	29C	47	0.48	0.31	0.19u	0.57C	2.6C	7.8JC	3.2C	24C	0.18u	0.09
C4 Alkyl-phenanthrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis (2-Ethylhexyl) Phthalate	24u	0.36u	21u	24u	0.4u	0.36u	0.10uJ	0.39u	0.43J	0.86	0.43u	24u	0.37u	0.35u
C6 Octa-hydroindene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	0.01u	-
Naphthalene	24u	0.36u	21u	24u	0.4u	0.36u	0.39u	0.39u	0.44u	0.5u	0.43u	24u	0.37u	-
Phenanthrene	24u	0.36u	21u	24u	0.4u	0.36u	0.39u	0.39u	0.12J	0.56	0.43u	24u	0.37u	0.35u
Fluoranthene	24u	0.36u	21u	24u	0.4u	0.36u	0.16J	0.39u	0.22J	1.1	0.43u	24u	0.37u	0.35u
Pyrene	24u	0.36u	21u	24u	0.4u	0.36u	0.13J	0.39u	0.18J	0.56	0.43u	24u	0.37u	0.35u
Benzo (A) Anthracene	24u	0.36u	21u	24u	0.4u	0.36u	0.13J	0.39u	0.44u	0.16J	0.43u	24u	0.37u	0.35u
Chrysene	24u	0.36u	21u	24u	0.4u	0.36u	0.17J	0.39u	0.44u	0.34J	0.43u	24u	0.37u	0.35u
Benzo (B and/or K) Fluoranthene	24u	0.36u	21u	24u	0.4u	0.36u	0.47J	0.39u	0.44u	0.39J	0.43u	24u	0.37u	0.35u
Benzo-A-Pyrene	24u	0.36u	21u	24u	0.4u	0.36u	0.27J	0.39u	0.44u	0.06	0.43u	24u	0.37u	0.35u
Indeno (1,2,3-CD) Pyrene	24u	0.36u	21u	24u	0.4u	0.36u	0.21u	0.39u	0.44u	0.52u	0.43u	24u	0.37u	0.35u
Benzo (GHI) Perylene	24u	0.36u	21u	24u	0.4u	0.36u	0.25J	0.39u	0.44u	0.52u	0.43u	24u	0.37u	0.35
Methyl Ethyl Ketone	-	-	-	-	-	-	-	-	-	0.02uR	-	-	0.01uR	-
Polychlorinated Bi-Phenyl (Non Mel-Arochlor)	-	-	-	-	-	-	1JN	-	-	-	-	-	-	-
Methyl-Anthracene	-	-	-	-	-	-	-	-	0.4JN	-	-	-	-	-
Fluorene	24u	0.36u	21u	24u	0.4u	0.36u	0.39u	0.39u	0.44u	0.09J	0.43u	24u	0.37u	0.35u
Benzyl Butyl Phthalate	24u	0.36u	21u	24u	0.4u	0.36u	0.39u	0.39u	0.44u	0.52	0.43u	24u	0.37u	0.35u
4-Methylphenol	24u	0.36u	21u	24u	0.4u	0.36u	0.39u	0.39u	0.44u	0.14J	0.43u	24u	0.37u	0.35u
1,1 Dichloroethane	-	-	-	-	-	-	-	-	-	0.02	-	-	0.01u	-
1,1,1-Trichloro-ethane	-	-	-	-	-	-	-	-	-	0.01J	-	-	0.01u	-
Total Xylenes	-	-	-	-	-	-	-	-	-	0.002J	-	-	-	-
Trichloroethylene	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0
1,2,4-Trichloro-benzene	24u	0.36u	21u	24u	0.4u	0.36u	0.39u	0.39u	0.44u	0.52u	0.43u	24u	0.37u	0.35u

- Not analyzed for
u [Mate]rial was analyzed, but not detected. The number is minimum quantitation [limi]t.
J [Esti]mated value
R [Dat]a are unusable
C Data confirmed

*QA/QC samples

Table 3-9. Metals Detected in Soil Samples from Swamp Disposal Area, CLP Laboratory

Parameter (mg/kg)	Sample Number-Depth A3-10'
Moisture Percent	23
Barium	34
Chromium	26
Copper	2.6
Lead	15
Vanadium	20
Zinc	11
Aluminum	13000
Manganese	57
Calcium	210
Magnesium	360
Iron	2800
Nickel	7.2
Strontium	4.5
Titanium	150
Yttrium	6.1

Table 3-10. Well Log for the Abandoned City Water Supply Well

Lithology	Depth of Stratum Encountered (ft)	Thickness (ft)
sandy clay	0	8
sand	8	10
clay	18	37
rock	55	2
boulders	57	7
rock	64	2
limestone	66	9
rock	75	2
clay	77	3
rock	80	76
clay	156	12
rock	168	56
clay	224	11
rock	235	1
sandy shale	236	6
clay	242	6
rock	248	1
clay	249	38
rock	287	1
clay	288	40
rock	328	2
clay	330	12
rock	342	1
clay	343	99
rock	442	8
sand *	450	34
rock	484	2
sand	486	3
rock	489	5
sand	494	5
rock	499	1
clay	500	21
rock	521	2
sand *	523	14
rock	537	1
sand	538	4
rock	542	1
sandy shale	543	3
bottom	546	

* water bearing zones

ubiquitous in the environment. Although the chlorinated benzenes and phthalates detected in soils at the site may have been associated with past waste disposal activities at the site and chlorinated benzenes are more mobile than PCBs, these compounds were found at relatively low concentrations in only a few samples. Moreover, PCBs are several orders of magnitude more toxic than either of these compounds.[1] Based on these considerations, the contribution of these compounds to the several potential risks currently posed by the site is considered to be insignificant when compared to PCBs.

Assessing the toxicity of PCBs is complicated by the fact that several different mixtures have been produced and distributed commercially and by the presence in some commercial mixtures of highly toxic contaminants--polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). Some of these contaminants can also be formed by the combustion of PCBs or even by high-temperature conditions during service so that used materials may be more toxic than the commercial mixtures whose toxicity has been studied.

In 1984, EPA noted that the weight of the evidence of the carcinogenicity of PCBs was sufficient from animal bioassays but was inadequate from human epidemiology studies and classified PCBs in group B2—suspected human carcinogens. PCBs have been shown to be quite toxic to some aquatic and terrestrial plants and animals, particularly following long-term exposure. Information on the toxicity of PCBs to unicellular plants was limited but suggested that effects could occur at levels less than 1 ug/liter (EPA, 1980).

Contaminant Migration and Exposure Assessment

Surface Water/Sediment. Persimmon Creek, classified by the State of Alabama for fish and wildlife uses (AWQ, 1980), is reported to be used for recreational fishing, although the extent of such use is uncertain. During the field investigation phase of the RI, there were no fishermen sighted in these waters; however, this may be due to the time of year of the investigation (October-November). It is not known whether children swim or play in Persimmon Creek, but it is probably reasonable to assume that children play at least occasionally in this creek. Tanyard Branch is considered unlikely to be used regularly for recreational activities because of its small size and inaccessibility (it is bordered by steep, overgrown banks).

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[1]EPA (1986) recently calculated a potency factor of 6.9×10^{-4} $(mg/kg/day)^{-1}$ for bis (2-ethylhexyl) pthalate; this compound is therefore over 4 orders of magnitude less potent than PCB (potency factor = 4.34 $(mg/kg/day)^{-1}$). Neither dichlorobenzene nor 1, 2, 4,-trichlorobenzene has been shown to be carcinogenic, and these chemicals are generally not considered to be very toxic, having reference doses (RfD) of 3 mg/day and 1.4 mg/day respectively (EPA, 1985a, 1986).

Since there were no contaminants above the 1980 EPA Water Quality Criteria in the upstream and downstream surface water samples from Persimmon Creek and Tanyard Branch and only very low levels of PCBs in downstream sediment samples, in conjunction with the limited use of these streams, the potential for significant exposure via dermal contact or inadvertent ingestion of water by fishermen or children is considered remote.

Groundwater. The direction of groundwater flow in the study area is toward Tanyard Branch. The swamp reportedly acts as a local discharge point for shallow ground water, and much of the flow of Tanyard Branch is reported to come from ground water seeping along the stream bank. As water containing PCBs in solution moves through the vadose zone and within the aquifer, the PCBs will be adsorbed and desorbed by soils. The net effect of these processes is that the rate of PCB transport will be very slow, particularly compared to the rate of ground water flow.

PCBs have only been detected in one of the four monitoring wells, MW-2, located near the eastern edge of the swamp near the drainage ditch. The migration of PCBs from soils to ground water is controlled by the physicochemical properties of both the PCBs and the soils, and the presence of other organic contaminants that may influence the solubility of PCBs. PCBs are not very soluble in water and would bind tightly to any organic material in soils. MW-2 shows low concentrations of PCBs; however, this sample was unfiltered, and the level may not reflect dissolved concentrations.

Although an abandoned city well at the southeastern corner of the swampy area could potentially serve as a conduit for vertical migration of contaminated ground water, no PCBs were detected in the monitoring well near this abandoned well, or the two nearest soil samples (at detection limits ranging from approximately 0.1 to 0.2 mg/kg). All residents in the Greenville area are served from the city's public drinking water system. None rely on private wells for their water supply. Therefore the potential for exposure to PCBs via ingestion of groundwater is remote.

Soils. The most likely mechanisms by which PCBs in the soil at the MEC property will migrate to the swamp area is via the storm sewer drainage system - by erosion of soils to which PCBs are adsorbed and sediment transport or by solubilization and runoff. Because of the low aqueous solubility of PCBs (27 ug/liter for Aroclor 1260; Mackay et al., 1983), and the high affinity of PCBs for adsorption onto soils (log K_{OC} = 6.83), erosion and sediment transport are likely to be the predominant mechanism for surface transport from the MEC property to the swamp area. For the same reasons, erosion and sediment transport are likely to be the predominant surface transport mechanisms by which PCBs could migrate from the swampy area into Tanyard Branch. The swampy area generally drains westward into Tanyard Branch, which borders it.

Under current use conditions, the potential for humans to come into direct contact with PCB - contaminated soils at the MEC property or in the swamp is not high. The MEC property is partially paved and, although there is a fence around the property, soils in unpaved areas have been shown to be contaminated. However, MEC has discontinued all operations and filed for bankruptcy in 1985, and there are no workers currently at the plant. The swamp is not fenced, and no warning signs to deter users have been posted. However, because of its unattractiveness as a recreational area (wet, stained soils and overgrown appearance), it is considered unlikely that the area would be used frequently.

IV. ENFORCEMENT

In 1981, EPA conducted an immediate removal at the site pursuant to Section 311 of the Clean Water Act. In 1982, the site was included on the National Priorities List for further investigation and response activities. In 1985, the United States obtained a money judgement against the Mowbray Engineering Company and its owner, dischargers of the oil and PCBs, for the costs incurred in the 1981 removal. Later in 1985, the MEC and its owner filed petitions for bankruptcy under Chapter 7 of the Bankruptcy Code. The United States filed Proofs of Claim for its final judgement under Section 311 of the Clean Water Act and for response costs incurred by the Hazardous Substances Response Trust Fund. These claims are pending.

EPA has identified the potentially responsible parties (PRPs) in connection with the site. These include the present owners of the site and the generators of the hazardous substances (MEC and its owner). As stated above, MEC and its owner have filed for bankruptcy under Chapter 7 of the Bankruptcy Code, and Proofs of Claim have been filed for response costs incurred by the Hazardous Substances Response Trust Fund. Based upon available information, the site owners had no knowledge that PCBs were disposed on their site. The property they own is actually a drainage basin for the MEC facility. In addition, the site owners are not able or willing to implement the remedy.

There have been no negotiations with the PRPs concerning the remedial response activities at the site. Based upon the responses to earlier notice letters sent to the PRPs, it has been determined that there is no PRP willing and able to undertake the necessary remedial response actions at the site. Therefore, it is recommended that the Hazardous Substance Response Trust Fund be expended to cleanup the site.

V. ALTERNATIVES EVALUATION

Public Health and Environmental Objectives

The MEC site has been impacted by the discharge of PCB-contaminated transformer oil from the MEC processing area, as previously discussed. However, based on the results of the RI, it appears that PCBs at the site are not likely to pose a significant health risk to persons having direct contact with PCB-contaminated soils at the MEC property or the swamp under the current use conditions of the study area. Any reuse of the MEC property for industrial activities, or increased use of the swamp, would be likely to lead to greater contact with contaminated soils and increased risks to people using these areas. It should be noted that these risks might only accrue to persons actually entering the MEC property or swamp and becoming exposed. According to the Public Health Evaluation prepared for this site, the relatively low levels of PCBs present in the soils of the study area do not substantiate health related clean-up goals, under the current use conditions of the area.

As stated, under current conditions of the MEC study area there is no significant risk to public health. However, there is a potential for these conditions to change in the future and to present an increased risk. The MEC installed two-3,000 gallon underground storage tanks on their plant property to store and recycle waste oils. Although these tanks were not sampled in the RI, it was discovered that oil remains in the tanks. Because of the potential for these tanks to deteriorate over time and release possible PCB-contaminated waste oil, these tanks should be removed. Waste oils released may be transported to the swamp area through the established drainage pathways or to the surface soils surrounding the tanks and, thus, increase exposure potentials.

Additionally, a sub-surface pocket of oil in the swamp area was discovered during the RI. The oil, which contained 1500 ppm of PCBs, may migrate to the surface soils or into Tanyard Branch via erosion or sediment/soil transport. This pocket was determined to be localized; however, there is the potential for additional localized oil pockets to be present since the sampling effort was conducted on an approximate 75-foot grid system. The presence of additional pockets would increase the potential of exposure.

PCB-contaminated soils in the swamp area may also be transported into Tanyard Branch via surface runoff and/or erosion. Therefore, remediation of the site is necessary to prevent the potential for increased exposure by this route.

Severe environmental impacts have been seen as a result of contamination originating from the MEC site. The vegetation in the swamp area is stressed, and part of the area is completely bare. In 1981, Tanyard Branch was reported to be completely devoid of aquatic life downstream from the site. Two components of the site-related contamination could contribute to the effects seen—the transformer oils and PCBs. The presence of oil in the soils is probably responsible for the vegetative stress and lack of vegetation in certain areas of the swamp, since PCBs are not present at phytotoxic concentrations. The acute aquatic effects seen in the past were probably due to the oil overflows rather than the presence of PCBs in the oil. The low concentrations of PCBs detected to date in the sediments would be unlikely to result in water column concentrations of concern. Remediation of the site would be necessary to restore the vegetation in the swamp and to protect aquatic life downstream of the site.

Technologies Considered

Remedial response technologies have been identified to address the contamination present in the study area of the MEC site. These technologies include processes for the treatment or disposal of the contaminants. Technologies were divided into broad categories, which are listed below, according to their applicability to the problem. The response technologies are presented in Table 5-1.

- Technologies for treatment or disposal of contaminated soils
- Technologies for treatment or disposal of waste oils
- Technologies for remediation of storage tanks

Several combinations of these technologies will formulate remedial action alternatives that fully comply with other appropriate environmental laws. For instance, an alternative that addresses the contaminants in the soils by onsite incineration, remediates the waste oils in the underground storage tanks and in the subsurface oil pocket by the PCBX system, and removes and disposes of the storage tanks to an approved landfill will comply with the requirements of the Toxic Substances Control Act (TSCA) and the Resource Conservation and Recovery Act (RCRA). During the RI it was established that air quality at the site was not affected by the contaminants present and, therefore, the requirements of the Clean Air Act (CAA) are not a concern. Similarly, it was determined that the groundwater of the study area has not been impacted and, thus, the Clean Water Act (CWA) is also not a concern.

Other regulations that may apply are the Department of Transportation (DOT) Hazardous Transport Rules for the transportation of hazardous material to a treatment or disposal facility and the appropriate state and/or local regulations for the on-site operation of a treatment or disposal facility.

Technology Screening

This section presents a screening of technologies for treatment or disposal of contaminated soils only. Because of the beleived limited extent of waste oils at the site, the screening of technologies for the treatment or disposal of contaminated oils found in the subsurface swamp soils and in the storage tanks will not be performed in accordance with the FS

Table 5-1. Applicable Response Technologies

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1. Technologies for Treatment or Disposal of Contaminated Soils

   a. excavation
   b. site drainage diversion (permanent diversion of surface runon around the swamp area)
   c. offsite disposal
   d. offsite incineration
   e. surface capping
   f. onsite solvent extraction
   g. onsite stabilization/solidification
   h. onsite containment/encapsulation
   i. onsite incineration
   j. site restoration (grading & revegetation of the swamp area; proper closure of the onsite abandoned city well; institutional controls, as necessary)

2. Technologies for Treatment or Disposal of Waste Oils

   a. Acurex system
   b. PCBX system
   c. ozonation
   d. incineration

3. Technologies for Remediation of Storage Tanks

   a. excavation/removal
   b. disposal

guidance and is not included. However, it should be noted that a TSCA-approved technology for treatment or disposal of waste oils encountered during remediation will be common to all alternative actions, except the no action alternative. Technologies associated with storage tank remediation are also not included because of the consideration of only one alternative for remediation - excavation/removal and disposal.

The screening of soil technologies was performed in accordance to 40 CFR Part 300.68 (g). More specifically, the screening used the broad evaluation criteria of technical feasibility, public health and environmental protection, and cost. By performing the screening process based on the above criteria, those technologies that did not provide adequate protection to the public health and environment, or cost substantially more than other technologies without providing significantly greater benefits, were eliminated.

Technologies Eliminated. Upon completion of the technologies screening, two technologies were eliminated. These are:

- surface capping
- onsite solvent extraction

Surface capping can be an effective method for preventing erosional transport of contamination and dermal contact with contaminated soils. However, the swamp is situated within a 100-year floodplain, and occasional flooding of the area will decrease the effectiveness of the cap. In addition, groundwater seepage from the swamp is a predominant means of infiltration to Tanyard Branch. This will cause erosion of soil beneath the cap and potential collapse of the cap. The overall effectiveness of surface capping is rated low due to this and to the potential for continued erosion of contaminated soils. Furthermore, surface capping will result in a permanent increase in surface runoff which must be handled. Therefore, this technology has been eliminated.

Attempts to extract soil contamination with solvents have had mixed results. Because of this and because there is no long-term data for the on-site solvent extraction process, its effectiveness and reliability are rated lower than processes for which long-term operating records are available. A by-product of this process is a waste solvent which would contain high concentrations of PCBs. The waste solvent must be further treated or disposed. Preliminary indications are that, due to the relatively low levels of PCBs present at this site, several washings of soils may be necessary to obtain the desired decontamination, which would result in significant cost increases. The number of washings can only be determined by field testing the actual soils. This technology is not retained for further consideration based on the above discussion.

Technologies Retained. Upon completion of the screening of technologies for the treatment or disposal of contaminated soils, two technologies were eliminated. The retained technologies presented in Table 5-2 will be combined to form remedial action alternatives for a detailed analysis.

Table 5-2. Retained Technologies for Treatment or Disposal of Contaminated Soil

a. excavation
b. site drainage diversion
c. offsite disposal
d. offsite incineration
g. onsite stabilization/solidification
h. onsite containment/encapsulation
i. onsite incineration
j. site restoration

Remedial Action Alternatives Considered

The technolgies retained after the technology screening process (Table 5-2) were combined to form seven remedial action alternatives. Common to all alternatives, except the no action alternative, are excavation and removal of the underground storage tanks on the MEC property and remediation of contaminated waste oils. Therefore, these components will not be repeated in the discussion of each alternative. The seven alternatives are presented in Table 5-3.

Detailed Analysis of Remedial Action Alternatives

Analysis Criteria. In accordance with the National Oil and Hazardous Substances Contingency Plan (NCP), the seven alternatives were analyzed based on important cost and non-cost factors, such as performance, reliability, implementability, institutional requirements, and public health and environmental considerations. These analysis criteria provide for the determination of the most technically feasible, cost effective remedy that adequately protects public health, welfare, and the environment.

In addition to considering such cost factors as capital and operation and maintenance, the results of a sensitivity analysis were also considered in the overall cost of each alternative. The purpose of the sensitivity analysis is to assess the effect of variation in specific assumptions associated with the cost estimates of the remedial action alternatives. The sensitivity analysis is especially concerned with factors that could bring significant changes in the overall cost with only a small variation in value. Determination of a distinct cleanup goal for the MEC site is considered to be the most sensitive factor affecting costs of the various alternatives. The estimated soil volume requiring treatment is dependent on the level of contamination cleanup achieved. For cleanup levels of 10, 20, 30, and 50 mg/kg of PCB, the estimated soil volume requiring treatment is presented in Table 5-4. Cost estimates for each of the alternatives are presented for each of the four cleanup levels in Table 5-5.

Alternative Analysis. The remedial action alternatives developed from the retained response technologies to address the conditions at the MEC site study area have been analyzed according to the criteria mentioned above. The results of this analysis are shown in Table 5-6. The alternatives are discussed below.

- Alternative 1 - No Action: This alternative implies that there is no threat posed by the contaminants present at the MEC site and that no remedial action will be implemented. Contaminated soils would remain in place and continue to be a means of environmental and public exposure by erosion of contaminants above acceptable levels into Tanyard Branch and the accessibility of contaminated soils to dermal contact. Runon would not be

Table 5-3. Remedial Action Alternatives Considered for Detailed Analysis*

Alternative 1 : No Action

Alternative 2 : Site Drainage Diversion

Alternative 3 : Offsite Disposal

Alternative 4 : Offsite Incineration

- rotary kiln-type
- infrared-type

Alternative 5 : Onsite Stabilization/Solidification

Alternative 6 : Onsite Containment/Encapsulation

Alternative 7 : Onsite Incineration

- rotary kiln-type
- infrared-type

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* Components common to all remedial action alternatives include:

  - treatment or disposal of contaminated waste oil
  - remediation of storage tanks

Table 5-4. Effect of Cleanup Levels on Estimated Soil Volumes Requiring Treatment

Cleanup Level (mg/kg)	Soil Volume Requiring Treatment (cy)			PCB Removed (lbs)
	Swamp Area	MEC Property	Total	
10	12,100	800	12,900	61.6
20	4,300	500	4,800	35.3
30	800	300	1,100	11.3
50	0	100	100	1.6

Table 5-5. Cost Estimates for Remedial Action Alternatives ($1000)

	Cleanup Level (mg/kg)			
Alternatives	10	20	30	50
1. No Action	--	--	--	--
2. Site Drainage Diversion *				
Capital Cost	- - - - - - - - 122 - - - - - - - -			
O & M Cost	- - - - - - - - 8 - - - - - - - -			
Total	- - - - - - - - 130 - - - - - - - -			
3. Offsite Disposal				
Capital Cost	8,558	3,278	871	212
O & M Cost	8	8	8	8
Total	8,566	3,286	879	220
4. Offsite Incineration				
° rotary kiln-type				
Capital Cost	51,409	19,279	4,575	558
O & M Cost	8	8	8	8
Total	51,417	19,287	4,583	566
° infrared-type				
Capital Cost	4,110	1,627	502	192
O & M Cost	8	8	8	8
Total	4,118	1,635	510	200
5. Onsite Stabilization/Solidification				
Capital Cost	1,992	842	337	194
O & M Cost	310	232	232	156
Total	2,302	1,074	569	350
6. Onsite Containment/Encapsulation				
Capital Cost	733	387	256	190
O & M Cost	950	475	318	158
Total	1,683	862	574	348

Table 5-5. Cost Estimates for Remedial Action Alternatives ($1000), (cont.)

Alternatives	Cleanup Level (mg/kg) 10	20	30	50
7. Onsite Incineration				
° rotary kiln-type				
Capital Cost	9,953	3,805	996	226
O & M Cost	8	8	8	8
Total	9,961	3,813	1,004	234
° infrared-type				
Capital Cost	3,706	1,474	458	178
O & M Cost	8	8	8	8
Total	3,714	1,482	466	186

* This alternative does not attain a specified cleanup level; therefore, a sensitivity analysis based on cleanup levels was not performed.

Table 5-6. Summary of Remedial Action Alternative Analysis

Alternative	Technical Feasibility	Environmental Impact	Public Health Concerns	Institutional Requirements
2. Site Drainage Diversion	Effective and reliable for prevention of soil erosion.	Reduced risk of PCB related impacts. Potential impacts to wetland vegetation and Tanyard Branch flood plain.	Reduced risk of public exposure by erosion pathways However, contaminants are left onsite.	State drainage regulations, DOT Hazardous Materials Transport Rules, TSCA, Federal Water Quality Criteriá, Clean Air Act, ADEM regulations.
3. Offsite Disposal	Proven, effective, easily implemented, removes contamination from site to RCRA approved facility.	Minimal impact at new site. Reduced impact at existing site. Low environmental risks due to possibility of spills during transporation.	Significant public health risk reduction by removal of PCBs and placement in a secured landfill.	Same as Alternative 2.
4. Offsite Incineration	Very effective, reliable, and implementable if taken to permanent facility. Mobile facility at another site is rated slightly less reliable and implementable.	Potential source of air pollution. Environmental risk from transporting hazardous materials. Long-term risk reduction due to PCB destruction.	Higher risk reduction than alternatives which store onsite or offsite. Short-term risk from transporting hazardous materials and excavation.	Same as Alternative 2. Clean Air Act
5. Onsite Solidification/ Stabilization	Feasible and implementable Does not treat waste, but confines it in a matrix which prevents interaction with the environment.	Increased runoff and loss of infiltration capacity may alter flood plain characteristics. Permanent loss of wetland resources in area where soils are solidified.	Risk reduction by prevention of contaminant transport. Small possibility of contaminants leaching out.	Same as Alternative 2.
6. Onsite Containment/ Encapsulation	Used extensively at sanitary and chemical waste landfills. Greater operation and maintenance requirements.	Potential environmental impact if liner leaks. Increased runoff and less infiltration may alter flood plain and wetland characteristics.	Risk reduction not as great as alternatives which treat or remove contamination.	Same as Alternative 2
7. Onsite Incineration	Highly effective and reliable method for PCB destruction. More complex operation and greater public opposition.	Possible source of air pollution. Some risk associated with ultimate disposal of waste products (ash and sludge). Long-term risk reduction due to PCB destruction.	Air pollution and risk associated with disposal of ash and sludge from incinerator. Long-term risk reduction due to PCB destruction rather than storage or disposal.	Same as Alternative 2. Clean Air Act

diverted around the swamp area, causing drainage from the surrounding watershed to continue to aid erosion and contaminant transport from the swamp. Also, the underground storage tanks would remain in place and serve as a potential threat of future release of PCB-contaminated oil into the environment by the deterioration of the tank. This alternative has been considered under the mandates of the NCP, however, based on the results of the RI and the above discussion, this alternative would not meet the public health and environmental objectives.

- Alternative 2 - Site Drainage Diversion: This alternative consists of site drainage diversion and site restoration, in addition to the components common to all alternatives. This alternative does not attain any specified cleanup goal. However, prevention of further spreading of contamination is achieved by removal of the underground storage tanks, treatment or disposal of waste oil, site drainage diversion, and site restoration (revegetation). These preventative measures are permanent and will reduce short-term and long-term threats to nearby communities and limit the area of PCB related environmental impacts. The exposure pathways of dermal contact and incidental ingestion are prevented by a vegetative barrier between the contaminated soils and persons entering the site. Revegetation and drainage diversion will prevent contaminant migration via erosion. However, the swamp area is located within a 100-year flood plain and diverting drainage around this area may result in minimal alteration of swamp vegetation or shape of the floodplain.

- Alternative 3 - Offsite Disposal: This alternative includes site drainage diversion, excavation, offsite hauling, offsite disposal, and site restoration. Specifically, this alternative removes contamination above a specified cleanup level to an approved hazardous waste facility, and therefore, is highly effective in meeting cleanup goals at the MEC site. The remediation is permanent for the existing site; the reliability is rated high, as offsite disposal is a simple and proven technology. Since this alternative does not involve installation of sophisticated and complex treatment systems onsite, it is considered relatively easy to implement. Offsite disposal of contaminants eliminates the potential for exposure and contaminant migration at the existing site. Transportation of the hazardous materials will result in a small risk to public health and the environment along the transportation route.

- Alternative 4 - Offsite Incineration: This remedial alternative involves site drainage diversion, excavation, offsite hauling, offsite incineration, and site restoration. Two offsite incineration technologies are being considered. The first consists of transportation and incineration at the rotary kiln facility in El Dorado, Arkansas. The second consists of incineration at another EPA site where a mobile infrared incineration system will be in use.

Due to the success of test burns and full scale operations, incineration is considered a technically reliable and effective method for destroying PCB in contaminated soils, thereby preventing future exposures and migration at the existing site and the incineration site. Therefore, this alternative is rated more effective than alternatives which store contamination.

Offsite incineration has a high potential for public health and environmental risk reduction since the process results in the destruction of PCB contaminants. There is a small risk to public health and the environment associated with the excavation and transportation of contaminants.

° Alternative 5 - Onsite Stabilization/Solidification: This alternative consists of site drainage diversion, excavation, onsite stabilization/ solidification, and site restoration. The purpose of solidification is to transform the hazardous waste into a physical form (monolithic block) which is more suitable for on-site storage and reduces water permeability into the waste. The solidified matrix acts as a barrier between the waste particles and the environment. Erosion control is required for this technology. Since this alternative would store contaminants permanently onsite, it is considered less effective than treatment or disposal. Solidification is not mechanically complex; however, significant material testing and monitoring would be required during design to assure that contaminants will not leach from the solidified matrix. Future failure of the cement bond by mechanical or chemical sources could cause a minor release of contaminants. Meeting the technical permitting requirements for this alternative may be extensive due to storage of contaminants and solidification of soils in a 100-year floodplain.

The overall consequence of solidification is reduction of risk by decreasing exposure to contaminants transported by surface or ground waters. The degree of reduction depends on the extent of the material solidified and the effectiveness of the process. Long-term threats may result from increased site runoff, such as downstream flood plain alteration.

° Alternative 6 - Onsite Containment/Encapsulation: Site drainage diversion, excavation, onsite containment/encapsulation, and site restoration comprise this alternative. The purpose of containment/ encapsulation is to limit the leachability of the toxic materials by physically keeping water from contacting the contaminated material. This is done by sealing off contaminated areas with impermeable liners and is considered technically feasible. However, this option is considered storage, and therefore, is less effective than technologies which fix, remove, or treat contamination. To assure reliability, a monitoring schedule must be maintained and the structural integrity of synthetic liners and the surface cap must be frequently verified. Meeting the technical permitting requirements may be extensive due to the storage of contaminants in a 100-year floodplain.

Public health risk is reduced through provision of a barrier to exposure and migration of contaminants. Environmental risks associated with contamination are traded for permanent affects on site vegetation and runoff. Since no material is 100 percent impermeable, the level of risk reduction may not be complete. The degree of risk reduction is proportional to the effectiveness of the process.

- Alternative 7 - Onsite Incineration: This alternative involves site drainage diversion, excavation, onsite incineration, and site restoration. Due to the success of test burns and full scale operations, this option is a reliable and effective method for destroying PCB found in soils and contaminated oils. Two systems are being considered - a rotary kiln-type incinerator and an infrared-type incinerator. There is a small incremental risk associated with the handling of incinerator sludge and scrubber wastes. This increase would only affect the individuals involved with the ultimate disposal of the waste, however. Local opposition to incineration may make local acceptance of this alternative difficult. However, there does not appear to be any federal permitting requirements that would prohibit use of this alternative if properly implemented.

  Public health and environmental risk is reduced by destruction of contaminants exceeding the cleanup goal. Onsite incineration eliminates the transportation risk associated with offsite incineration while providing the same effective and permanent treatment.

VI. COMMUNITY RELATIONS

Identifiable community concerns regarding the MEC site have been limited. Public reaction to the EPA activities associated with the CWA section 311 action in 1981 can be divided into three catagories:

- residents living near the site, or downstream of the contaminated swamp area, who were concerned about hazards associated with possible PCB exposure.
- citizens who downplayed the contamination problem and tended to view EPA's presence at the site as a typical example of unnecessary government spending.
- other members of the community who followed press coverage of the site, but did not feel strongly one way or another about the site.

Owners of the swamp area took an active interest in EPA's site activities. Property owner Boyd Foster informed EPA in July 1981 that he wanted an Environmental Impact Statement and Corps of Engineers permit issued before the CWA Section 311 activities were initiated at the site. At that time, Foster stated that he would not grant EPA site access unless these demands were met. After conversations with EPA legal staff members regarding CWA requirements, however, Foster and his partner Erastus Talbert agreed to let EPA go ahead with its plans to excavate, divert, ditch, and backfill the swamp area.

Press coverage during 1981 of EPA and ADEM activities at the MEC site was fairly extensive. Both the Birmingham News and The Montgomery Advertiser carried stories about EPA's site plans and provisions for financing the cleanup action. The Greenville Advocate also covered initial site activities, but eventually stopped giving the site much attention because its editors felt that EPA was "playing toward the Montgomery and Birmingham press" and ignoring the local media. According to Gene Harden of The Advocate, the local newspaper was tired of finding out about site activities by reading the Birmingham and Montgomery newspapers. During 1981, EPA officials participated in a call-in radio talk show on WKXN, the local Greenville radio station. EPA officials responded to numerous questions from area residents during the talk show, with the majority of questions pertaining to dangers of PCB contamination and EPA's plans for the site.

Several community concerns existed following completion of the 1981 activities. Area residents were left with the impression that no further contamination would be present at the site. Therefore, many felt that no further response activities were necessary. Additionally, area residents and local officials do not feel that they were adequately informed about the site developments during response activities in 1981. Red Etheridge, Mayor of Greenville during the 1981 action, stated that most of his information about site activities came from his own contacts in the state government.

Gene Harden of the Greenville Advocate claimed that his staff felt EPA was more concerned with media representatives in Birmingham and Montgomery than the local press. Lastly, many citizens did not feel the response activities taken in 1981 were warranted. These sentiments were combined with what local officials call a tendency to view the presence of Federal officials and contractors as "a nuisance" and, generally speaking, a waste of taxpayers' money.

With these thoughts in mind, community relations activities conducted during the RI/FS were directed at keeping State and local officials informed of activities being performed by EPA; informing area residents, local news media, and other interested citizens of the progress and results of the RI/FS; providing opportunities for the citizens to comment on the proposed field work, site documents, and remedial alternatives; and establishing a public repository for all site information.

To carry out the objectives stated above, an information repository was established in August 1985 at the Greenville Public Library to house all site information and documents. This repository is available to the public during the normal working hours of the library.

Four fact sheets were mailed to citizens on the MEC mailing list at critical points during the RI/FS: before the Public Meeting conducted to present the Work Plan; after the RI field work was completed; after the laboratory analytical results were received; and before the FS Public Meeting.

Frequent telephone conversations were held with the PRPs for the site, the Mayor of Greenville, and ADEM to provide current site information and update the status of the site activities.

One anonymous letter was received by EPA during the performance of the RI/FS. This letter was signed "a concerned citizen of Greenville" and expressed concern over the potential for dioxin to be present in the swamp area and for the widespread use of MEC oil for the control of dust, termites, weeds and mosquitos in the Greenville area. The RI determined that dioxin is not present in the soils of the swamp, and these results were reported to the citizens.

As mentioned above, two public meetings were held to disseminate information to the public. The first was held on August 27, 1985 for the purpose of explaining to the public why further response actions are necessary for the site, presenting the Work Plan that describes the proposed field activities, and soliciting public input on the proposed actions. All comments received were responded to. The second meeting was held at the completion of the Draft RI/FS Report. Two weeks prior to the meeting, this document was placed in the MEC information repository and a Fact Sheet was mailed to the mailing list. The meeting was held on August 12, 1986 at the Beeland Park Community Center. The results of the RI and all remedial alternatives under consideration were presented to receive comments. This marked the beginning of a formal 3-week public comment period.

During this Public Meeting, comments were received pertaining to the alternatives presented, the cost of the RI/FS, and the current status of the CERCLA reauthorization and funding for the MEC remedy. The overall feeling of the citizens present was that EPA has spent too much money on this site, and they supported no-action (Alternative 1) or limited action (Alternative 2).

Only one written comment was received during the 3-week public comment period which concluded on September 2, 1986. The writer expressed the opinion that most of the citizens who attended the Public Meeting favor the no action alternative. The Responsiveness Summary is attached as Appendix A.

VII. CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

In selecting remedial action alternatives, primary consideration must be granted to remedies that achieve applicable or relevant and appropriate environmental and public health standards. For the MEC site, such laws and guidelines include:

- Toxic Substances Control Act (TSCA)
- DOT Hazardous Material Transport Rules
- Resource Conservation and Recovery Act (RCRA)
- Clean Air Act (CAA)
- Clean Water Act (CWA)

Specifically, contaminated soils, waste oils, and the underground storage tanks removed from the MEC study area would be disposed in a TSCA-approved waste facility. The level of PCBs that remain in the onsite soils after excavation would be consistent with the proposed TSCA regulations. Similarly, for incineration of contaminated soils, the requirements of TSCA that pertain to incineration of PCBs would be met.

For the alternatives which include transportation of contaminated soils and waste oils, the DOT Hazardous Material Transport Rules require that the proper labeling and safety requirements be implemented.

PCBs are not currently listed as a hazardous waste under the RCRA regulations and, therefore, there are no requirements of RCRA that are applicable to the remedial action alternative selected for this site. However, if the stabilization/solidification or encapsulation alternative is selected for site remediation, we should comply with the RCRA requirements for closing wastes in place, as the requirements may be relevant and appropriate. Since the swamp area is situated in a 100-year floodplain, floodproofing requirements for closing wastes in place should be taken into account when designing the remedy.

During the incineration of PCB-contaminated soils, air quality monitoring must be performed to ensure that the emissions from the incineration process do not exceed applicable standards specified in the CAA. A quality assurance/quality control plan that will specify the standards that must be adhered to and the emmissions monitoring method employed will be developed during the detailed design of the remedy.

Finally, the CWA sets forth water quality criteria that have been developed to protect freshwater aquatic life. In order to ensure that the criteria for PCBs in surface water is not exceeded by erosion/sediment transport of contaminated soils from the swamp area and dissolution of PCBs from the sediments to the surface water, the contaminated soils will be removed from the swamp area to a level adequate to protect aquatic life in Tanyard Branch.

In 1986, the U.S. Fish and Wildlife Service conducted a survey of Department of Interior trust responsibilities for natural resources at the MEC site. This survey followed a preliminary survey conducted in 1985 and verified its conclusions. It was concluded that no resources under the trusteeship of the U.S. Fish and Wildlife Service are known to occur in any area that could be affected by PCBs discharged from the MEC.

Table 7-1 illustrates the applicability and compliance of each remedial action alternative considered with the various environmental laws and guidelines.

Table 7-1. Consistency with Other Environmental Laws

	Alternatives 1	2	3	4	5	6	7
Toxic Substances Control Act (TSCA)	X	N	C	C	C	C	C
Resources Conservation and Recovery Act (RCRA)	X	X	X	X	X	X	X
DOT Hazardous Material Transport Rules	X	C	C	C	C	C	C
Clean Air Act (CAA)	X	X	X	C	X	X	C
Clean Water Act (CWA)	N	N	C	C	C	C	C
Safe Drinking Water Act (SDWA)	X	X	X	X	X	X	X

C = Compliance
N = Non-compliance
X = Not applicable

VIII. RECOMMENDED ALTERNATIVE

The remedial action alternative recommended for the MEC site is excavation of soils contaminated above 25 ppm PCBs from the swamp disposal area and the transformer processing area and either onsite or offsite incineration using an infrared-type incinerator. The alternative will also include site drainage diversion, storage tank removal, remediation of waste oils encountered in the swamp area and in the storage tanks, and site restoration (Alternative 4 or 7). There are several unknown operating details of the infrared-type incinerator that need to be specified in the detailed design of the remedy. If these details prove this type of incineration unsatisfactory, stabilization/solidification of the contaminated soils above 25 ppm PCBs will be the recommended alternative, along with the other components described above (Alternative 5).

Incineration of PCB-contaminated soils using the infrared-type incinerator is the preferred method for soil remediation. This method allows for complete destruction of PCBs in the soil, resulting in maximum risk reduction, thereby being a permanent, cost-effective solution. The infrared-type incinerator operates without the intake air and fuel requirements associated with the rotary kiln-type incinerator. Consequently, air handling stacks and scrubbers can be reduced, and air emissions from the burning of fuel are eliminated. From preliminary estimates, this method is more cost-effective than the rotary kiln-type and appears to be an effective method for the level of PCBs present at the MEC site. This alternative also would not require long-term operation and maintenance (O & M) measures and will not create the uncertainties associated with offsite disposal or in-situ containment (encapsulation).

As mentioned, several operating details of the infrared-type incinerator are as yet unknown. These parameters include cost, acceptance of the contaminated soils at the offsite location, and the ability of the incinerator to meet the technical requirements of the TSCA permit. Stabilization/solidification has been retained, therefore, as a recommended alternative should the infrared-type incinerator prove to be unsatisfactory. This method would entail solidifying (fixing) the contaminated soils into a permanent matrix for placement and storage in the swamp area. This method has been proven effective as a permanent solution that limits the solubility, toxicity, and mobility of the contaminants. This is a cost-effective method but, due to the uncertainties associated with long-term monitoring to ensure that no contaminants are leaching into the environment, this alternative is not as effective as incineration and should only be implemented if incineration is not feasible. Stabilization/solidification is selected over encapsulation (Alternative 6), which is also a cost-effective method that stores contaminants onsite, because encapsulation does not permanently fix the contaminants as solidification does. Encapsulation encloses the waste with a liner that requires extensive long-term monitoring and liner maintenance to maintain its integrity.

The cleanup level of 25 ppm PCBs has been chosen for the contaminated soils in the MEC study area to be consistent with the proposed TSCA regulations. These regulations require that soils in an industrial area that have experienced previous PCB-contaminated oil spills be remediated to a level of 25 ppm of PCBs. For this site, remediating the soils to a 25 ppm PCB level is feasible and will result in adequate protection to public health, welfare, and the environemnt.

In contrast, the no action alternative (Alternative 1) or the limited action of the site drainage diversion alternative (Alternative 2) do not require remediation of the contaminated soils in the study area. Contaminated soils would remain onsite and continue to be a threat to public health and the environment. For this reason, these alternatives are not recommended for remediation at this site. Alternative 3, Offsite Disposal, is also not recommended for remediation of this site. This alternative removes contaminated soils above the 25 ppm cleanup level to an approved waste facility, and therefore, is highly effective in meeting the public health and environmental objectives at the site. This remedy is permanent for the existing site; however, contaminants are not destroyed or detoxified - merely transported from one site to another. The alternative is also not cost-effective in comparison with the recommended alternative.

As mentioned above, in addition to the recommended method for remediating contaminated soils, several other components comprise the recommended alternative. Site drainage diversion will consist of a diversion channel and grassed waterway with a stone center for permanent diversion of surface water runon around the contaminated swamp area. Drainage diversion is necessary to prevent continued erosion of contaminated soils from the swamp area to Tanyard Branch. The underground storage tanks on the MEC property will be excavated, removed, and disposed in an approved waste facility. This will prevent any future release of PCB-contaminated oil into the environment from the deterioration of the tanks. Any waste oils found in the tanks will be collected, analyzed for PCBs, and treated or disposed according to TSCA regulations. Similarly, the pocket of oil discovered in the swamp disposal area will be collected, analyzed, and treated or disposed. Any additional oils encountered during remediation of the swamp area will be handled in the same manner.

Upon completion of the remedial action implementation, the site will be restored. This will consist of backfilling, grading, revegetating, and fertilizing the swamp area and backfilling and grading the area of the storage tank removal. In addition to this, the abandoned onsite city supply well will be properly closed according to ADEM well closure regulations. Although no contamination was found in the area of this well or in the groundwater, proper closure of the well will ensure that contaminants that may migrate to this area via erosion/sediment transport do not migrate down the well casing and contaminate the public water supply. Additional controls, such as fencing the area or land use restrictions will be identified during the detailed design of this remedy, if necessary.

O & M requirements for the recommended alternative consist of maintenance of the drainage diversion ditch and the revegetated area. If stabilization/solidification is implemented, O & M activities will also include maintenance of the soilidified matrix and long-term monitoring to ensure that the contaminants are not leaching from the matrix.

The estimated cost of the recommended alternatives, which include soil cleanup to 25 ppm PCBs, plus the estimated cost for O & M are as follows:

Alternative 4:	Offsite Incineration	- $1.2 million to $2.0 million
Alternative 7:	Onsite Incineration	- $1.1 million to $1.8 million
Alternative 5:	Stabilization/Solidification	- $0.75 million

According to 40 CFR Part 300.68(i), the appropriate extent of remedy shall be determined by the lead agency's selection of a cost-effective remedial alternative which effectively mitigates and minimizes threats to and provides adequate protection of public health, welfare, and the environment. The recommended alternatives are cost-effective while providing complete destruction of the contaminants or permanent fixation of the contaminants in a matrix, and thus, result in maximum risk reduction to public health, welfare, and the environment. The alternatives considered in this document that could be implemented at a lower cost do not provide adequate protection to public health, welfare, and the environment. Other alternatives may meet the public health and environmental objectives but do so at a higher cost.

IX. OPERATION AND MAINTENANCE

Operation and maintenance for the recommended alternatives consists of maintenance of the revegetated area and of the drainage diversion ditch and, if applicable, maintenance and long-term monitoring of the solidified matrix.

To ensure that the revegetation efforts of the remediation activities are successful and vegetative growth flourishes, bi-annual maintenance checks of the area will be necessary. Previous attempts to revegetate this area were unsuccessful, however no maintenance was performed. With the proper backfill, fertilization, and maintenance, this area could be re-established with fertile growth. If additional measures are seen as necessary to improve the conditions, these should immediately be implemented. The maintenance schedule will be presented in the detailed design of the remedy.

Similarly, the drainage diversion ditch will also require bi-annual maintenance checks to ensure that the ditch is in good condition and adequately diverts surface runon from the storm sewer drain around the swamp area. The diversion ditch is important for reducing erosion and sediment transport from the swamp area to Tanyard Branch as much as possible. If maintenance is necessary, these measures will be implemented immediately. Again, the detailed design will specify these maintenance activities.

If stabilization/solidification is performed to remediate the soils, additional O & M activities will be required. Bi-annual monitoring of the matrix will be implemented to detect leaching of contaminants from the matrix, should this be occurring. Additionally, as with the vegetative cover and drainage ditch, the solidified matrix will also require bi-annual maintenance checks to determine the integrity of the matrix. Measures will be outlined in the detailed design of the remedy to rectify any problems discovered from the maintenance checks and monitoring. The detailed design will also specify the details of the monitoring program to be performed.

The O & M requirements discussed above will be implemented for 30 years. EPA is willing to perform these activities for one year after implementation of the remedy. The State of Alabama does not agree with the remedy and does not currently have a mechanism for cost-sharing of the remedy or performance of the remaining O & M activities. However, EPA will work with the State to reach a mutually agreeable settlement.

X. SCHEDULE

Upon approval of the recommended alternative by the Regional Administrator, the next step in the process is to prepare a detailed design of the remedy. PRPs do exist for this site; however, the owner of the MEC has filed for bankruptcy, and the remaining PRPs have not indicated a desire to perform the remedy. Thus, the earliest that the design, and implementation, can begin is after CERCLA is reauthorized and some agreement is reached with the State of Alabama to provide a 10% cost share.

XI. FUTURE ACTIONS

Once the recommended alternative is performed and the required O & M activities are underway, there will be no future actions necessary for the MEC site.

RESPONSIVENESS SUMMARY

MOWBRAY ENGINEERING COMPANY SITE

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION IV

This is the Responsiveness Summary for the Mowbray Engineering Company Superfund site in Greenville, Alabama. The U.S. Environmental Protection Agency (EPA) in Region IV received only one written comment on the Feasibility Study (FS) during the required public comment period. Therefore, in lieu of a descriptive summary of public comments and EPA's responses, this Responsiveness Summary document includes a short discussion of EPA's community involvement activities; a description of the single comment received and EPA's response; the fact sheet describing the FS, and a summary of the public meeting held on the FS.

The Remedial Investigation/Feasibility Study (RI/FS) for the site was conducted from spring 1985 to spring 1986. A community relations plan that described community concerns and recommended EPA community relations activities was prepared in May 1985. Following one recommendation of the plan, EPA established an information respository at the Greenville Public Library. The repository contained educational documents and research materials on the site, including the RI/FS work plan and the RI/FS report.

Once the draft FS was completed, a fact sheet was prepared that described EPA remedial activities at the site, the proposed cleanup alternatives, and the public comment period. It was mailed to individuals on the mailing list and placed in the information repository. Announcements were placed in local papers describing the public comment period and the public meeting on the FS. EPA held the public meeting on August 12, 1986, and the public comment period covered the period from August 12 to September 2, 1986. Approximately fifteen to twenty residents attended the meeting. The presentations, questions from the audience, and EPA responses are in the public meeting summary.

COMMENT ON THE FEASIBILIITY STUDY FOR THE MOWBRAY ENGINEERING COMPANY SITE

Comment:

The only written comment received during the three-week public comment period expressed the opinion that most of the citizens who had attended the public meeting favored the No Action remedial alternative.

EPA Response:

EPA has evaluated the No Action alternative as mandated by the National Oil and Hazardous Substances Contingency Plan. This alternative implies that there is no threat posed by the contaminants present at the Mowbray Engineering Company site. Selecting this alternative would mean that no remedial action would be implemented. The contaminants would remain in place and serve as a potential source of future PCB contamination.

Allowing the site to remain in this condition would not meet the public health and environmental objectives for this site, nor would it conform with other environmental laws. For these reasons, the No Action alternative is not recommended as the remedial action alternative for this site.

Fact Sheet for FS Public Meeting

REMEDIAL INVESTIGATION/
FEASIBILITY STUDY SUMMARY

U.S. EPA
REGION IV

MOWBRAY ENGINEERING COMPANY SITE
GREENVILLE, ALABAMA

JULY 1986

Introduction

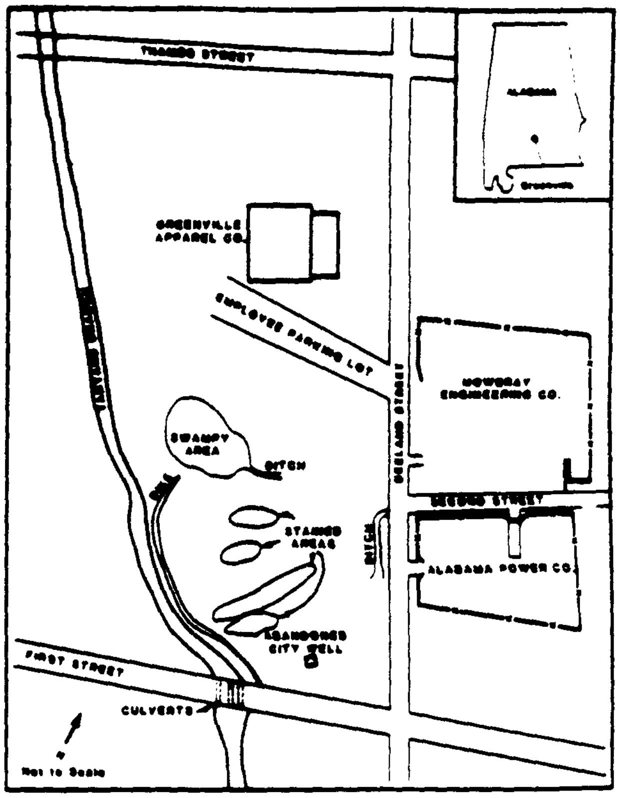
The U.S. Environmental Protection Agency (EPA) recently completed a Remedial Investigation and Feasibility Study (RI/FS) defining site conditions and evaluating remedial alternatives for the Mowbray Engineering Company Superfund site in Greenville, Alabama. This fact sheet provides background information on the site and summarizes the findings of the draft RI/FS report.

At sites like this one, EPA typically conducts an extensive investigation and study called a Remedial Investigation and Feasibility Study. (See Appendix A for a detailed description of the Superfund cleanup process.) The first part of the study, the RI, is conducted to define the type, level, and extent of contamination. The second part, the FS, is to evaluate the cleanup alternatives. Superfund cleanups are designed to: (1) control or eliminate the source of contamination at hazardous waste sites; and (2) minimize the impact of contaminants.

Site Background

The Mowbray Engineering Company (MEC) site is located in an industrial and residential area in Greenville. The study area consists of the MEC plant and a swamp, while the actual Superfund site consists of the swamp alone. MEC is located east of Beeland Street and north of First and Second Streets, and the swamp is directly west from the MEC plant across Beeland Street. MEC does not own the swamp property. A tributary of Persimmon Creek, called Tanyard Branch, runs near the west side of the swamp. (See Figure 1 for a site map.)

Figure 1
SITE LOCATION MAP
MOWBRAY ENGINEERING COMPANY SITE



MEC has been rebuilding and reconditioning electrical transformers at this plant since the mid-1950's. (However, Mowbray Engineering Company has since ceased operations at the site, and in 1985 the company declared bankruptcy.) Between 1955 and 1977, waste oil from these operations, containing polychlorinated biphenyls (PCBs), was discarded on the ground behind the plant. These oils flowed into a drain that was connected to the city storm sewer system. The sewer system then drained onto the swamp across Beeland Street, and then into Tanyard Branch. In 1977, however, MEC stopped disposing its oil on the ground and began to recycle it.

In 1975, a major fish kill in Tanyard Branch was traced to overflow waste oils from an MEC holding tank. However, upon inspection of the swamp, only trace amounts of PCBs were found. In 1980, another oil spill at the MEC plant was reported to the Alabama Water Improvement Commission (AWIC), and this time AWIC investigations revealed oil and PCB levels above 500 parts per million (ppm) in the swamp. Between February and August 1981, EPA conducted an extensive sampling progam and performed an emergency cleanup of the swamp.

In February 1981, the Centers for Disease Control (CDC) asked the National Institute for Occupational Safety and Health (NIOSH) to evaluate occupational exposures to PCBs at MEC. NIOSH personnel collected blood samples and conducted physical exams for some workers, and collected air and dust samples from the work area. NIOSH concluded that workers did not appear to be exposed to excessive levels of PCBs. However, NIOSH did recommend that workers minimize exposure to transformer oil and that any transformer suspected of containing PCBs not be processed at the site.

The site was included on the National Priorities List (NPL) in December 1982. The NPL is a listing of the nation's worst hazardous waste sites; inclusion on the list enables EPA to use Federal Superfund money for site investigation and cleanup. The site is ranked 118 of 786 sites on the NPL.

In November 1983, routine sampling at MEC by the Alabama Department of Environmental Management (ADEM) revealed high concentrations of PCBs in the stormwater drainage pathway through the site. In the spring of 1984, EPA conducted a site inspection and additional sampling. PCBs were found in the surface of the swamp, ground water, surface water and sediment from the nearby streams.

In the spring of 1985, EPA contractors began the Remedial Investigation for the site, which lasted approximately one year. Contractor personnel collected samples from the soil in the study area, from upstream and downstream locations on Tanyard Branch and Persimmon Creek, and from ground-water monitor wells. These investigations revealed PCB contamination in soil on the MEC property and in the swamp. Trace amounts of PCBs were found in sediment samples downstream of the site, but no PCBs were detected in surface waters in samples either upstream or downstream of the site. One ground-water sample was found to contain low, but detectable levels of PCBs. This finding could have been caused by the particular sampling method used, however. Air monitoring has revealed no air contamination from the site.

All Greenville residents are connected to the city water system; none use private wells. Furthermore, because of the local geology and the nature of the contaminants, EPA has concluded that it seems highly unlikely that contaminants in the study area could migrate to reach the city's drinking water supply.

What is a Feasibility Study?

EPA conducts a Feasibility Study (FS) to evaluate various ways to clean up hazardous waste sites. EPA assesses how easily the remedies can be implemented, how well they will clean up the environment and protect public health, and how much they will cost. EPA's objective is to choose the most environmentally sound and cost-effective cleanup method.

The remedies considered in the Feasibility Study for the Mowbray Engineering Company site are described below.

Alternatives Considered in the FS of the Mowbray Engineering Company Site

The Feasibility Study of the Mowbray Engineering Company site used findings from the Remedial Investigation to evaluate applicable technologies for remediation and cleanup of the swamp and MEC property. This evaluation resulted in the development of seven alternatives. Each alternative except the "No Action Alternative" includes, as common components, the excavation and removal of underground storage tanks on the MEC property, the cleanup of contaminated waste oil, and restoration (revegetation) of the swamp. This section describes each of the alternatives considered.

1. **Site Drainage Diversion**. A channel consisting of a grassy waterway with a stone center would be constructed to permanently divert surface runon around the contaminated swamp area. Drainage diversion is necessary to prevent spreading of contaminants by erosion of contaminated soils.

2. **Offsite Disposal**. For this alternative, all wastes contaminated with PCBs above a particular level are removed from the site and transported to a chemical waste facility permitted to receive PCBs.

3. **Offsite Incineration**. This remedial alternative consists of transporting the wastes to one of two out-of-state incineration facilities that are designed to destroy PCB-contaminated soil. During incineration, the PCBs are destroyed while the soil is left essentially unchanged.

4. **Onsite Stabilization/Solidification**. This remedial alternative uses a variety of techniques to minimize the solubility (ability to dissolve in water), toxicity, or mobility of the contaminants. These techniques are also designed to facilitate the handling of the wastes. Stabilization involves adding chemicals to the wastes to achieve these objectives. Solidification involves changing the wastes's physical characteristics by compacting it into a form that is tightly held together and easily stored onsite.

5. **Onsite Containment/Encapsulation**. The purpose of this alternative is to limit the movement of contaminants by physically keeping water from contacting the contaminated material. This technology consists of sealing off contaminated soils with materials that prevent such movement. Available materials include concrete, asphalt, and plastics.

6. **Onsite Incineration**. This alternative consists of transporting one of two possible mobile incineration facilities to the site for incineration of contaminated soils.

7. **No Action**. This alternative implies that no remedial measures would be taken at the site. EPA is required by law to consider a no-action alternative in every Feasibility Study.

Next Steps

A public comment period, as described below, will be held to allow citizens to comment on the remedial alternatives considered in the Feasibility Study. Following the conclusion of the comment period on the draft FS report, a formal decision document will be prepared that summarizes EPA's decision process and the selected remedies. This document will include the Responsiveness Summary (a report that summarizes citizen comments and EPA responses) and will be submitted to the EPA Regional Administrator for his approval. Submission of this decision document is expected to occur in September 1986. At that time, the design of the remedy will be developed. Upon completion of the design, implementation of the remedy will begin.

Copies of the draft RI and FS report are available for review in the information repository at the following location:

Greenville Public Library
101 Adams Street
Greenville, Alabama 36037
(205) 382-3216
Hours: Mon., Tues., Thurs., Fri.: 10 am - 5 pm
Wed.: 1 pm - 4 pm
Sat.: 9 am - 12 noon

When completed, the Responsiveness Summary will also be placed on file in the information repository.

Public Comment Invited

EPA will hold a public meeting on Tuesday, August 12, 1986 from 7 p.m. to 9 p.m. at the Beeland Park Community Center (Room 4), East Commerce Street, Greenville (phone 205-382-3031). At the meeting, EPA will present a summary of the RI/FS process (including the results of the RI/FS) and explain the proposed remedies for the site. There will also be an opportunity for citizens to ask questions. The question-and-answer period will be recorded to assist in the preparation of a Responsiveness Summary.

The public meeting will mark the start of a three-week public comment period on the draft FS report. The comment period will begin August 12, 1986, and conclude on September 2, 1986. During this three-week period, the public is encouraged to review the remedies proposed in the draft FS report and submit written comments to EPA. Copies of the draft FS report are available at the information repository. All comments must be post-marked no later than September 2, 1986 and should be sent to:

Meredith Clarke Anderson
Remedial Project Manager
U.S. Environmental Protection Agency
345 Courtland Street NE
Atlanta, Georgia 30365

For questions or further information contact either of the following:

Meredith Clarke Anderson
Remedial Project Manager
U.S. Environmental Protection Agency
345 Courtland Street NE
Atlanta, Georgia 30365
(404) 347-2643

Michael Henderson
Community Relations Coordinator
Office of Public Affairs
U.S. Environmental Protection Agency
345 Courtland Street NE
Atlanta, Georgia 30365
(404) 347-3004

MAILING LIST ADDITIONS

To be placed on the mailing list to receive information on the Mowbray Engineering Company site, please fill out and mail this form to:

Michael Henderson
Community Relations Coordinator
Office of Public Affairs
U.S. Environmental Protection Agency
345 Courtland Street NE
Atlanta, GA 30365

Name: ______________________________

Address: ______________________________

Affiliation: ______________________________

Phone: ______________________________

Fact Sheet for FS Public Meeting

APPENDIX A

EPA SUPERFUND PROCESS

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, more commonly known as "Superfund"). This act authorizes EPA to respond to releases or threatened releases of hazardous substances that may endanger public health or welfare, or the environment.

This appendix provides a simplified explanation of how a long-term Superfund response works at sites like the Mowbray Engineering Company site.

1. After a site is discovered, it is **investigated**, usually by the State.

2. The State then **ranks** the site using a system that takes into account:

   - Possible health risks to the human population;
   - Potential hazards (e.g., from direct contact, inhalation, fire, or explosion) of substances at the site;
   - Potential for the substances at the site to contaminate drinking water supplies; and
   - Potential for the substances at the site to pollute or otherwise harm the environment.

   If the problems at a site are deemed serious by the State and EPA, the site will be listed on the **National Priorities List (NPL)**, a roster of the nation's worst hazardous waste sites. Every site on the NPL is eligible for Federal Superfund money.

3. If a site or any portion thereof poses an imminent threat to public health or the environment at any time, EPA may conduct an emergency response called an **immediate removal action**.

4. Next, EPA usually conducts a **Remedial Investigation (RI)**. The RI assesses how serious the contamination is, identifies what contaminants are present, and characterizes potential risks to the community. As part of the RI, EPA typically conducts an endangerment assessment that describes the problems at the site and the potential health and environmental consequences if no further action is taken at the site.

5. Following completion of the RI, EPA performs a **Feasibility Study (FS)**. The FS examines various cleanup alternatives and evaluates them on the basis of technical feasibility, public health effects, environmental impacts, institutional concerns (including compliance with State and local laws), impact on the community, and cost. The findings are presented in a draft FS report.

6. Following completion of the draft FS report, EPA holds a **public comment period** to receive citizen comment concerning the recommended alternatives. The minimum duration is three weeks. Citizens may provide comments either orally at public meetings or through written correspondence to EPA.

APPENDIX A (continued)

7. After public comments have been received, EPA then chooses a **specific cleanup plan**.

8. This cleanup plan and the Responsiveness Summary (a description of public comments and EPA responses to those comments) are compiled in the **Record of Decision (ROD)**. The ROD is then submitted to the EPA Regional Administrator for his approval.

9. Once the Regional Administrator signs the ROD, EPA designs the specific cleanup plan for the site.

10. When the design is finished, the actual remedial activities at the site can begin.

The time necessary to complete each of these steps varies with every site. In general, an RI/FS takes from one to two years. Designing the cleanup plan may take six months. And implementing the remedy - the actual containment or removal of the waste - may take from one to three years. If ground water is involved, the final cleanup may take many more years.

Ongoing community relations activities during a cleanup include public meetings, news releases, fact sheets like this one, and other activities intended to keep citizens and officials informed and to encourage public participation. These activities are scheduled throughout the course of the remedial cleanup process. Specific activities vary from site to site depending on the level and nature of concern. The range of community relations activities that can occur is described in EPA's Community Relations Plan for the site.

MOWBRAY ENGINEERING COMPANY SITE
PUBLIC MEETING SUMMARY

I. OVERVIEW

On August 12, 1986, the U.S. Environmental Protection Agency (EPA) in Region IV held a public meeting from 7 to 8 pm to discuss the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Mowbray Engineering Company (MEC) Superfund site located in Greenville, Alabama. The public meeting was held in the Beeland Park Community Center in Greenville. Approximately fifteen to twenty local residents, including the Mayor of Greenville, attended. Reporters from the Greenville Advocate and the Montgomery Advertiser were also present.

Representing EPA at the meeting were Jim Orban, Superfund Unit Chief; Ralph Jennings, Superfund Unit Chief; Meredith Anderson, Remedial Project Manager; Michael Henderson, Community Relations Coordinator; and Elizabeth Osheim, Assistant Regional Counsel. Contractor personnel present were Mary Leslie and Mark Burgess of Camp Dresser & McKee, Incorporated; and Sara Watson of ICF Incorporated. The meeting began with a description of the MEC site, a presentation of the results of the RI/FS, and an explanation of the upcoming public comment period. A question-and-answer period followed.

A summary of EPA's presentations, and the questions and answers that followed is outlined below. The presentations are given in chronological order; the questions and answers have been organized into topics.

II. PRESENTATIONS

A. Introduction and Site History - Meredith Anderson

Ms. Anderson described the purpose of the meeting and introduced the EPA and contractor personnel present. She noted that the information presented at the meeting was available in the RI/FS. She said that the full RI/FS prepared by EPA and its contractor is currently available for public review in the information repository located in the Greenville Public Library. Ms. Anderson invited the public to review the material and submit comments to her at the address listed in the fact sheet on the site. She indicated that copies of this fact sheet, which presents key information relevant to the Mowbray RI/FS, were available at the door.

Ms. Anderson next described the site area, the history of Mowbray Engineering Company's operations and disposal practices, and the nature of the contamination at the site. She explained that the results of the RI provided the technical information about the nature and extent of contamination found at the MEC site. EPA's field work on the RI was concluded in November 1985. The FS was completed in June 1986, at which point the formal RI and FS reports were written. Ms. Anderson showed several slides of the site to illustrate sampling procedures and the geography of the area.

B. Remedial Investigation - Mary Leslie

Ms. Leslie explained what an RI is, why it is performed, and how it is conducted. She said that the purpose of the RI is to gather data about the existing contamination onsite; the routes available that would allow the contamination to migrate offsite towards local bodies of water or other areas; and the people, animals, or environmentally sensitive areas that could possibly be affected by this contamination. This data is then used to determine the nature of the public health threat from the site.

Ms. Leslie stated that the RI was undertaken to fill specific data gaps that had not been addressed by previous investigations. She said the areas that required further sampling included:

- soils on the MEC property;
- the swamp area;
- ground water near the site;
- surface waters; and
- sediments upstream and downstream from the site, especially in Tanyard Branch and Persimmon Creek.

To gather this information for the RI, Ms. Leslie said that samples were collected from various monitor wells around and on the site. These samples were then analyzed for traces of contamination.

Ms. Leslie showed maps of the site depicting the locations of the monitor wells installed by EPA. She explained the rationale for their placement by citing these examples:

> Monitor well #1 was located upstream of the site to establish a baseline for comparing the results of samples from the other wells. Monitor well #2 was located where EPA believed it was most likely that contaminants would migrate from the site.

Ms. Leslie said the results of the RI indicated that, overall, relatively few polychlorinated biphenyls (PCBs, the main contaminants of concern) were discovered at the Mowbray site. She said very low levels of PCBs were found downstream from the site, while none were found upstream from the site. Ms. Leslie observed that the RI established that there was little probability for contamination of ground water in the vicinity of the site. She did note, however, that significant levels of PCBs were found in selected areas -- near the storage tanks on the MEC property, in monitor well #2, and in localized pockets of subsurface oil in the swamp.

Ms. Leslie spoke about the completion of a public health evaluation for the site. She said that this evaluation is based upon the results of the RI, the known toxicity of the contaminants, their concentration at the site, the possible routes for contaminant migration, and the possible receptors of the contaminants. Based on these factors, Ms. Leslie said the public health evaluation concluded that there was no serious threat to the public health.

C. Feasibility Study - Mark Burgess

Mr. Burgess explained that, based on the areas and levels of contamination found during the RI, many different options for addressing the contamination at the site were developed. He said these options were evaluated on the basis of technical feasibility, environmental impact, public health impact, and cost. Mr. Burgress said that EPA then shortened the original list of alternatives to seven options. He described the advantages, disadvantages, and costs for each of the final options.

The cost information Mr. Burgress presented is listed in the table below. He suggested that any one of the seven alternatives could clean the site to a level where the PCBs remaining in the soil would range from ten milligrams per kilogram (mg/kg) to fifty mg/kg. He explained further that cleaning up the site to a level of ten mg/kg means that the only soil left at the site would contain less than ten mg/kg of PCBs.

In the following table, costs are given for each alternative that would clean up the site over increasing levels of PCBs. The lower the level of PCBs allowed to remain at the site, the more soil must be removed and the more the action will cost.

D. Table of Cleanup Alternatives and Explanation

Cleanup Alternative	Cost ($) PCB Level 10 mg/kg*	20 mg/kg	30 mg/kg	50 mg/kg
1. No Action	0	0	0	0
2. Site Drainage Diversion	129,600	129,600	129,600	129,600
3. Off-Site Disposal	8,266,000	3,285,900	879,500	219,600
4. Off-Site Incineration				
(Permanent facility)	51,417,300	19,287,500	4,583,400	566,300
(Temporary facility)	4,118,500	1,635,300	509,800	199,700
5. On-site Solidification	2,307,800	1,074,500	569,500	349,600
6. Containment/Encapulation	1,682,500	861,900	574,300	348,400
7. On-Site Incineration	6,837,500	2,647,300	734,900	210,000

* mg/kg means milligrams per kilogram.

Explanation of Cleanup Alternatives

All the following cleanup alternatives, with the exception of Alternative 1, have four common components. These components include: drainage diversion to prevent the erosion of contaminated soil into Tanyard Branch; removal of storage tanks containing contaminated oil; treatment or disposal of contaminated waste oils; and restoration of the site by revegetation.

The significant difference between these alternatives covers how the contaminated soil is treated. The list below provides a brief explanation of the advantages and disadvantages unique to each alternative.

Alternative 1: No Action

Advantages: No additional cost.

Disadvantages: The site would be left as it is now, pockets of PCBs would remain at the site, and the contaminated soils and storage tanks could potentially release additional PCBs at a later date.

Alternative 2: Site Drainage Diversion

This option includes the four components listed above.

Advantages: It prevents erosion of soils, leakage of storage tanks, and contact with contaminated soil.

Disadvantages: The contaminated soils are left on site and, if the vegetative cover were removed, contaminated soils could continue to erode into Tanyard Branch.

Alternative 3: Off-site Disposal

This option involves excavating the soil and taking it to an approved landfill. As with the remaining four options, the range of costs is very wide and depends on the extent of the cleanup. Cleaning up the site to very low levels of PCBs means handling much greater quantities of soil which thereby raises the cost.

Advantages: The technology is easy to implement, and the contaminated soils would be properly disposed.

Disadvantages: The contaminated soil would be transported through Greenville and other towns and cities, creating the potential for accidental exposure to the public.

Alternative 4: Off-site Incineration

The soil would be excavated and taken to either a mobile or permanent incineration facility.

Advantages: The PCBs are permanently destroyed instead of simply placed in another area.

Disadvantages: The contaminated soil would be transported through Greenville and other towns and cities, creating a potential hazard to the public.

Alternative 5: <u>On-site Solidification</u>

The soil would be excavated, mixed with cement-like substances, and put back on the site.

Advantages: The soils cannot move or erode, there is no need to transport the contaminants, and there is a barrier to prevent contact with the contaminants.

Disadvantages: The soils would be left on site, there would be additional storm water runoff to Tanyard Branch, and EPA would need to establish a long-term monitoring program to verify the effectiveness of this remedy.

Alternative 6: <u>Containment/Encapsulation</u>

The contaminated soils would be enclosed in a clay or plastic liner.

Advantages: The contaminants are contained and cannot move, and there is no need to transport soils off-site.

Disadvantages: Contaminants are left on site, and EPA would need to establish a long-term monitoring program to ensure the integrity of the liner.

Alternative 7: <u>On-site Incineration</u>

Soils are excavated, incinerated on site and put back onto the site.

Advantages: This is a permanent remedy as the PCBs are destroyed, there is no need to transport the soils, and the facility provides some opportunity for employment of local residents.

Disadvantages: The on-site incineration facility is unaesthetic and is a potential source of air pollution.

E. Conclusion - Meredith Anderson

Ms. Anderson restated where the pockets of contamination were found at the MEC site, reiterated that the public health evaluation had found no threat to public health, and listed again the seven alternatives in the FS. She explained that EPA currently favored Alternative 2. However, Ms. Anderson said EPA was eager to have public comments on all seven alternatives and would consider those comments in making its final selection. She said that the public's comments and the EPA responses would be compiled into a document called the Responsiveness Summary; this summary and the recommended remedy would then be presented to the Regional Administrator for final approval.

III. QUESTIONS AND RESPONSES

A. Questions on Remedial Action Alternatives

1. Question: One resident inquired whether EPA was ready to abandon the site by choosing the No Action Alternative.

Response: EPA responded that the No Action Alternative is one of the options EPA must consider.

2. Question: Several residents asked if specific parts of various alternatives could be performed. One asked if the No Action Alternative were chosen and the tanks remain, would the tanks leak. Could EPA simply remove the tanks?

Response: EPA responded that the tanks may leak and that the Agency may choose to do any combination of the alternatives presented.

3. Question: Another resident asked if only part of Alternative 2 could be done, and what was the cost of Alternative 2.

Response: EPA said that they may choose to perform any part of an alternative. However, there are certain items that fit into the same category as the tanks. They cause similar, substantial problems and require minimal effort to remove them. That is why EPA has put these items together as Alternative 2. The cost of Alternative 2 is $129,600.

4. Question: One resident asked why the off-site incineration alternative is so expensive and why there is such a wide range of costs associated with incineration.

Response: EPA explained that when soil is burned at a permanent incineration facility, the soil bulk is not reduced. Therefore, the facility must use its landfill capacity to dispose the incinerated soil. The costs are also high if the site is cleaned to a low level of PCBs. Off-site incineration is also an expensive technology in general.

5. Question: One resident asked about the composition of the soil around the site and whether it could be stabilized with lime.

Response: EPA responded that the top level of soil is clay, the next six inches of the site is top soil, and beneath that layer is two and half feet of mainly sandy clay. The exact composition of soil varies over the site. This composition is incompatible with the use of lime for stabilization.

B. Questions on PCB Levels

1. Question: One resident asked what PCB level EPA considers to be hazardous and why EPA would clean up the site beyond that level.

Response: EPA responded that the question of PCB toxicity continues to be studied and debated. In the past, one common interpretation of the Toxic Substances Control Act led to cleanups down to 50 ppm. However, new Toxic Substances Control Act regulations have been proposed that will result in cleanup down to the 10-25 ppm range.

2. Question: A resident asked how many samples contained PCBs exceeding 50 ppm, and where were these samples found.

Response: EPA answered that six or seven samples contained PCBs exceeding 50 ppm. The exact data is in the RI/FS report. These samples were found on the MEC property and in localized areas in the swamp.

3. Question: Several questions considered why there was such a large difference between PCB levels found in samples evaluated in the field and those evaluated in the laboratories. The samples from the field all showed PCB levels lower than the laboratory measurements.

Response: EPA said that the field instruments used for measuring PCBs are less sophisticated and less precise than the laboratory instruments. The field measurements were taken so that EPA could screen samples quickly to decide where to take additional samples. Any sample that is split and sent to two laboratories will show different results. It is not uncommon for laboratories to find contamination levels in one sample that are twice as high as those found in another sample. EPA stressed, however, that even where results of individual samples differ, the data for this site does show the same trends in the concentration of PCBs.

C. Questions on the Need for Cleanup

Questions: In a series of questions, one resident said he had a letter from Mr. Devine of EPA stating that the remedial cleanup action performed in 1981 at the site was satisfactory and no additonal work was needed. He asked if Mr. Devine had changed his mind. He stated that he had asked Mr. Devine to do another independent study and that he didn't think EPA had cleaned up the site adequately. He also questioned the need for additional work now because there could be no new contamination as MEC had not been in operation since the time of the letter. He concluded by recommending the No Action Alternative.

Response: EPA responded that Mr Devine's letter was written in 1981 and referred to the specific immediate removal at the site as satisfactory. EPA believes that the site continues to be a source of contamination, regardless of whether MEC had been in operation since 1981. In any case, new data was needed to determine if the contaminants had migrated, and if so, where they had migrated.

D. Questions on the Future of the Site

Question: One resident who owned a small piece of the swamp property asked if the No Action Alternative were chosen, what would happen to the property. Would anyone buy it?

Response: EPA explained that the property would remain as it is now. When any site is cleaned up, the next step is to delete it from the National Priorities List (NPL). If the No Action Alternative is selected, attempts to take the site off the NPL would be the next logical step. The contaminant levels would be the same but the area would no longer be a Superfund site. There should be no more risks with buying that property than with buying any other property that could turn out to be contaminated.

E. Questions on Financing Superfund Remedial Actions

1. Question: One resident asked who pays for the cleanup.

Response: EPA stated that initially EPA pays for the cleanup with money from the national Superfund. Then, EPA attempts to recover those costs from responsible parties identified through ongoing legal research conducted by EPA.

2. Question: One resident asked if Superfund was funded out of general tax revenues. In a follow-up question, the resident asked why EPA was having problems funding Superfund if the money comes from chemical companies.

Response: EPA explained that 87% of the Trust Fund comes from a tax on chemicals; 13% comes from general tax revenues. The problem now is that the law exists but that the funding has expired. There is a new Superfund bill which has been agreed to by the House and Senate Conference Committees. However, there is still some disagreement over the funding issue. The bill must pass both the House and Senate and be signed by the President.

3. Question: One resident asked what would happen to this site if Superfund isn't funded.

Response: EPA responded that the funding would not exist but the law would. Therefore, EPA predicted that the Agency would probably be very agressive in hunting out responsible parties to finance cleanups. However, the site would essentially remain in limbo for some time.

F. General Questions

In reponse to a request for the number of complaints EPA has received about the site, EPA stated that it has received one anonymous letter.

In response to a question asking if a 3 or 4 page comment would be considered, EPA stated that a comment of any size would be welcome.

In response to requests for the approximate cost of the investigation and the time period covering that expense, EPA responded that the investigation has cost $400,000 since January 1985. EPA added that this includes all field work, planning, and documentation. A typical RI/FS costs $500,000-$800,000.

Meeting Adjournment

Ms. Anderson then thanked everyone for coming, and the meeting adjourned at 8 pm.