United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R06-90/059
September 1990

EPA

Superfund Record of Decision:

Tenth Street Dump/Junkyard, OK

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. EPA/ROD/R06-90/059	2.	3. Recipient's Accession No.

4. Title and Subtitle SUPERFUND RECORD OF DECISION Tenth Street Dump/Junkyard, OK First Remedial Action - Final	5. Report Date 09/27/90
	6.
7. Author(s)	8. Performing Organization Rept. No.
9. Performing Orgainization Name and Address	10. Project/Task/Work Unit No.
	11. Contract(C) or Grant(G) No. (C) (G)
12. Sponsoring Organization Name and Address U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460	13. Type of Report & Period Covered 800/000
	14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The 3.5-acre Tenth Street Dump/Junkyard site is an inactive landfill in Oklahoma City, Oklahoma, within the North Canadian River's 100-year floodplain. There are two residences and a salvage yard within 100 yards of the site. From 1951 to 1979, the site was used, in succession, as a municipal landfill, a privately owned and operated salvage yard, and an automobile salvage yard. Waste materials accepted by the first salvage yard included paint thinners, old transformers, and tires. Dielectric fluid that contained PCBs was drained from old transformers, stored in barrels, and sold. During this PCB recovery process, substantial quantities of PCB-contaminated oil were spilled onto the ground at the site. In 1983, EPA site inspections located 20 drums, some of which were corroded and leaking contaminated material into the soil. Soil samples, taken on and around the site, showed contamination by hazardous materials, particularly, high levels of PCBs. In 1985, EPA completed removal actions, which included disposal of drums containing hazardous waste, decontamination and relocation of junk automobiles, consolidation of contaminated soil to the center of the site, installation of a plastic liner and a clay cap, and installation of security fencing. This Record of Decision addresses soil contamination at the site. It is estimated

(See Attached Page)

17. Document Analysis a. Descriptors

Record of Decision - Tenth Street Dump/Junkyard, OK
First Remedial Action - Final
Contaminated Medium: soil
Key Contaminants: organics (PCBs)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 74
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse* OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

EPA/ROD/R06-90/059
Tenth Street Dump/Junkyard, OK
First Remedial Action - Final

Abstract (Continued)

that 8,500 cubic yards of soil are contaminated by PCBs, with 7,500 cubic yards of this total having PCBs levels above the TSCA PCB spill cleanup policy level of 25 mg/kg. The primary contaminants of concern affecting the soil are organics including PCBs.

The selected remedial action for this site includes removing the red clay cover and plastic liner; excavating an estimated 7,500 cubic yards of PCB-contaminated soil with concentrations of 25 mg/kg and higher, followed by treatment of the excavated soil by chemical dechlorination and carbon adsorption to control air emissions; and backfilling and regrading the excavated area with clean and treated soil. The estimated present worth cost for this remedial action is $4,044,000. There are no O&M costs associated with this remedial action.

PERFORMANCE STANDARDS OR GOALS: Contaminated soil with greater than 300 mg/kg PCB (an order of magnitude higher than the health-based goal) is considered the principal threat. However, the soil excavation goal is PCB 25 mg/kg (TSCA), due to the cost effectiveness of treating soil with low levels of PCBs along with the highly contaminated soil, and is based on a 10-6 excess cancer risk level. Soil residuals will contain less than 2 mg/kg PCBs.

DECLARATION
TENTH STREET DUMP
RECORD OF DECISION

SEPTEMBER 1990

Statutory Preference for Treatment as a
Principal Element is Met
and a Five-Year Review is not Required

SITE NAME AND LOCATION

Tenth Street Superfund Site
3200 NE Tenth Street
Oklahoma City, Oklahoma

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Tenth Street Site in Oklahoma City, Oklahoma, which was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site.

The State of Oklahoma does not support the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in the Record of Decision (ROD), may present a potential endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy addresses the principal threat posed by the site through chemical treatment of PCB contaminated soil at the site. Treated soil will be disposed on site to backfill the excavated area.

The major components of the selected remedy include:

- Remove the existing red clay cover and the visqueen plastic liner.
- Excavate an estimated 7,500 cu. yd. of PCB contaminated soil with concentrations of 25 ppm and higher.

- Chemically treat the excavated contaminated soil by a chemical dechlorination process meeting the Toxic Substance Control Act (TSCA) PCB alternative treatment requirements.

- Backfill the treated soil in the excavated area.

- Grade the site for effective drainage and establish vegetative cover.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, compiles with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective. This remedy utilizes permanent solutions and an alternative treatment technology to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because this remedy will not result in hazardous substances remaining onsite above health-based levels, the five-year review will not apply to this action.

Robert E. Layton Jr.

Robert E. Layton Jr., P.E.
Regional Administrator

Date 9/27/90

I. LOCATION AND DESCRIPTION

The Tenth Street Site (the "site") is located at 3200 NE Tenth Street, in the far eastern boundary of Oklahoma City, Oklahoma (Section 31, Township 12 North, Range 2 West, of Oklahoma County). The site is approximately 3.5 acres in size. It is situated immediately south of NE Tenth Street and lies between Bryant Avenue and the North Canadian River. Standish Avenue, a side street east of Bryant, is the North-South street closest to the western boundary of the site (see Figures 1 & 2). The site is also situated in the 100-year flood plain of the North Canadian River. The area in the vicinity of the site is used primarily for industrial purposes.

Vegetation in the area is directly related to the North Canadian River and to the degree of urbanization. It consists of marsh grass and willow and cottonwood trees along the river banks. Grasscovered fields and lots away from the river are punctuated by varieties of elm, backjack, post oak and other deciduous trees. Around the site are primarily short grasses while the site itself is covered by a tall grass.

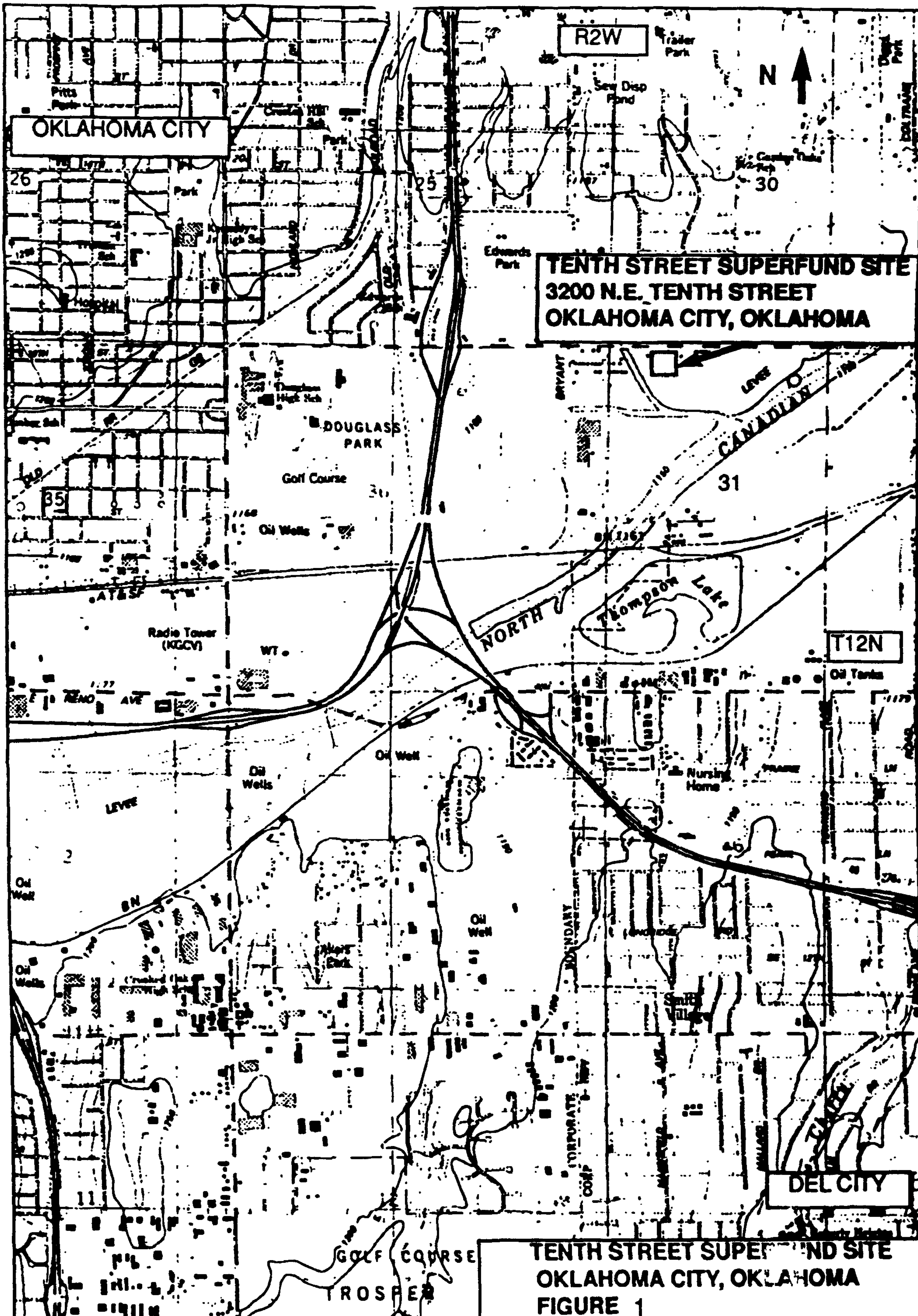
Within 100 yards of the western site boundary is a residence. East of the site about 75 yards is a residence and a salvage yard (Figure 2). Two individuals live at the residence adjacent to the salvage yard and one individual lives at the residence west of the site. There are about 30 visitors per day at the salvage yards and about 4 visitors per day at the home west of the site.

According to a 1985 traffic count, approximately 16,000 cars per day pass the site on the NE Tenth Street. The closest population centers are Oklahoma City (446,120, 1986 census records) and Del City (28,523, 1980 census records).

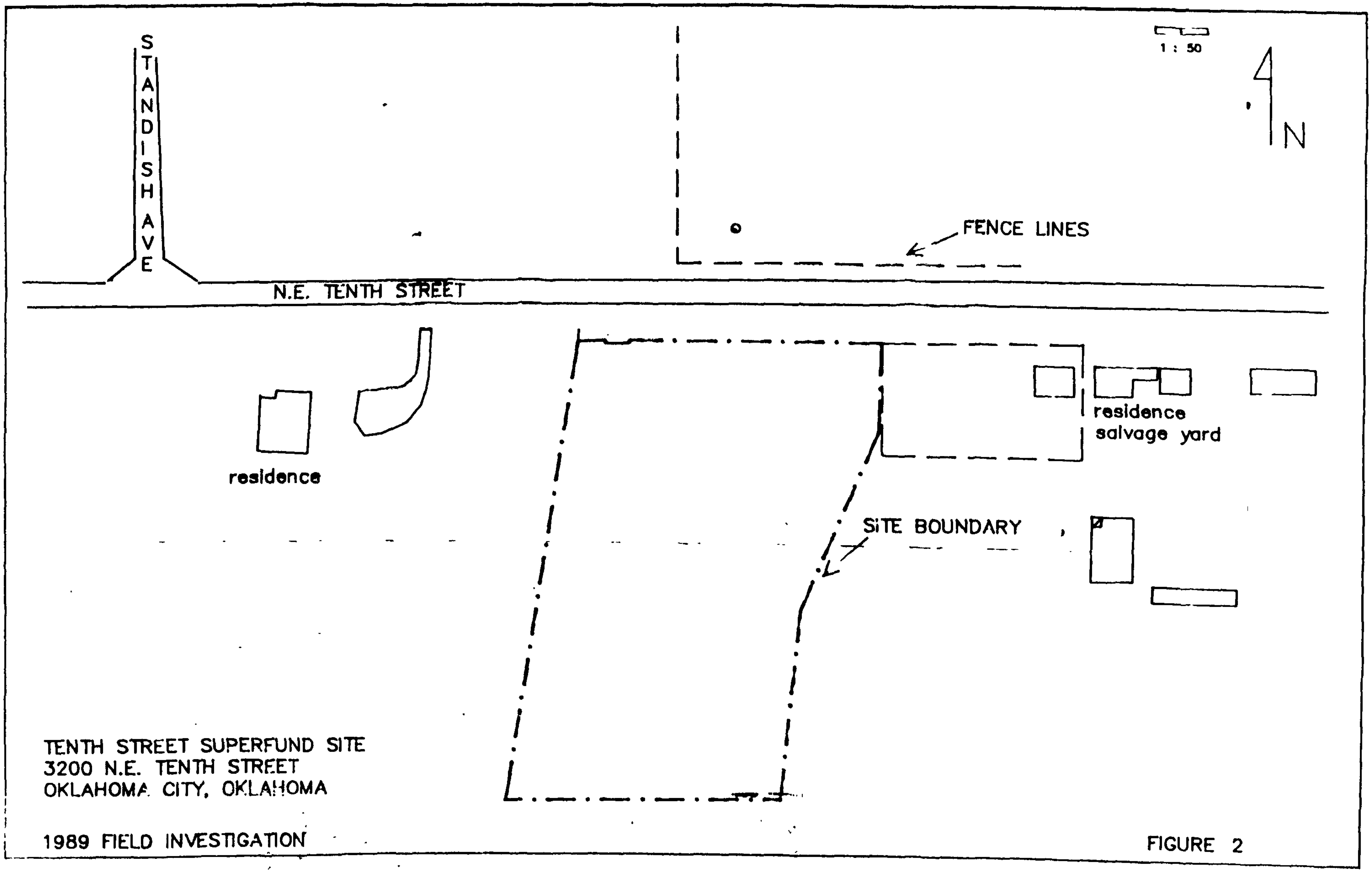
The Oklahoma City public water supply source is Draper Lake. Del City uses surface water from Thunderbird Lake and ground water for its sources of drinking water. Both Draper Lake and Thunderbird Lake are outside of a three-mile radius of the site. Water supply for about 29,218 people within a three-mile radius of the site is provided by ground water from the Garber-Wellington formation.

The nearest major surface water body is the North Canadian River, which lies south and east of the site. Regional drainage is toward the river but local topography causes some variations in this pattern. Two southeast trending tributaries about 200 to 400 yards west of the site become confluent and join the North Canadian River about 400 yards south of the site. About 0.25 mile to the northeast of the site are two large ponds which were previously quarrying pits for sand and gravel.

The site rests on unconsolidated Quarternary alluvium deposits of the North Canadian River (Figure 3); its thickness ranges from a few inches



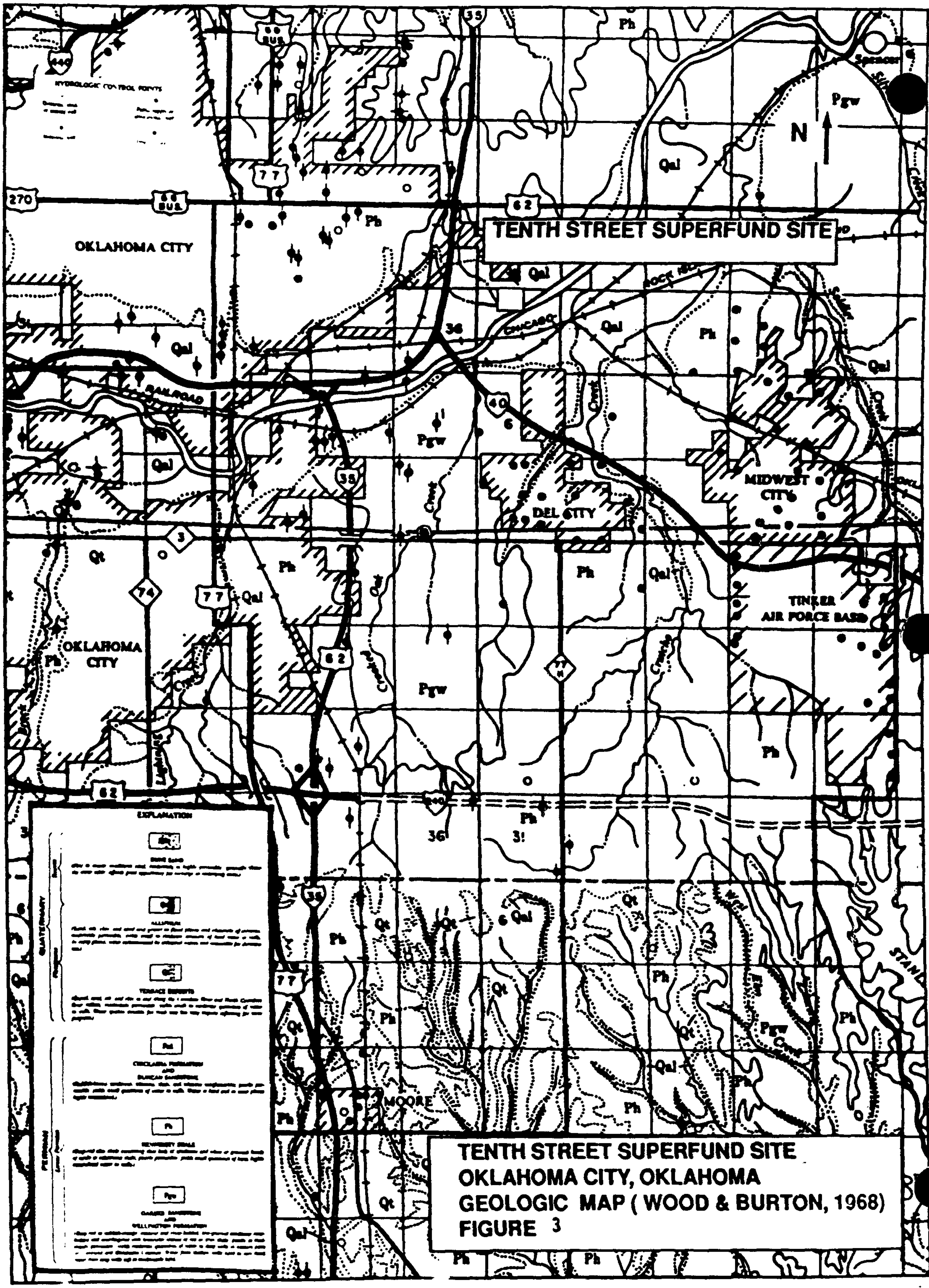
TENTH STREET SUPERFUND SITE
OKLAHOMA CITY, OKLAHOMA
FIGURE 1



TENTH STREET SUPERFUND SITE
3200 N.E. TENTH STREET
OKLAHOMA CITY, OKLAHOMA

1989 FIELD INVESTIGATION

FIGURE 2



TENTH STREET SUPERFUND SITE
OKLAHOMA CITY, OKLAHOMA
GEOLOGIC MAP (WOOD & BURTON, 1968)
FIGURE 3

The site rests on unconsolidated Quarternary alluvium deposits of the North Canadian River (Figure 3); its thickness ranges from a few inches up to 100 feet. Beneath the site, the alluvium is about 30 feet thick. The Garber-Wellington Formation underlies the alluvium with the Hennessey shale stratigraphically positioned in between. However, the Hennessey shale is not present underneath the site.

The Garber-Wellington is the most important source of ground water in the Oklahoma City-Del City-Midwest City area. In the vicinity of the site, the base of fresh water is sloped from 600 to 300 feet above sea level. The Hennessey shale is not a significant aquifer but the water is of sufficient yield and quality to provide water supplies for domestic and agricultural use (ground water classification 2B).

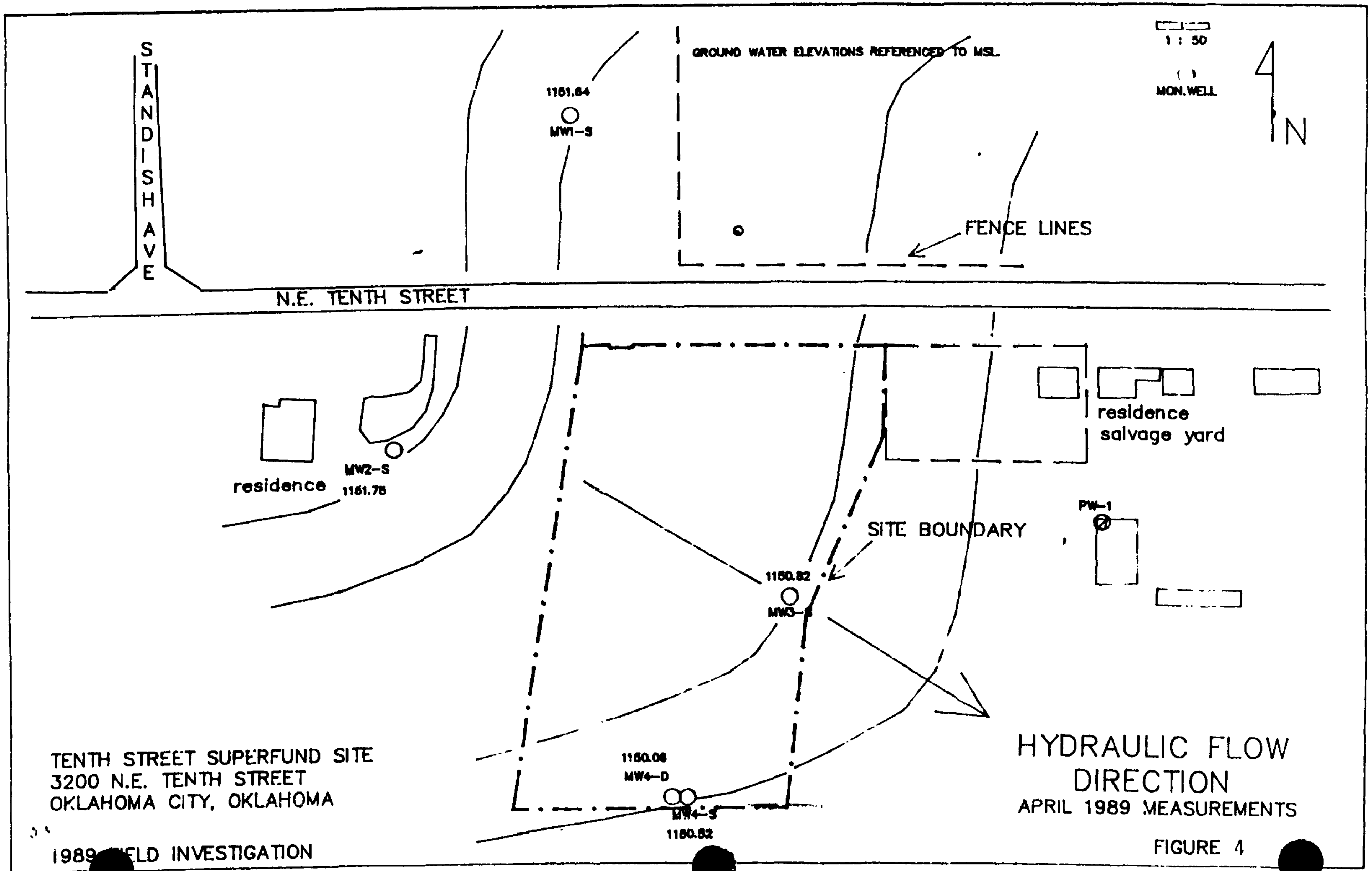
Ground water beneath the site is present in at least two distinct zones as indicated by field investigations and water quality data. A shallow water-bearing zone exists from 6 feet to at least 30 feet below ground surface (BGS). The water table ranges from 6 to 10 feet BGS and slopes gently to the south-southeast, towards the North Canadian River (Figure 4). Another zone is present at about 160 feet BGS. The upper and lower bounds of this deeper zone are not known. Nor is it known if other water bearing units exist between these shallow and deep zones.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

Evidence from aerial photographs indicate that the area was operated as a municipal landfill between 1951 and 1954. From about 1959 to 1979 Mr. Raymond Cobb leased this site and operated it as a salvage yard until his death in 1979. During his operation, materials such as paint thinners, tires, and old transformers were accepted in the salvage yard. Dielectric fluid that contained polychlorinated biphenyls (PCBs) was drained from old transformers, stored in barrels, and sold. During the recovery process, substantial quantities of oil were spilled onto the ground. After Mr. Cobb's death, Mr. Rolling Fullbright operated the site as an automobile salvage yard called Deadeye's Salvage Yard.

In 1983, the Field Investigation Team of the Environmental Protection Agency (EPA) inspected the site and observed about 20 drums, some of which were corroded, leaking, or bulging. Liquids contained in the drums and soils from the surrounding area were sampled by FIT. High concentrations of volatile organic compounds, benzene, polynuclear aromatics, methylene chloride, methylene phenol, ethanol, tetrachloroethane, acetone, and tetrachloroethylene were detected in soil. Subsequent sampling in 1984 and 1985 by the the Technical Assistant Team (TAT) of EPA detected high concentrations of PCBs in the soil on and around the site.

In August 1985, the EPA Region 6 Regional Administrator approved an emergency response action to remove and dispose of electrical equipment and drums containing hazardous substances. This authority also included actions to decontaminate and relocate junk automobiles, consolidate contaminated soils to the center of the site, grade the site for effective drainage, install a synthetic liner and clay cap, and erect a



1 : 50
MON. WELL
N
GROUND WATER ELEVATIONS REFERENCED TO MSL.
STANDISH AVE
N.E. TENTH STREET
FENCE LINES
1151.64
MW1-S
MW2-S
1151.78
residence
residence
salvage yard
PW-1
SITE BOUNDARY
1150.82
MW3-S
1150.06
MW4-D
MW4-S
1150.52
TENTH STREET SUPERFUND SITE
3200 N.E. TENTH STREET
OKLAHOMA CITY, OKLAHOMA
1989 FIELD INVESTIGATION
HYDRAULIC FLOW DIRECTION
APRIL 1989 MEASUREMENTS

FIGURE 4

a security fence around the site.

After completion of the removal action, the site was evaluated under the criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action. In January 1987, the site was proposed for inclusion on the National Priorities List (NPL) due to the potential for ground water contamination. The site was placed on the NPL in July 1987.

A remedial investigation and feasibility study (RI/FS) was conducted by EPA Region 6 in Spring 1989 to identify the types, quantities and locations of contaminants, to identify the risk from these contaminants and to address the contamination problems. The RI consisted of a comprehensive field sampling and analysis program followed by validation and evaluation of the data collected. The RI report was finalized and released to the public in March 1990.

The results of the RI identify that:

- o PCBs are the contaminants of concern at the site, based on concentration and risk; the predominant PCB species present is Aroclor 1260;
- o Contamination is limited to soil at the site; and
- o Ground water or surface water contamination was not detected.

The Feasibility Study Report and Risk Assessment Report for this site were completed in July 1990. In August 1990, the FS report and the Risk Assessment report were released to the public along with the Proposed Plan. A 30-day public comment period was provided, ending on September 8, 1990.

Searches for potentially responsible parties (PRPs) have been conducted and two possible PRPs, Mr. Sullivan Scott and Mr. Elmer Cobb, were identified. Upon further investigation, other PRPs may be identified. The known PRPs were notified in writing on March 23, 1989 via a general notice letter and given the opportunity to conduct the RI/FS under the supervision of EPA. However, neither has elected to undertake these activities.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

A Community Relations Plan for the site was developed and finalized in June 1989. This document lists contacts and interested parties throughout government and the local community, and locations for information repositories. It also establishes communication pathways to ensure timely dissemination of pertinent information. Fact sheets outlining the RI and its progress were distributed. An open house to provide information on the RI activities was held in September 1989. The RI report was released to the public in March 1990. The FS Report, Risk Assessment Report, and the Proposed Plan were released to the public in August 1990. An open house to provide information on the FS and the Proposed Plan was held on August 7, 1990. All of these documents were made available in the administrative record and information repositories maintained at the Oklahoma City Public Works Department, Oklahoma State Department of Health, and the Ralph Ellison Library. A public comment period was held from August 9, 1990 to September 7, 1990. A public meeting was held on August 14, 1990 to present the results of the RI/FS and the preferred alternative as presented in the proposed plan for the site. All comments which were received by EPA within the comment period, including those expressed verbally at the public meeting, are addressed in the responsiveness summary section of the Record of Decision.

IV. SCOPE AND ROLE OF RESPONSE ACTION WITHIN SITE STRATEGY

As characterized by the RI, the problems at the Tenth Street Superfund Site are limited to soil contamination. The site was determined to pose a principal threat because of the potential for direct contact with the contaminated soil and the soil's potential impact on ground water. The scope of the response action is to address the principal threat at the site by preventing current or future exposure to the contaminated soil through treatment and/or containment, and reducing or controlling the potential migration of contaminants from the soil to ground water.

V. SUMMARY OF SITE CHARACTERISTICS

Analyses of soil, ground water, and surface water from the site and adjacent areas indicate contaminants at the site are primarily related to PCBs. Other contaminants do not pose a health risk, based on the risk assessment. Contamination is limited to soil at the site.

Soil

Soil samples were collected at selected intervals during the drilling of five ground water monitoring wells and 26 shallow boring; of these 31 locations, two monitoring wells and 11 shallow borings are offsite (Figure 5). A summary of the PCB soil sampling results is listed in Table 1. The concentrations of PCBs range from 41 ppm to as much as 1700 ppm, while the average concentration is 110 ppm. Figure 6 shows total Aroclor concentrations without species differentiation.

Laterally, PCBs are generally located more towards the central portion of the site. Vertically, PCBs are present from 1 ft to as much as 8 ft below the ground surface (including the thickness of the cap). Excluding the cap, the maximum depth of contamination or thickness of contaminated soil below the protective cap is about 6.7 ft. In general, contaminated soil is about 1 foot thick at the cap periphery, while it is between 3 to 6.7 ft thick towards the center of the cap. The increase in the thickness of contaminated soil from 2 feet in 1985 to 6.7 feet in 1989 (Figure 7), is due to grading of soil towards the center of the site during construction of the protective cap. Contamination greater than the 25 ppm PCB remedial goal was not detected at depths greater than 6 feet. The deepest point where contamination was detected is about 3 ft above the ground water table.

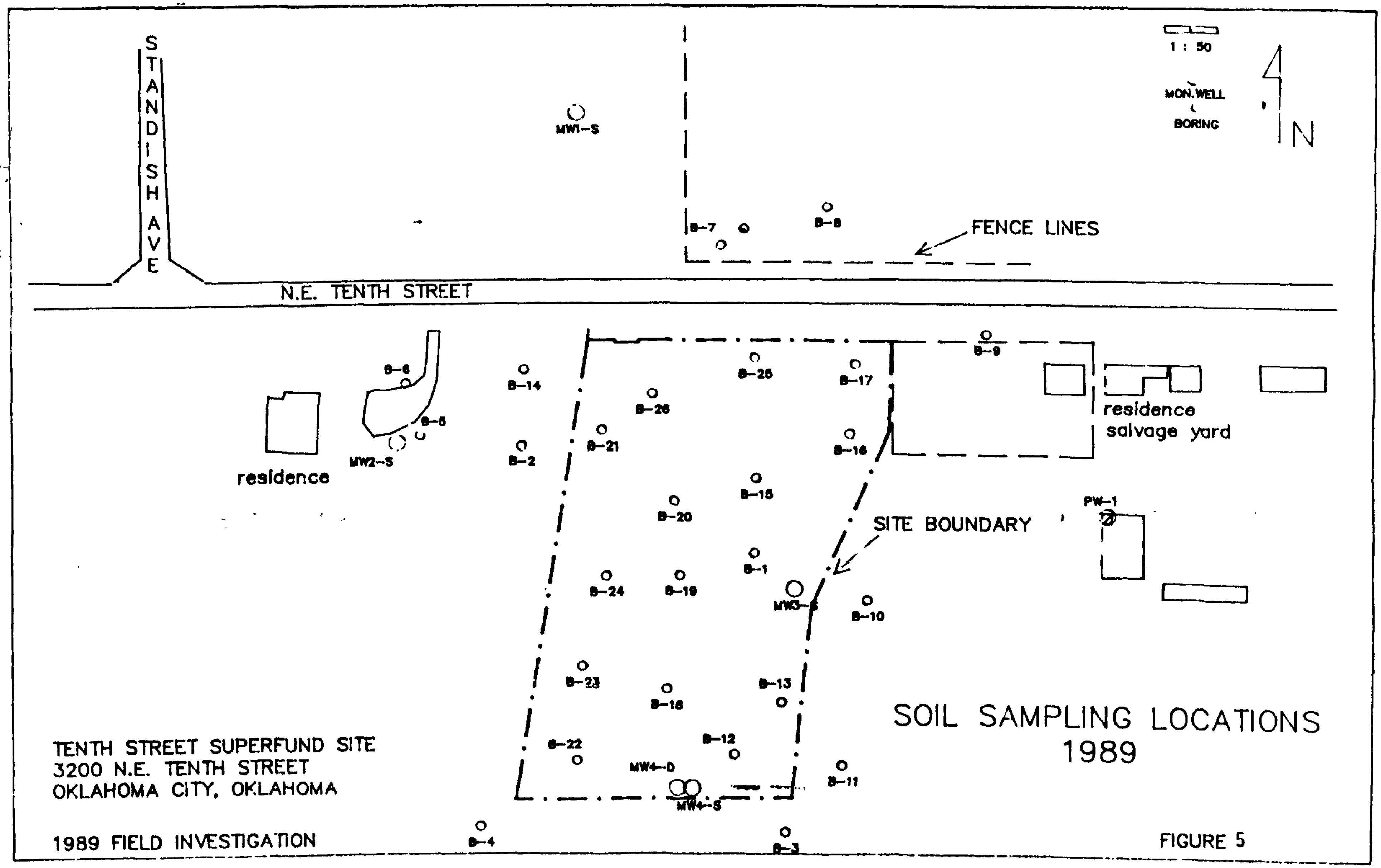

1 : 50
MON. WELL
BORING
N
STANDISH AVE
N.E. TENTH STREET
FENCE LINES
MW1-S
B-7
B-8
B-9
B-6
B-5
MW2-S
residence
B-14
B-2
B-25
B-17
B-26
B-21
B-16
B-15
B-20
B-1
B-24
B-19
MW3-S
B-10
B-23
B-13
B-18
B-12
B-22
MW4-D
MW4-S
B-11
B-4
B-3
residence
salvage yard
PW-1
SITE BOUNDARY
SOIL SAMPLING LOCATIONS
1989
TENTH STREET SUPERFUND SITE
3200 N.E. TENTH STREET
OKLAHOMA CITY, OKLAHOMA
1989 FIELD INVESTIGATION

FIGURE 5

TABLE 1

SOIL SAMPLING RESULTS - 1989

TENTH STREET SUPERFUND SITE

SAMPLE LOCATION	SAMPLE STATION	CAP THICKNESS (FT)	MAX. SAMPLE DEPTH (FT)	PCB CONC (ppm)	TOTAL EXCESS CANCER RISK	MAX. DEPTH PCB CONTAM. SOIL (FT)	THICKNESS OF CONTAM. SOIL (FT)	RUBBLE THICKNESS (FT)	BORE HOLE DEPTH (FT)
B-1	S012	2.0	3.5	10.3	3.5-10^{-4}				
	S013		6.0	16.0	1.8-10^{-4}	6.0	4.0	7.2	7.2
B-2	S014	0.6	1.5	2.2	3.4-10^{-5}				
	S015		5.0	BDL 0.17	2.1-10^{-5}	1.5	0.0	2.0	5.0
B-3	S016	0.0	1.6	BDL 0.17	2.9-10^{-5}	0.0	0.0		
	S017		5.0	BDL 0.17	2.0-10^{-5}			1.7	5.0
B-4	S018	0.0	1.5	0.6	3.1-10^{-5}	0.0			
	S019		5.0	0.36	3.5-10^{-5}		0.0	5.0	5.0
B-5	S020	0.0	1.5	BDL 0.2	3.4-10^{-5}	0.0			
	S021		5.0	BDL 0.2	2.4-10^{-5}		0.0	5.0	5.0
B-6	S023	0.0	1.5	BDL 0.17	2.3-10^{-5}	0.0			
	S024		5.0	BDL 0.2	2.3-10^{-5}		0.0	0.0	5.0
B-7	S025	0.0	1.5	BDL 0.17	1.4-10^{-5}	0.0			
	S026		5.0	BDL 0.18	2.2-10^{-5}		0.0	5.0	5.0
B-8	S027	0.0	1.5	BDL 0.17	1.9-10^{-5}	0.0			
	S028		5.0	BDL 0.18	6.4-10^{-5}		0.0	6.0	6.0
B-9	S029	0.0	1.0	BDL 0.18	1.6-10^{-5}	0.0			
	S030		5.0	BDL 0.17	2.1-10^{-5}		0.0	3.0	6.0
B-10	S031	0.0	1.5	BDL 0.19	1.5-10^{-4}	0.0			
	S032		5.0	BDL 0.20	2.5-10^{-5}		0.0	5.0	5.0

TABLE 1 (cont.)

SAMPLE LOCATION	SAMPLE STATION	CAP THICKNESS (FT)	MAX. SAMPLE DEPTH (FT)	PCB CONC (ppm)	TOTAL EXCESS CANCER RISK	MAX. DEPTH PCB CONTAM. SOIL (FT)	THICKNESS OF CONTAM. SOIL (FT)	RUBBLE THICKNESS (FT)	BORE HOLE DEPTH (FT)
B-11	S034	0.0	1.5	BDL 0.19	3.2-10^{-5}	0.0	0.0		
	S035		3.0	BDL 0.19	7.4-10^{-5}			2.8	2.0
B-12	S036	1.2	2.2	500	5.3-10^{-3}				
	S037		5.0	BDL 0.18	1.9-10^{-5}	2.2	1.0	3.5	5.0
B-13	S038	0.5	1.5	200	2.2-10^{-3}				
	S039		5.0	BDL 0.19	1.7-10^{-5}	1.5	1.0	5.0	5.0
B-14	S040	0.0	1.5	0.56	3.2-10^{-5}				
	S041		5.0	BDL 0.21	2.5-10^{-5}	1.5	1.5	4.5	5.0
B-15	S042	1.3	3.1	420	4.4-10^{-3}				
	S043		8.0	260	2.9-10^{-3}	8.0	6.7	6.0	10.0
B-16	S045	2.2	3.0	0.5	2.6-10^{-5}				
	S046		4.5	BDL 0.17	2.0-10^{-5}	3.0	0.8	NONE	4.8
B-17	S047	1.0	2.0	190	2.2-10^{-3}				
	S048		6.0	BDL 0.17	2.2-10^{-5}	2.0	1.0	3.0	6.0
B-18	S049	0.7	1.7	306	3.1-10^{-3}				
	S050		3.9	BDL 0.71	2.1-10^{-5}	1.7	1.0	2.7	3.9
B-19	S051	0.8	1.8	140	1.5-10^{-3}				
	S052		4.0	200	2.1-10^{-3}	4.0	3.2	4.0	4.0
B-20	S053	1.0	2.0	207	2.1-10^{-3}				
	S054		9.0	BDL 0.19	2.3-10^{-5}	7.3	6.3	8.0	9.0
B-21	S056	1.0	2.5	BDL 0.20	2.6-10^{-5}	0.0			
	S057		4.0	BDL 0.19	2.4-10^{-5}		0.0	2.5	6.0
B-22	S058	0.8	1.8	BDL 0.19	4.0-10^{-5}				
	S059		4.5	10	1.3-10^{-3}	4.5	3.7	4.0	4.5

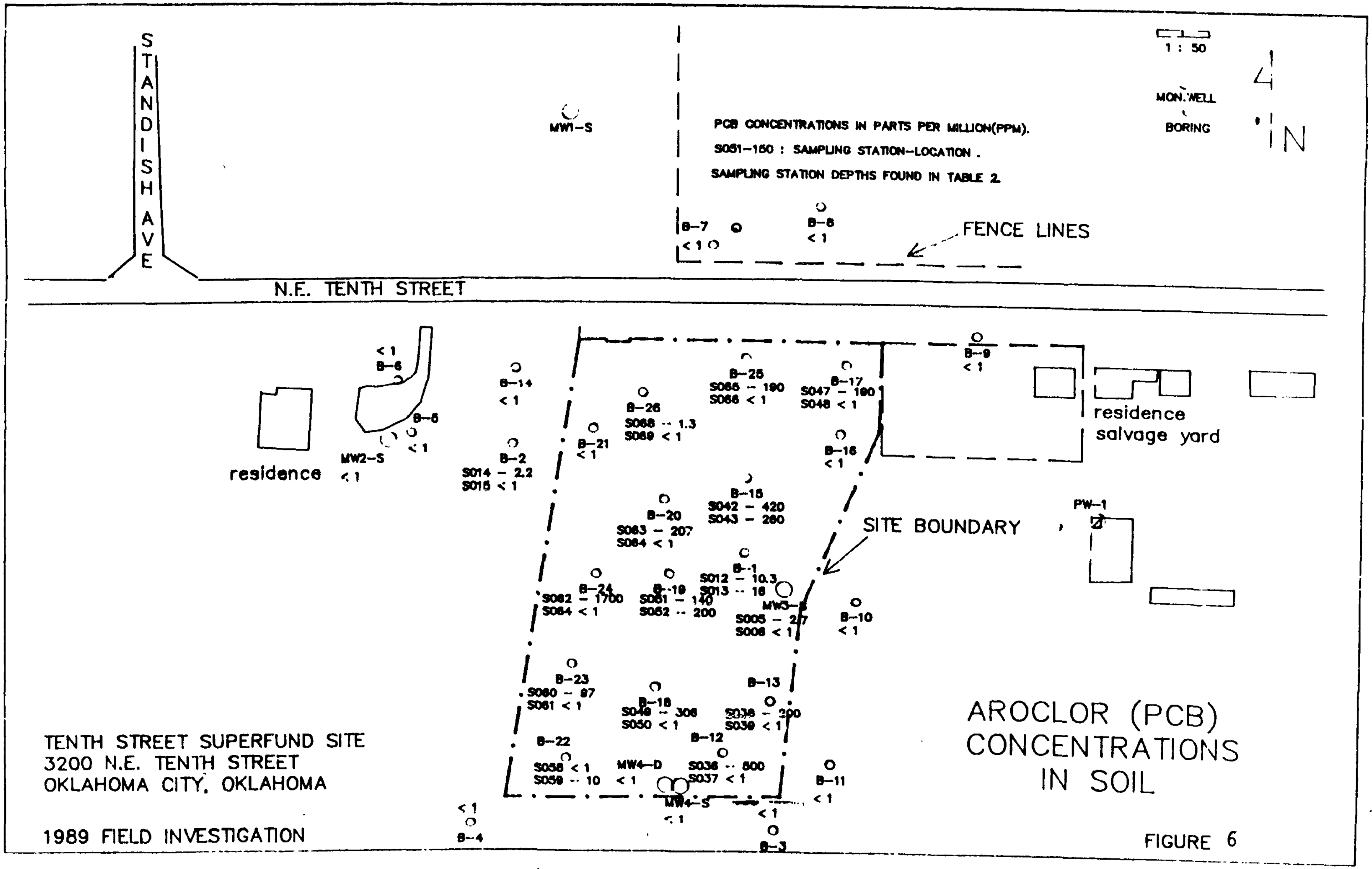
TABLE 1 (cont.)

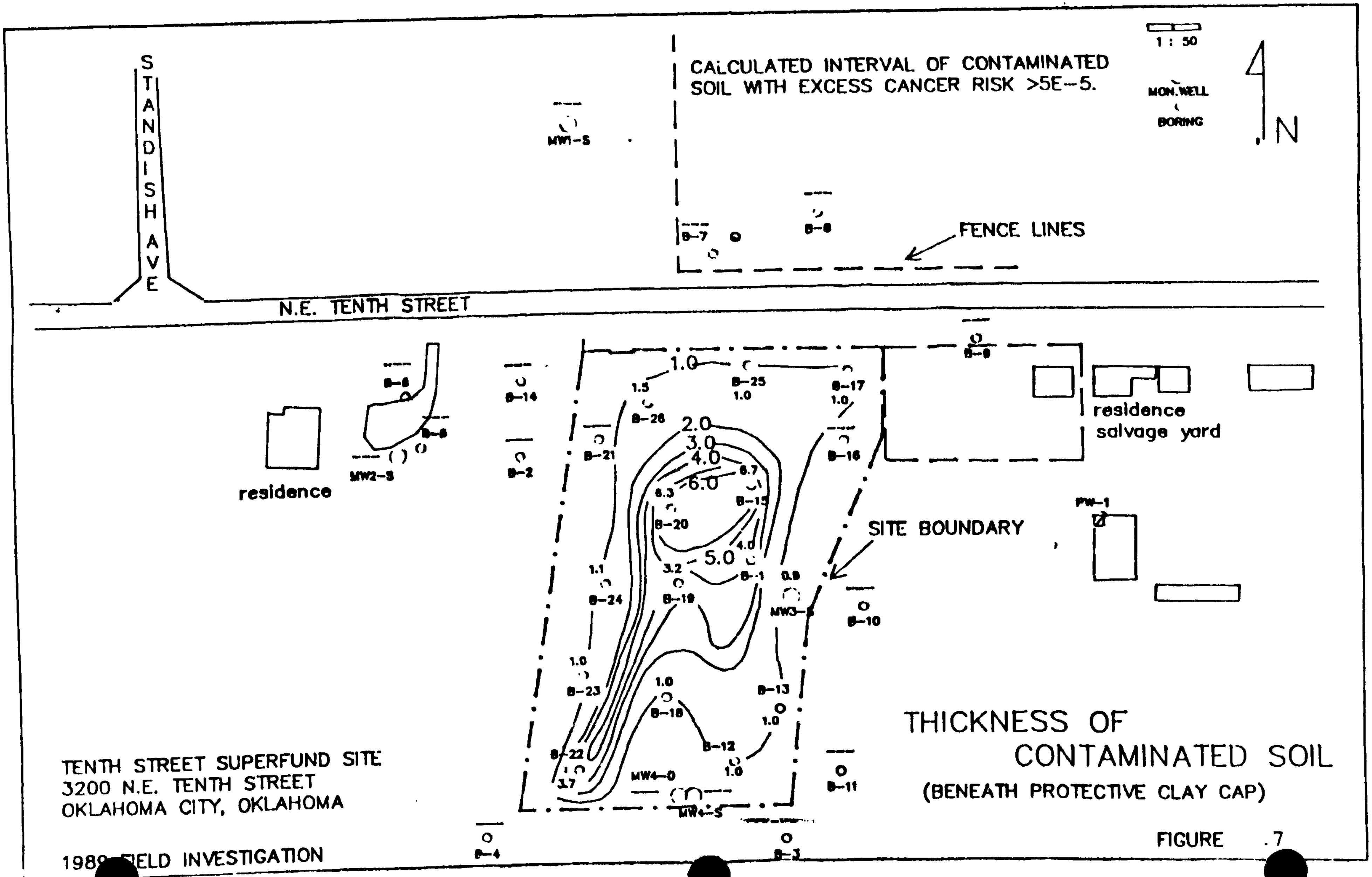
SAMPLE LOCATION	SAMPLE STATION	CAP THICKNESS (FT)	MAX. SAMPLE DEPTH (FT)	PCB CONC (ppm)	TOTAL EXCESS CANCER RISK	MAX. DEPTH PCB CONTAM. SOIL (FT)	THICKNESS OF CONTAM. SOIL (FT)	RUBBLE THICKNESS (FT)	BORE HOLE DEPTH (FT)
B-23	S060	1.0	2.0	97	1.4-10^{-3}				
	S061		6.0	BDL 0.18	2.3-10^{-5}	2.0	1.0	5.0	6.0
B-24	S062	1.2	2.3	1700	2.4-10^{-2}				
	S064		4.5	BDL 0.16	2.3-10^{-5}	2.3	1.1	3.8	6.0
B-25	S065	1.0	2.0	190	2.0-10^{-2}				
	S066		6.0	0.7	3.0-10^{-5}	2.0	1.0	4.6	6.0
B-26	S068	2.0	3.5	13	3.0-10^{-4}				
	S069		5.0	BDL 0.21	2.3-10^{-5}	3.5	1.5	3.6	6.0
MW1-S	S001		1.0	BDL 0.17	2.3-10^{-5}	0.0	0.0		19.8
	S002		4.0	BDL 0.19	2.3-10^{-5}			3.8	
MW2-S	S003	0.6	1.6	BDL 0.18	2.4-10^{-5}	0.0	0.0		20.0
	S004		5.0	BDL 0.18	2.1-10^{-5}			1.8	
MW3-S	S005	1.8	2.0	2.7	9.0-10^{-5}		0.0		22.2
	S006		5.7	BDL 0.17	2.0-10^{-5}	2.0		3.3	
MW4-S	S007	1.0	1.8	BDL 0.18	2.3-10^{-5}	0.0	0.0		21.0
	S008		5.7	BDL 0.17	2.0-10^{-5}			2.9	
MW4-D	S009	1.6	2.0	0.92	2.6-10^{-5}	0.0	0.0		29.6
	S010		6.0	BDL 0.17	2.1-10^{-5}			3.0	

MAX. DEPTH PCB CONTAMINATED SOIL
- CAP THICKNESS

THICKNESS OF CONTAMINATED SOIL

Rubble thickness includes cap.


STANDISH AVE
N.E. TENTH STREET
MW1-S
PCB CONCENTRATIONS IN PARTS PER MILLION(PPM).
S051-150 : SAMPLING STATION-LOCATION .
SAMPLING STATION DEPTHS FOUND IN TABLE 2.
1 : 50
MON. WELL
BORING
N
B-7 <1
B-8 <1
FENCE LINES
residence
B-6 <1
B-5 <1
MW2-S <1
B-14 <1
B-2 S014 - 2.2 S015 < 1
B-21 <1
B-26 S068 -- 1.3 S069 < 1
B-25 S065 -- 190 S066 < 1
B-17 S047 - 190 S048 < 1
B-9 <1
residence
salvage yard
B-16 <1
B-15 S042 - 420 S043 - 260
B-20 S063 - 207 S064 < 1
SITE BOUNDARY
PW-1
B-1 S012 - 10.3 S013 -- 16
MW3-S S005 -- 2.7 S006 < 1
B-24 S062 - 1700 S064 < 1
B-19 S051 - 140 S052 -- 200
B-10 <1
B-23 S060 - 97 S061 < 1
B-18 S049 -- 306 S050 < 1
B-13 S038 - 200 S039 < 1
B-22 S058 < 1 S059 -- 10
MW4-D <1
B-12 S036 -- 500 S037 < 1
MW4-S <1
B-11 <1
B-4 <1
B-3 <1
AROCLOR (PCB) CONCENTRATIONS IN SOIL
TENTH STREET SUPERFUND SITE
3200 N.E. TENTH STREET
OKLAHOMA CITY, OKLAHOMA
1989 FIELD INVESTIGATION
FIGURE 6


CALCULATED INTERVAL OF CONTAMINATED SOIL WITH EXCESS CANCER RISK >5E-5.
1 : 50
MON. WELL
BORING
N
STANDISH AVE
N.E. TENTH STREET
FENCE LINES
SITE BOUNDARY
MW1-S
MW2-S
MW3-S
MW4-D
MW4-S
PW-1
B-2
B-3
B-4
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
B-14
B-15
B-16
B-17
B-18
B-19
B-20
B-21
B-22
B-23
B-24
B-25
B-26
1.0
1.5
2.0
3.0
4.0
5.0
6.0
6.3
6.7
3.2
3.7
1.1
0.9
residence
residence
salvage yard
TENTH STREET SUPERFUND SITE
3200 N.E. TENTH STREET
OKLAHOMA CITY, OKLAHOMA
1989 FIELD INVESTIGATION
THICKNESS OF CONTAMINATED SOIL
(BENEATH PROTECTIVE CLAY CAP)
FIGURE .7

During preparation of the feasibility study report, review of the 1985 Removal After-Action Report revealed that PCB contamination was detected in the road right-of-way at a depth approximately 4 ft. and the protective cap was extended to the edge of the NE Tenth Street. This area of contamination is between the north fence line of the site and the edge of the NE Tenth Street. Additional sampling is planned and results will be used to estimate the additional volume of contaminated soil to be addressed in the remedial action.

Only local concentrations of polynuclear aromatic hydrocarbons (PAHs) were detected (Tables 2 - 8). The levels are slightly elevated and are consistently associated with burned rubble and landfill debris. The samples in which PAHs were detected contained burned wood, tires, and other debris typical of landfills.

Lead concentrations are slightly elevated in onsite areas but are within normal ranges in the offsite areas. The slightly elevated concentrations of lead are typically associated with salvage activities. Lead at the Tenth Street Site is most likely a result of automobile and other metal salvage decomposition and corrosion.

Based on the results of soil sampling, it is estimated that approximately 7,500 cu. yd. of soil contaminated with PCBs greater than 25 ppm are present at the site. Of this volume, 6,500 cu. yds. are contaminated with greater than 300 ppm PCBs, representing the volume of material that poses the principal threat at this site. Principal threats are defined as soil contaminated an order of magnitude or more above the health-based goal set for the site. Soil contaminated between 25 ppm and 300 ppm (1,000 yds.) represents the low-level threat posed by the Tenth Street site.

Ground Water

Ground water samples were collected from the five monitoring wells installed during the RI and from one existing private well. Locations of ground water samples are shown in Figure 8. PCBs or compounds that may act as carriers for PCBs were not detected in ground water samples collected (Tables 9 and 10).

The ground water table at the site ranges from about 1151.7 MSL (Mean Sea Level) to about 1150.0 MSL. Contaminated soil at its deepest point onsite is approximately 3 feet above the water table. The ground water was measured in April 1989, a month in which ground water levels are considered to be high in Oklahoma.

Surface Water

Surface water samples were collected from a tributary that runs by the western margin of the Site and from the North Canadian River (Figure 9). Contaminants attributable to the site were not detected in the surface water samples collected (Table 9 and 11). This conclusion is based on upstream samples being equally or more contaminated than downstream samples.

Table 2 Organic chemicals detected in soil from the on-site area at the 10th Street site

Chemical	Frequency	Average	Upper Bound	Range of Detections	Range of Quantitation Limits
Acenaphtene	3/20	65 R	83	47-83	380-4300
Acetone	15/20	13	35	5-47	12-13
Anthracene	7/20	160 R	260	48-260	380-4300
Aroclor 1242	1/20	27,000	170,000	230,000	92-490,000
Aroclor 1254	4/20	40,000	100,000	290-100,000	180-970,000
Aroclor 1260	16/20	180,000	940,000	270-1,700,000	180-200
Benzene	3/20	3	3	0.2-3	6
Benzo(a) anthracene	13/20	630	2200	110-2800	380-4300
Benzo(a) pyrene	16/20	580	1900	100-2500	380-4300
Benzo(b) fluoranthene	17/20	750	2700	150-4300	380-850
Benzo(g,h,i) perylene	11/20	510	1200	57-1200	380-4300
Benzo(k) fluorathene	12/20	850	3000	80-4300	380-4300
Bis(2-ethylhexyl) phthalate	17/20	1200	5800	170-9900	380-420
Carbon disulfide	3/20	3	6	0.9-6	6
Chloroform	7/20	0.6 R	2	0.2-2.0	6
Chloromethane	3/20	2	2	0.6-0.9	11-13
Chrysene	18/20	480	1500	15-2400	380-410
Di-n-butyl-phthalate	5/20	410	460	49-460	380-4300

Table 2 (continued)

Chemical	Frequency	Average	Upper Bound	Range of Detections	Range of Quantitation Limits
Dibenzo(a,h) anthracene	7/20	410	530	41-530	380-4300
DDT	3/20	100	162	44-162	19-49,000
Fluoranthene	17/20	650	2100	96-3000	380-440
Fluorene	3/20	50	68	34-68	380-4300
Indeno(1,2,3-cd) pyrene	12/20	490	1100	44-1100	400-4300
Phenanthrene	16/20	460	1400	90-1400	380-4300
Pyrene	16/20	620	1900	130-2200	380-4300
Tetrachloro-ethylene	3/20	3	5	3-7	6
Toluene	6/20	2	3	0.2-3	6
1,2,4-Trichloro-benzene	5/20	400	1400	52-1400	380-4100
1,1,1-Trichloroethane	3/20	3	3	0.3-0.4	6
Xylene	5/20	4	12	2-22	6

R = Recalculated using only detected quantities of contaminant.

Table 3 - Organic chemicals detected in soil from the salvage yard area at the 10th Street site

Chemical	Frequency	Average	Upper Bound	Range of Detections	Range of Quantitation Limits
Acenaphtene	1/4	43	43	43	340-380
Acetone	1/4	34	120	120	10-12
Anthracene	3/4	120	200	66-200	370
Aroclor 1242	1/4	180	600	600	83-95
Benzo(a) anthracene	4/4	520	1200	210-1200	-
Benzo(a) pyrene	4/4	620	1500	210-1500	-
Benzo(b) fluoranthene	4/4	1100	3000	350-3000	-
Benzo(g,h,i) perylene	4/4	290	640	100-640	-
Benzo(k) fluorathene	4/4	990	3000	260-3000	-
Bis(2-ethylhexyl) phthalate	3/4	670	2100	150-2100	340
Chrysene	4/4	620	1500	220-1500	-
Dibenzo(a,h) anthracene	3/4	120	190	49-190	370
Fluoranthene	4/4	1100	2500	380-2500	-
Indeno(1,2,3-cd) pyrene	4/4	240	560	91-560	-
Phenanthrene	4/4	420	880	170-880	-
Pyrene	4/4	590	1300	230-1300	-

Table 4 Organic chemicals detected in soil from the off-site area at the 10th Street Site

Chemical	Frequency	Average	Upper Bound	Range of Detections	Range of Quantitation Limits
Acenaphthene	1/7	41	41	41	350-390
Acetone	5/7	21	36	12-59	11
Anthracene	2/7	63 R	76	49-76	350-490
Aroclor 1260	1/7	110	199	220	170-190
Benzo(a) anthracene	6/7	160	260	43-260	390
Benzo(a) pyrene	5/7	160	250	52-250	370-390
Benzo(b) Fluoranthene	6/7	260	520	59-520	390
Benzo (g,h,i) perylene	4/7	140	170	94-170	350-390
Benzo (k) fluoranthene	6/7	260	520	58-520	390
Bis(2-ethylhexyl) phthalate	6/7	290	1364	40-1600	360
Chrysene	6/7	200	370	83-370	390
Fluoranthene	5/7	260	560	71-560	360-390
Indeno(1,2,3-cd) pyrene	4/7	90 R	130	46-130	350-390
Phenanthrene	6/7	190	400	70-750	390
Pyrene	6/7	310	72	70-750	390

R = Recalculated using only detected quantities of contaminant.

Table 5

Comparison of inorganic chemicals detected at the 10th Street site to background levels

Chemical	On-Site	Salvage Yard	Off-Site	Loc a	National a
Aluminum	11000	10400	7170	<20000	66000
Antimony	12	8	4.2	-	-
Arsenic	13	15.9	2.6	-	6[b]
Barium	570	472	247	<300	554
Beryllium	0.29	0.22	0.32	>2	1
Cadmium	9.7	5.0	1.9	-	0.6[c]
Calcium	27000	61000	15300	<30000	24000
Chromium	55.5	66.5	13	50	53
Cobalt	10.3	12.5	5.0	>15	10
Copper	708	400	50.6	20	25
Iron	57500	65100	10400	>30,000	25000
Lead	1100	769	289	>20	20
Magnesium	3450	3930	2430	<3000	9200
Manganese	480	581	219	>500	560
Mercury	0.22	0.67	0.071	-	0.3[d]
Nickel	50.7	49.9	9.8	>20	20
Potassium	1990	1740	1160	<10000	23000
Selenium	0.47	nd	nd	-	0.5
Silver	1.7	nd	nd	-	0.05[e]
Sodium	342	2530	80.1	<5000	12000
Thallium	0.28	nd	nd	-	5[f]
Vanadium	27.7	34.2	18.1	<50	76
Zinc	2170	1790	289	>5400	54
Cyanide	1.3	nd	0.8	-	-

Table 6

Inorganic chemicals detected in soil from the on-site area at the 10th Street site

Chemical	Frequency	Average	Upper Bound	Range of Detections	Range of Quant. Limits
Aluminum	20/20	11000	180000	2990-19000	-
Antimony	10/20	12	43	9.3-61.9	5.3-9.2
Arsenic	20/20	13	30	1.4-35.8	-
Barium	20/20	570	1120	43.1-1120	-
Beryllium	11/20	0.29	0.62	0.12-0.62	0.27-0.57
Cadmium	18/20	9.7	24	0.9-27.5	0.72-0.88
Calcium	20/20	27,000	44,200	2700-44,200	-
Chromium	20/20	55.5	120	4.7-120	-
Cobalt	19/20	10.3	24.5	2.7-32.4	7.4
Copper	20/20	708	3190	12.6-5560	-
Iron	20/20	57500	155000	3740-223000	-
Lead	20/20	1100	3610	4.1-5620	-
Magnesium	20/20	3450	5360	1760-5810	-
Manganese	20/20	480	906	89-938	-
Mercury	14/20	0.22	0.52	0.13-0.52	0.09-0.12
Nickel	20/20	50.7	88.8	5.2-88.8	-
Potassium	20/20	1990	3300	640-3300	-
Selenium	7/20	0.47	0.59	0.35-0.59	0.3-4.2
Silver	6/20	1.7	6.5	1.4-9.9	0.9-1.0
Sodium	20/20	342	606	67.6-606	-
Thallium	2/20	0.28	0.46	0.4-0.65	0.03-0.59
Vanadium	20/20	27.7	48.4	6.8-57.9	-
Zinc	20/20	2170	5330	120-6730	-
Cyanide	8/20	1.3	3.1	0.64-4.3	1.1-3.9

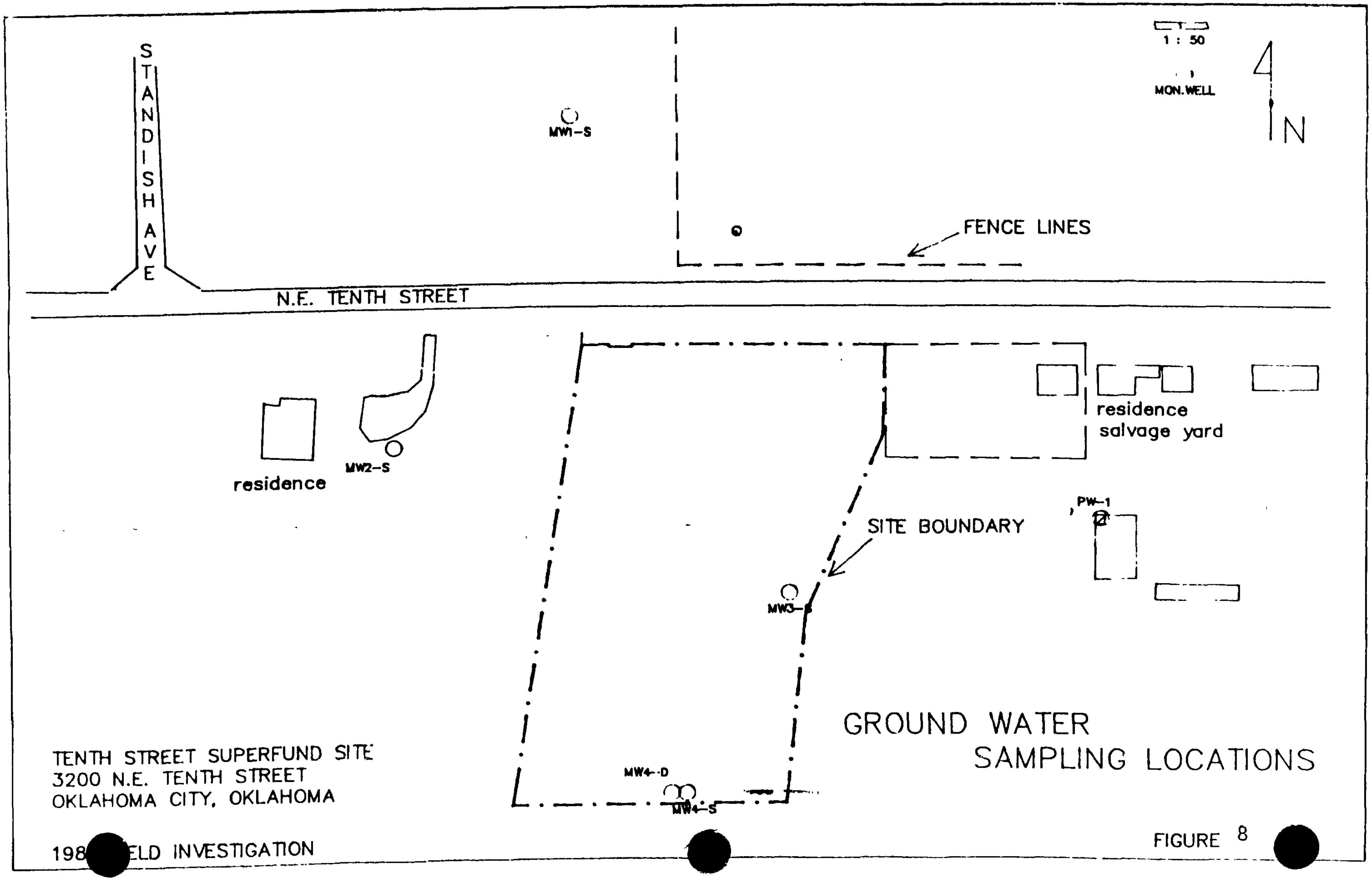
Table 7 Inorganic chemicals detected in soil from the salvage yard area at the 10th Street site

Chemical	Frequency	Average	Upper Bound	Range of Detections	Range of Quant. Limits
Aluminum	4/4	10400	14900	6000-14900	-
Antimony	2/4	8.0	15.5	9.7-15.5	6.5-7.2
Arsenic	3/4	15.9	27	15.8-27	1.3
Barium	4/4	472	776	145-776	-
Beryllium	1/4	0.22	0.37	0.37	0.32-0.35
Cadmium	3/4	5.0	9.1	3.6-9.1	0.85
Calcium	4/4	61100	149000	5220-14900	-
Chromium	4/4	66.5	136	9-136	-
Cobalt	4/4	12.5	26.8	3-26.8	-
Copper	4/4	400	893	9.3-893	-
Iron	4/4	65100	165000	6580-165000	-
Lead	4/4	769	1250	2.6-1250	-
Magnesium	4/4	3930	6310	2040-6310	-
Manganese	4/4	581	994	162-994	-
Mercury	2/4	0.67	2	0.55-2.0	-
Nickel	4/4	49.9	111	6.7-111	-
Potassium	4/4	1740	2410	1110-2410	-
Selenium	0/4	-	-	-	0.72-0.83
Silver	0/4	-	-	-	0.87-1.0
Sodium	3/4	2530	9040	494-9040	39.8
Thallium	0/4	-	-	-	0.43-0.57
Vanadium	4/4	34.2	56.4	14.1-56.4	-
Zinc	4/4	1790	3110	37.2-3110	-
Cyanide	0/4	-	-	-	1.1-1.2

Table 8

Inorganic chemicals detected in soil from the off-site area at the 10th Street site

Chemical	Frequency	Average	Upper Bound	Range of Detections	Range of Quant. Limits
Aluminum	7/7	7170	16300	2880-18000	-
Antimony	1/7	4.2	7.4	8	6.6-7.5
Arsenic	6/7	2.6	5.4	1.4-5.8	2.7
Barium	7/7	247	402	53.1-402	-
Beryllium	2/7	0.32	.09	0.36-1.0	0.32-0.34
Cadmium	2/7	1.9	6.9	3.4-7.6	0.83-0.98
Calcium	7/7	15300	42200	6510-47200	-
Chromium	7/7	13	25.7	4.5-25.7	-
Cobalt	7/7	5.0	8.9	2.7-9.0	-
Copper	7/7	50.6	207	3.1-219	-
Iron	7/7	10400	17900	4620-17900	-
Lead	7/7	289	917	6.4-917	-
Magnesium	7/7	2430	5160	1250-5670	-
Manganese	7/7	219	332	105-332	-
Mercury	1/7	0.071	0.14	0.16	0.11-0.12
Nickel	7/7	9.8	18.1	5.3-18.1	-
Potassium	7/7	1160	2750	442-3040	-
Selenium	0/7	-	-	-	0.73-0.83
Silver	0/7	-	-	-	0.89-1.0
Sodium	6/7	80.1	139	48.9-139	-
Thallium	0/7	-	-	-	0.43-0.49
Vanadium	7/7	18.1	34.9	10.7-37.8	-
Zinc	7/7	289	741	21-741	-
Cyanide	1/7	0.8	2.0	2.2	1.1-1.2



GROUND WATER SAMPLING LOCATIONS

FIGURE 8

TABLE 9

GROUND WATER/SURFACE WATER ANALYTICAL RESULTS - 1989 SAMPLING

SAMPLE LOCATION		WELL SCREEN INTERVAL	TRN	PCB ANALYSIS UNFILTERED	PCB ANALYSIS FILTERED
GW001	MW1-S	9.7-19.6 FT	FK683 FK689 F05	.05 u/.10 u	.05 u/.10 u
GW002	MW2-S	9.8-19.9 FT	FK684 FK690 F06	.05 u/.10 u	.05 u/.10 u
GW003	MW3-S	9.5-19.6 FT	FK693 FK694 F08	.05 u/.10 u	.05 u/.10 u
GW004	MW4-S	10.5-20.6 FT	FK682 FK687 F07	.05 u/.10 u	.05 u/.10 u
GW005	MW4-D	19.0-29.0 FT	FK685 FK688 F09	.05 u/.10 u	.05 u/.10 u
GW006	Field blank		FK686 F10	.05 u/.10 u	
PW001	Residential Well		FK664 F11	.05 u/.10 u	
SW001	Tributary-upstream surface		FK634 F02	.05 u/.10 u	
SW002	River-downstream surface		FK635 F03	.05 u/.10 u	
SW003	River-downstream surface		FK636 F04	.05 u/.10 u	
CW001	City Water		FK637 F01	.05 u/.10 u	

* Concentrations in ug/l or ppb.
* TRN Traffic Report Number.
Organic or special analytical services numbers used to track samples.

.05 - Detection limit for Aroclors 1016 thru 1248.
.10 - Detection limit for Aroclors 1254 and 1260.

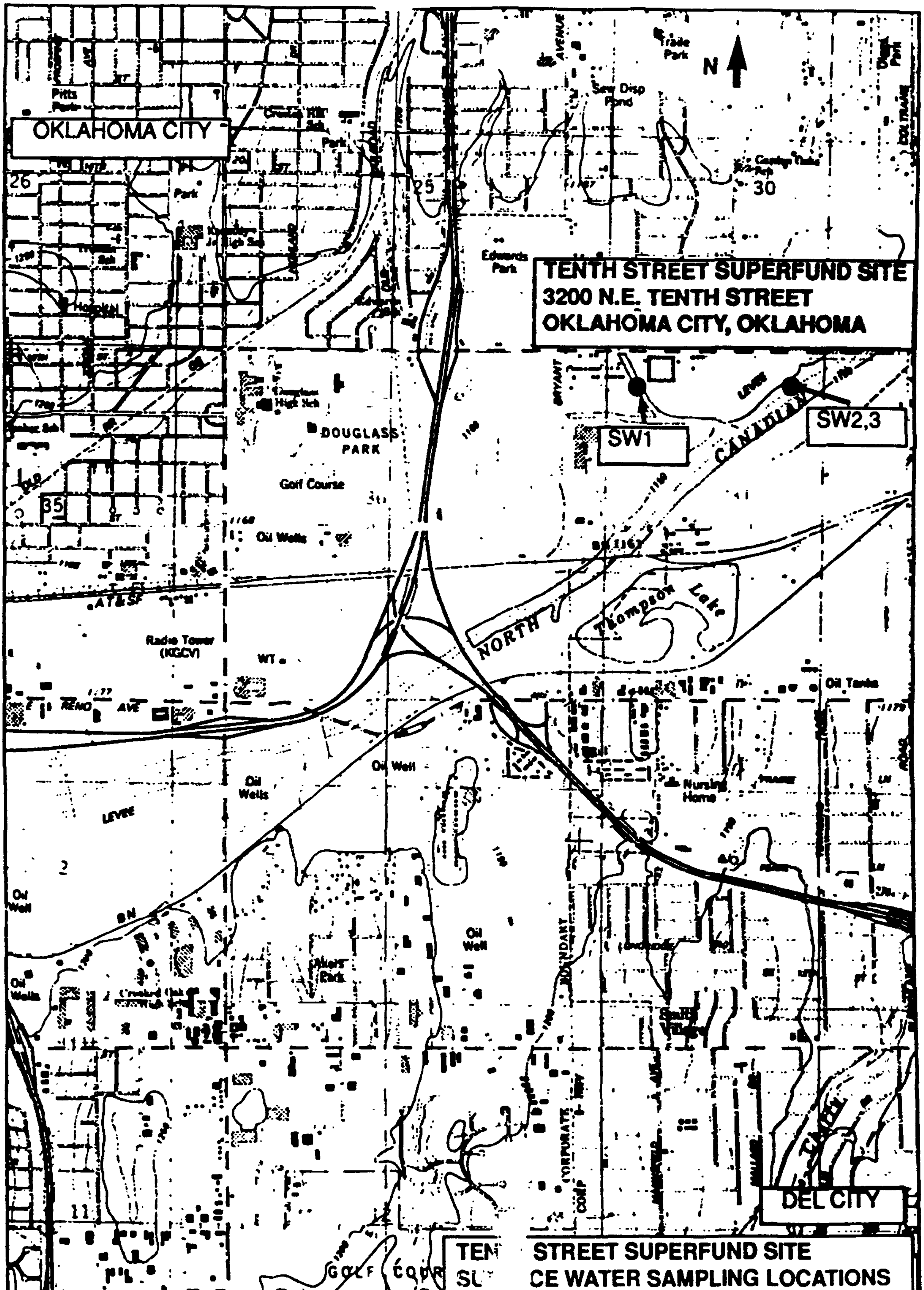
u = Below detection limit.

Temperature approximately 15^{o}C on all ground water samples from monitoring wells.

Table 10 Inorganic chemicals detected in ground water from the 10th Street Site.

Chemical	Private Well	Upgrade[a]	Downgrade[b]	Maximum Concentration Limits
Aluminum	27.4 c	9190	6630	50 PS
Arsenic	(2.2) d	9.7	4.2	50 (30 P)
Barium	251	390	232	5000 P
Beryllium	(1.5)	0.3	0.3	------
Chromium	(4.6)	5.8	10.9	100 P
Cobalt	(7.6)	7.7	7.9	------
Copper	89.2	7.1	5.4	1000 S
Lead	(1.2)	9.8	6.2	50 (5 P)
Manganese	(3.3)	924	1690	50 S
Nickel	(17.8)	12.5	7.9	------
Selenium	(3.4)	(1.3)	1.0	50 P
Vanadium	6.6	20.2	17.1	------
Zinc	162	44.5	30.8	5000 S

a = Arithmatic average of monitoring wells MW-1S and MW-2S.
b = Arithmatic average of monitoring wells MW-3S, MW-4S and MW-4D.
c = All concentration in ug/l.
d = Detection limit within brackets.
p = Proposed limit.
s = Secondary limit (Taste and aesthetic quality).



TEN STREET SUPERFUND SITE
SU CE WATER SAMPLING LOCATIONS
FIG 9

Table 11 Inorganic chemicals detected in surface water from the 10th Street Site.

Chemical	Upstream	Downstream	Water Quality Criteria Acute	Chronic
Aluminum	1080	1630	---	---
Arsenic	(2.2) a	5.2	360	190
Barium	152	154	---	---
Calcium	159000	99300	---	---
Copper	(2.9)	29	18+	12+
Iron	2250	7760	---	1000
Lead	21.4	1.7	82+	3.2+
Magnesium	30400	41000	---	---
Manganese	1280	141	---	---
Potasium	7160	5900	---	---
Selenium	(3.4)	3.7	280	35
Sodium	106000	151000	---	---
Vanadium	(4.9)	9.3	---	---
Zinc	68.4	113	120+	110+

a = Detection limit within brackets.

+ = Hardness dependent (100 mg/L assumed).

Migration Pathways

The contaminants of concern at this site are PCBs. The migration of PCBs in the subsurface (in soil, soil to ground water, and in ground water) is controlled by several factors. These include the solubility of PCBs, soil permeability, the presence or absence of transport-facilitating solvents, organic carbon content, and organic colloids. With the very low solubility of PCBs, the presence of a protective cap, the absence of transport-facilitating solvents, normal organic carbon content, no detection of PCBs adhering to colloids, as well as the physical separation between contaminated soil and the ground water table, it would take free product to be present at the site in order for subsurface migration to occur. PCBs are fixed in the soil matrix beneath the Tenth Street site and migration is not occurring.

At present time, airborne migration of PCBs from the site is not likely. With the protective soil cover and vegetation established, any migration of contaminants by particulates generated from wind erosion is virtually eliminated. The potential for airborne migration of PCBs from the site would exist, only if the soil cover is destroyed by external forces such as heavy erosion, flooding, or physical destruction. Likewise, the current potential for transport of PCBs from the site via surface water is minimal due to the existence of the protective cover.

If the PCB contaminated soil was exposed, the areas most likely to be impacted by contaminant migration would be the nearby community and persons who visit the automobile junk yard.

VI. SUMMARY OF SITE RISKS

A baseline risk assessment was conducted for this site and is presented in a document entitled, Baseline Risk Assessment for the Tenth Street Dump Superfund Site, Oklahoma City, Oklahoma. The assessment follows procedures set in the EPA Risk Assessment Guidance for Superfund Sites, December 1989.

Identification of Contaminants of Concern

Chemicals whose analytical results are of acceptible quality for use in the risk assessment and related to the site were identified as contaminants of concern for this site. Concentrations of site-related contaminants in water and soil samples are compared to applicable or relevant and appropriate requirements (ARARs). In addition, comparisons are made to local and national background conditions. Chemicals whose concentrations are less than background are eliminated from the quantitative risk assessment. Chemicals detected at the site and their comparison to ARARs and background levels are also summarized in Tables 5, 10, and 11.

Exposure Assessment

In the risk assessment, EPA evaluated the current, or baseline, risk to health posed by the contaminants at the Tenth Street site. Since the site is currently unoccupied, assumptions regarding the most probable future land use for the site were made by EPA. Because the properties surrounding the site are operating automobile salvage yards and inquiries have been made of EPA regarding the suitability of the site for future development, EPA considered the probable future land use to be commercial. The risk assessment and the development of remedial goals focused on the effects workers exposed to the site contaminants.

The assumptions used for the ground water ingestion scenario are:

1. 70-year lifetime;
2. 70 kg. (adult) and 10 kg. (child) body weight;
3. ingestion rate of 2 liters per day for adults;
4. ingestion rate of 1 liter per day for children.

The assumptions used for soil ingestion and dermal absorption were based on an industrial/ commercial exposure scenario:

1. 70-year lifetime;
2. 70 kg. body weight;
3. ingestion rate of 0.1 grams per day;
4. exposure duration of 9 years, 40 hours per day, five days per week.

These assumptions are standardized in the risk assessment guidance.

Toxicity Assessment

Quantitative risk assessment requires contaminant-specific qualitative and quantitative toxicity information. Contaminants are classified as systemic toxicants, and/or as known or suspected human carcinogens. For systemic toxicants, the EPA reference doses (RfDs) and, acceptable intakes subchronic and chronic (AISs and AICs) are identified. For known or suspected carcinogens, EPA weight-ofevidence classifications and upper bound cancer slope factors are identified. Included in the risk assessment are pertinent standards, criteria and guidelines developed for the protection of human health and the environment. Dose-response parameters used in the assessment are presented below.

Organic Chemicals

Acetone. The chronic oral RfD for acetone is 0.1 mg/kg/day (Health Effects Assessment Summary Tables, Third Quarter FY 1989. (HEAST).

Benzene. The chronic oral RfD for benzene is 7E-4 mg/kg/day (0.0007) (ATSDR 1987). Benzene is classified as a human carcinogen (Group A), and has an oral and inhalation slope factor of 2.9E-2 $(mg/kg/day)^{-1}$ (IRIS and HEAST). Some individuals exposed to benzene over a long period of time have developed leukemia (cancer of the white-blood-cellforming tissue) (ATSDR 1987).

Bis (2-ethylhexyl) phthalate. The chronic oral RfD for bis (2ethyl hexyl) phthalate is 2E-2 mg/kg/day (Integrated Risk Information System (IRIS) and HEAST). It is classified as a probable human carcinogen (Group B2) and has an oral slope factor of 1.4E-2 $(mg/kg/day)^{-1}$ (HEAST).

Carbon disulfide. The chronic oral RfD for carbon disulfide is 0.1 mg/kg/day (IRIS).

Chloroform. The subchronic and chronic oral RfD for chloroform is 1E-2 mg/kg/day (HEAST and IRIS). Chloroform is classified as a probable human carcinogen (Group B2), and has oral and inhalation slope factors of 6.1E-3 and 8.1E-2 $(mg/kg/day)^{-1}$, respectively (IRIS).

Chloromethane. Chloromethane is classified as a possible human carcinogen (Group C), and has oral and inhalation slope factors of 1.3E-2 and 6.3E-3 $(mg/kg/day)^{-1}$, respectively (HEAST).

1,4 -Dichlorobenzene. The subchronic and chronic inhalation RfD for 1,4 -dichlorobenzene is 0.7 mg/cu.m (HEAST). 1,4 dichlorobenzene is considered as a probable human carcinogen (Group B2) and has an oral slope factor of 2.4E-2 $(mg/kg/day)^{-1}$ (HEAST).

Dichlorodiphenyltrichloroethane (DDT). The subchronic and chronic RfD for DDT is 5E-4 mg/kg/day (HEAST). DDT is classified as a probable human carcinogen (Group B2), and has an oral and inhalation slope factor of 0.34 $(mg/kg/day)^{-1}$ (HEAST).

Di-n-butyl phthalate. Subchronic and chronic RfDs for di-nbutyl phthalate are 1.0 and 0.1 mg/kg/day, respectively (HEAST).

Polychlorinated Biphenyls (PCBs). PCBs are a complex mixture of polychlorinated compounds which includes Aroclors 1242, 1254 and 1260. The chronic oral RfD for PCBs is based on a study using Aroclor 1016 (no data on noncarcinogic effects of Aroclor 1260) and is 1E-4 mg/kg/day (ATSDR). PCBs are classified as a probable human carcinogen with a slope factor of 7.7 $(mg/kg/day)^{-1}$.

Polynculear Aromatic Hydrocarbons (PAHs). PAHs are a complex class of compounds which includes: acenaphthene, anthracene, benzo (a) anthracene, benzo (a) pyrene, benzo (b) fluoranthene, benzo (g,h,i) perylene, benzo-(k) fluoranthene, chrysene, dibenz (a,h) anthracene, fluorene, fluoranthene, indeno (1,2,3 cd) pyrene, phenanthrene and pyrene. The subchronic and chronic oral RfD for PAHs is based on the toxicity of naphthalene and is 0.4 mg/kg/day. PAHs are classified as probable human carcinogens (Group B2), and have oral and inhalation slope factors of 11.5 and 6.1 $(mg/kg day)^{-1}$, respectively (EPA 1986). PAH slope factors are based on benzo-(a)pyrene carcinogenicity. The following PAHs are considered to be carcinogenic: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)perylene, benzo(k)fluoranthene, dibenzo(a,h) anthracene and indeno (1,2,3, cd) pyrene.

Tetrachloroethylene (Perchloroethylene). The subchronic and chronic RfDs for tetrachloroethylene are 0.1 and 0.01 mg/kg/day, respectively (HEAST). Tetrachloroethylene is classified as a probable human carcinogen (B2), and has an oral and inhalation slope factors of 5.1E-2 and 3.3E-3 (mg/kg/day)-1, respectively (HEAST).

Toluene. The subchronic and chronic oral RfDs for toluene are 4E-1 and 3E-1 mg/kg/day, respectively (IRIS and HEAST). Subchronic and chronic inhalation RfD for toluene is 2 mg/cu.m (HEAST). The EPA determination of toluene carcinogenicity is pending (IRIS).

1,2,4-Trichlorobenzene. The subchronic and chronic oral RfDs for 1,2,4-trichlorobenzene are 2E-1 and 2E-2 mg/kg/day, respectively; subchronic and chronic inhalation RfDs are 3E-2 and 3E-3 mg/kg/day, respectively (HEAST).

1,1,1-Trichloroethane. The subchronic and chronic oral RfDs for 1,1,1-trichloroethane are 9E-1 and 9E-2 mg/kg/day, respectively; and the subchronic and chronic inhalation RfDs are 10 and 1 mg/cu.m (IRIS and HEAST). The EPA determination of its carcinogenicity is pending (IRIS).

Xylene. For mixed xylenes, subchronic and chronic oral RfDs are 4E+0 and 2.0 mg/kg/day, respectively; and the chronic inhalation RfD is 3E-1 mg/cu.m. (HEAST).

Inorganic Chemicals

Aluminium. The data on aluminium is inadequate for quantitative risk assessment (HEAST).

Antimony. The subchronic and chronic oral RfD for antimony is 4E-4 (mg/kg/day) (IRIS and HEAST).

Arsenic. The subchronic and chronic oral RfD for arsenic is 1E-3 mg/kg/day (HEAST). Arsenic is classified as a human carcinogen (Group A), and has oral and inhalation slope factors of 1.8 and 1.5E+1 (mg/kg/day)-1 (IRIS).

Barium. For barium, the subchronic and chronic oral RfD is 5E-2 mg/kg/day (IRIS and HEAST); subchronic and chronic inhalation RfDs are 5E-3 and 5E-4 mg/kg/day, respectively (HEAST).

Beryllium. The subchronic and chronic oral RfD for beryllium is 5E-3 (mg/kg/day) -1 (HEAST).

Cadmium. The chronic RfDs for cadmium are 1E-3 mg/kg/day (food) and 5E-4 mg/kg/day (water) (HEAST). Cadmium is considered as a probable human carcinogen by inhalation (Group B1) and has an inhalation slope factor of 6.1E+0 $(mg/kg/day)^{-1}$ (IRIS and HEAST).

Chromium. The chronic RfD for chromium is 5E-3 mg/kg/day (IRIS). Chromium is considered as a human carcinogen by inhalation (Group A) and has an inhalation slope factor of 4.1E+1 $(mg/kg/day)^{-1}$ (IRIS).

Cobalt. Quantitative risk assessment information on cobalt is not available.

Copper. For copper, the oral AIS and AIC is 3.7E-2 mg/kg/day and the inhalation AIC is 1E-2 mg/kg/day (EPA 1986). Copper is not classified as to human carcinogenicity (Group D) (IRIS).

Cyanide. The subchronic and chronic oral RfD for cyanide is 2E-2 mg/kg/day (HEAST).

Lead. Lead can have profound adverse effects on certain blood enzymes and on aspects of children's neurobehavioral development. These adverse effects may occur at blood lead levels so low as to be essentially without a threshold (IRIS). For lead, oral AIC is 1.4E-3 mg/kg/day and inhalation AIC is 4.3E-4 mg/kg/day (EPA 1986). Lead is classified as a probable human carcinogen (Group B2) (IRIS and HEAST).

Manganese. For managanese, the subchronic and chronic oral RfDs are 5E-1 and 2E-1 mg/kg/day, respectively; and the subchronic and chronic inhalation RfD is 3E-4 (HEAST). Manganese is not classified as to human carcinogenicity (Group D) (IRIS).

Mercury. The subchronic and chronic oral RfD alkyl and inorganic mercury is 3E-4 mg/kg/day (HEAST).

Nickel. The subchronic and chronic oral RfD for nickel is 2E-2 mg/kg/day (HEAST). Nickel is classified as a human carcinogen by inhalation (Group A) and has an inhalation slope factor of 8.4E-1 (mg/kg/day) -1 (IRIS).

Selenium. For selenium, the subchronic and chronic oral RfDs are 4E-3 and 3E-3 mg/kg/day, respectively; and the subchronic and chronic inhalation RfD is 1E-3 mg/kg/day (HEAST).

Silver. The oral AIC for silver is 3E-3 mg/kg/day (EPA 1986).

Vanadium. The subchronic and chronic RfD for vanadium is 7E-3 mg/kg/day (HEAST).

Zinc. The subchronic and chronic RfD for zinc is 0.2 mg/kg/day (HEAST).

Risk Characterization

The first step in the risk characterization is to calculate the intake of specific site-related contaminants absorbed from the affected media. Intakes by exposed populations will be calculated for the selected pathways of exposure, and converted to daily doses (in mg/kg body weight/day) by correcting for absorption efficiency across gastrointestinal, pulmonary, or dermal boundaries. These doses are denoted by EPA as the chronic daily intake (CDI). The CDIs for systemic (noncarcinogenic) and carcinogenic health effects are calculated separately to account for differences in the averaging time.

The potential effects of contaminants on human health have been evaluated for their noncarcinogenic and carcinogenic effects. For noncarcinogenic effects, a chronic Hazard Index (HI) is calculated by summing the quotients of the contaminant-specific CDIs by the contaminant specific RfDs or AICs. A total (i.e, accounting for all media) HI greater than 1 suggests a potential human health concern. For ground water exposure, the evaluation of noncarcinogenic effects will focus on 1 to 6 year old children, who are the most sensitive to contaminant exposures.

For carcinogenic effects, the potential upper-bound lifetime excess cancer risk (accounting for all contaminated media) is estimated by summing the products of the contaminant-specific CDIs and the contaminant-specific slope factors. EPA considers a lifetime upper bound of risk range of 10^{-4} to 10^{-6} as the target range for remedial action goals at Superfund sites. EPA also considers the 1E-6 risk level as the "point of departure" for remedial goals. This is the level that the agency expects to achieve where practicable.

The dermal absorption route lacks the toxicity reference values of the other exposure routes (e.g., oral and inhalation), Oral values were used to assess risks from dermal exposure.

The results of the risk assessment indicate that no adverse health effects would be expected from ingestion of the ground water near the site. PCBs were not detected in any ground water samples taken. Data presented in Table 2 indicates that the maximum concentration limits for metals were not exceeded in any samples taken.

The risk assessment also indicated that non-carcinogenic risks from PCBs, metals, polynuclear aromatic hydrocarbons, and solvents are not present at this site. The combined hazard index, the measure of non-carcinogenicity, for direct contact with the contaminated soil was calculated to be 0.55. A hazard index of 1.0 or greater is considered by EPA to represent a non-carcinogenic risk.

Carcinogenic risks posed by the site are attributed to the PCB contamination in the soil. The average lifetime carcinogenic risk from direct contact with the soil, based on the average concentration of PCBs in the soil, is estimated to be 3.8×10^{-5} excess cancer incidents. Under the "worst case" conditions, the estimated risk is 9.6×10^{-5}, or approximately 1×10^{-4}. Polynuclear aromatic hydrocarbons, metals, and sovlents did not contribute to the carcinogenic risks (less than 10^{-6} risk).

Environmental Assessment

The environmental risks associated with contaminants at the site appear to be non-measurable or minimal. Surface water samples collected show no organic chemicals related to the site and similar concentrations of inorganic chemicals. Biota samples collected indicate that the North Canadian River, downstream from the site contain more individuals and species than upstream. The vegetation in the vicinity of the site and cottonwood trees along the intermittent stream west of the site did not appear to be stressed. During 1987, the U.S. Fish and Wildlife Service of the Department of the Interior conducted a Preliminary Natural Resource Survey and granted a release from natural resource damages.

VII. DESCRIPTION OF ALTERNATIVES

As discussed earlier, PCBs are the contaminants of concern and are limited to surface and subsurface soils at the site. Remedial alternatives for the Tenth Street site have been evaluated with respect to nine evaluation criteria set in the National Contingency Plan, the Toxic Substance Control Act (TSCA), PCB regulations; the Resource Conservation and Recovery Act (RCRA), land disposal restrictions; the Oklahoma Solid Waste Management Act, Regulations Governing Solid Waste and Sludge Management. The PCB Spill Cleanup Policy, which is not an ARAR but is codified in the Federal Register, has also been considered. The TSCA PCB regulations of importance to Superfund sites are found in 40 CFR Part 761, Subpart D: Storage and Disposal (761.60 - 761.79). These regulations specify the treatment and disposal requirements for PCBs.

RCRA land disposal restrictions do not specifically apply to PCB contamination, as PCBs alone are not a RCRA waste. However, if the PCBs are mixed with other hazardous waste(s), they may be subject to land disposal restrictions. The Oklahoma Regulations Governing Solid Waste and Sludge Management specify landfill location standards, and the final cover requirement. Under EPA Guidance on Remedial Actions for Superfund Sites with PCB Contamination (August 1990), land use (residential, industrial, or rural) is a primary consideration in determining cleanup level. The concentration of PCBs that can be left in the soil on site depends primarily on the expected exposure scenario (i.e. direct contact, limited contact, or restricted contact through capping and access control) and the achievement of adequate risk protection.

Remedial action is clearly warranted at Tenth Street based on the August 1990 EPA guidance for PCB-contaminated Superfund sites. Section 3.1.2 of this guidance discusses remedial goals for industrial or remote areas with PCB contamination. A range of 10 ppm to 25 ppm is considered appropriate for a remedial goal in an industrial area. This goal is consistent with the goals set in the TSCA Spill Cleanup Policy.

The remedial goal for the Tenth Street site was set based on future industrial land use and is 25 ppm PCBs in the soil onsite. This goal was selected to be consistent with the Toxic Substances Control Act Spill Cleanup Policy criteria for commercial/industrial areas and goals set at other Superfund sites nationwide where commercial exposures were considered. This concentration also represents a maximum residual excess cancer risk of 1×10^{-5}. This risk is based on a future commercial/industrial land use. An estimated 7,500 cubic yards of soil to a depth of about 6 feet are contaminated with greater than 25 ppm of PCBs and will be addressed by the remedial action.

Alternatives Evaluation

To achieve the remedial goal, technologies and process options applicable to this site were identified and analyzed. After the screening process, a total of six alternatives were formulated. These alternatives were further evaluated in terms of effectiveness, implementability, and cost. Five alternatives were analyzed in detail in the FS. These five alternatives are listed below and numbered to correspond with the alternatives in the FS report.

- Alternative 1: No Action
- Alternative 3: Excavation and Offsite Disposal

- o Alternative 4: Excavation, Onsite Chemical Treatment and Disposal Onsite

- o Alternative 5: Excavation, Onsite Thermal Treatment, and Disposal Onsite

- o Alternative 6: Excavation and Offsite Thermal Treatment

Alternative 2, in place capping was screened out prior to the detailed evaluation of alternatives because the site is in a flood plain and because capping would not satisfy the preference for treatment expressed in SARA.

Except for the "no action" alternative, all of the alternatives considered for the site include a common component, the removal and/or treatment of PCB contaminated soil. An air monitoring program and dust control measures would be implemented to reduce/minimize any potential adverse short-term health effects during excavation and treatment activities. Institutional controls would not be required for any of the alternatives, except the "No Action" alternative.

Descriptions of each of the alternatives are as follows:

Alternative 1: No Action

Estimated Capital Cost: $2,500

Estimated Annual O&M Costs: $11,800

Estimated Total Present Worth Costs: $184,200

Estimated Implementation Timeframe: 30 years for O&M

The Superfund regulations (National Contingency Plan) requires that the "no action" alternative be evaluated at every site to establish a baseline for comparison. No construction activities would occur at the site; an estimated 7,500 cu. yd. of PCB contaminated soil at concentrations of 25 ppm and above would remain at the site.

Under this alternative, deed restrictions to prohibit soil excavation and construction activities would be imposed on the site, and regular maintenance including vegetation mowing, reseeding, and fence and cover surface repair would be performed. The two downgradient ground water monitoring wells would be sampled and analyzed for PCBs annually to ensure that no migration of PCBs to ground water underneath the site occurs. This alternative would meet neither the Toxic Substances Control Act (TSCA) PCB disposal requirements, PCB Spill Cleanup Policy, nor the Oklahoma Solid Waste Regulations. This alternative would not mitigate the long-term risks identified with the contaminants at the site.

Because this alternative would result in contaminants remaining at the site, CERCLA requires that the site be reviewed every five years.

Alternative 3: EXCAVATION AND OFFSITE DISPOSAL

Estimated Capital Costs:	$4,037,000
Estimated Annual O&M Costs:	$0.00
Estimated Total Present Worth Costs:	$4,037,000
Estimated Implementation Timeframe:	3 months

This alternative consists of the removal of the existing temporary red clay cover and excavation and disposal of the PCB-contaminated soil in a TSCA-permitted chemical landfill. The red clay removed could be retained to supplement the clean soil required to backfill the excavated area.

The contaminated soil would be excavated and temporarily stored in waste piles. The contaminated soil would then be loaded onto 20 cu. yd. dump trucks for transport to a TSCA-permitted landfill. Prior to leaving the site, the trucks would be inspected to ensure hazardous substance transportation requirements are met. Manifests would also be prepared and signed as required. The excavated area would be backfilled with clean soil. The final surface would be graded and seeded to blend with the surrounding area.

Under this alternative, an estimated 7,500 cu. yd. of PCB contaminated soil at concentrations of 25 ppm and above would be removed from the site. During implementation of this alternative, measures to supress dust generated during excavation will be used to mitigate any potential risk to the nearby community may be expected due to fugitive dusts in the ambient air. After completion of this alternative, no long-term monitoring and maintenance would be required and the site risk would be reduced to 10^{-6}. This alternative would meet the TSCA PCB disposal requirements and the PCB Spill Cleanup Policy.

Alternative 4: EXCAVATION, ONSITE CHEMICAL TREATMENT, AND DISPOSAL ONSITE

Estimated Capital Costs:	$4,044,000
Estimated Annual O&M Costs:	$0.00
Estimated Total Present Worth Costs:	$4,044,000
Estimated Implementation Timeframe:	6-9 months

This alternative consists of removing the existing red clay cover and treating the PCB contaminated soil on-site by a chemical process to destroy chlorinated biphenyls.

After treatment, the treated soil (less than 2 ppm PCB) would be put back into the excavated area. The clay cover could be retained and used as clean backfill material. If needed, additional clean soil would be brought to the site for final grading.

The basics of the chemical dechlorination process are straight forward. Contaminated soil is mixed with an alkaline reagent consisting of potassium or sodium hydroxide in a solution of mixed polyethylene glycol and dimethyl sulfoxide. The reagent mixture dechlorinates the aryl halide to form a PEG ether and a totally dechlorinated species.

In soil processing, the soil/reagent mixture is heated to 30 - 150^{o}C with mixing until the reaction has been completed. At the end of the reaction, reagent is recovered by decantation and washing the soil with several volumes of water. The decontaminated soil is then discharged, with the reagent recycled for reuse. Water vapor and volatiles generated during the process will pass through a condensor equipped with a carbon adsorption filter before discharging to a waste treatment unit. Any volatiles that are not condensed will be trapped by the filter. Spent carbon filters will be handled in accordance with the waste classification. Chemical analysis will be performed to ensure that discharged soil is clean.

A treatability study conducted during the RI indicated the KPEG treatment process to be a feasible and effective technology for decontaminating PCB contaminated soil at this site. This study demonstrated that this technology can destroy PCB contamination at this site to below 1 ppm in the soil.

An estimated 7,500 cu. yd. of PCB contaminated soil with concentrations of 25 ppm and above would be treated. The concentrations of the treated residual would be reduced to less than 2 ppm. During implementation of this alternatve, dust suppression and monitoring will be done to mitigate any risk from fugitive dusts that may be generated. Emissions from the treatment process would be minimal, water vapor and volatiles generated which are not removed by the condensor unit would unit would be trapped by carbon adsorption. Completion of this alternative would reduce the site risk to 10^{-6} and no long-term monitoring and maintenance would be required. This alternative would meet the TSCA PCB alternative treatment requirements (2.0 ppm) and the PCB Spill Cleanup Policy.

Alternative 5: EXCAVATION, ONSITE THERMAL TREATMENT, AND DISPOSAL ONSITE

Estimated Capital Cost:	$4,406,000
Estimated Annual O&M Costs:	$0.00
Estimated Total Present Worth Costs:	$4,406,000
Estimated Implementation Timeframe:	6-9 months

This alternative consists of removing the existing red clay cover and treating the PCB contaminated soil on-site by an incinerator meeting the incineration destruction removal efficiency (DRE) of 99.9999 percent set for PCBs by regulation. After treatment, the treated soil would put back into the excavated area. The clay cover could be retained and used as clean backfill material. Additional clean soil, if needed, would be placed on top of the site for final grading.

Prior to incineration, contaminated soil would be excavated and stored temporarily in waste piles. The contaminated soil would be fed into the onsite incinerator equipped with emission controls and ash handling equipment. The exhaust gases resulting from incineration would be scrubbed before venting to the atmosphere.

The scrubber water would be incinerated or treated by passing through serial activated carbon columns. The spent carbon would be incinerated. The ash would be tested prior to backfilling the excavated area to ensure PCBs are destroyed. A shredder would be used to reduce lumps of clay, rocks, and other large debris to an acceptable size for incineration. Large pieces of debris, such as bricks, rocks, or concrete found during the excavation that can not be shredded would be assumed PCB wastes and disposed of in an approved landfill.

An estimated 7,500 cu. yd. of PCB contaminated soil at concentrations of 25 ppm and above would be treated by the mobile incinerator brought onsite. After incineration, the site risk would be reduced to 1E-6. No long-term monitoring and maintenance would be required. Any increase in risk by inhalation due to the introduction of fugitive dusts in atmosphere by soil excavation would be similar to Alternative 3. A potential increase in risk by inhalation to the nearby community would also exist, if emission control system of the incinerator were to fail. This alternative would meet the TSCA PCB incineration requirements (40 CFR 761), the PCB Spill Cleanup Policy, and the Oklahoma Clean Air Act.

Alternative 6: EXCAVATION AND OFFSITE THERMAL TREATMENT

Estimated Capital Costs:	$17,829,000
Estimated Annual O&M Costs:	$0.00
Estimated Total Present Worth Costs:	$17,829,000
Estimated Implementation Timeframe:	3 months

This alternative consists of removing the existing red clay cover and transporting the PCB contaminated soil to a permitted incineration facility off-site. The PCB would be thermally destroyed at the off-site facility. The cover soil removed could be retained to supplement the clean soil required to backfill the excavated area and for final grading.

The contaminated soil would be excavated and temporarily stored in waste piles ready for loading and transporation. The contaminated soil would then be loaded onto 20 cu. yd. dump trucks. Prior to leaving the site, the trucks would be inspected to ensure hazardous substance transportation requirements are met. Manifests would also be prepared and signed as required. The excavated area would be backfilled with clean soil. The final surface would be graded and seeded to blend with the surrounding area.

Implementation of this alternative would remove an estimated 7,500 cu. yd. of PCB contaminated soil at concentrations of 25 ppm and above from the site and reduce the site risk to 1E-6. No long-term monitoring and maintenance would be required. During soil excavation, stockpiling, and loading, this alternative would have a potential for temporary increases in risk by inhalation to the nearby community similar to Alternative 3. This alternative would meet the TSCA PCB incineration requirements and the PCB Spill Cleanup Policy.

VIII. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

Overall Protection of Human Health and the Environment

All of the alternatives, with the exception of the "no action" alternative, would be comparable in terms of providing adequate protection of human health and the environment. They achieve protection by eliminating, reducing, or controlling risks through source removal and treatment. At the cleanup level of 25 ppm, risks through direct contact and ingestion are reduced to a cancer risk maximum level of 10^{-5}. The overall average site risk of 10^{-6} is achieved by treatment or removal of the contaminated soil and the placement of treated soil on the site. Alternative 4, 5, and 6 achieve protection by reducing exposure through treatment. Alternative 3 reduces risks by source removal. Under the "no action" alternative, as long as the integrity of the existing soil cover is maintained, no imminent and substantial endangerment to public health, welfare, or the environment would be expected. However, contamination will remain at the site and potential for contaminant migration will always exist. Also, site access would be restricted and no excavations or construction activities would be permitted at the site.

Compliance with ARARs

All of the alternatives, with the exception of the "No Action" alternative, will achieve the 25 ppm remedial goal set in the TSCA Spill Cleanup Policy. The use of a fully compliant land disposal facility permitted to accept PCB-contaminated materials will ensure that Alternative 2, offsite land disposal, meets the TSCA disposal regulations (40 CFR 761.75). Chemical dechlorination will achieve the 2.0 ppm concentration set in the TSCA Alternate Technology regulations. Both onsite and offsite thermal destruction alternatives would comply with the incinerator regulations governing PCB disposl (40 CFR 761.70).

Long-term Effectiveness and Permanence

Alternative 4,5, and 6 afford the highest degrees of long-term effectiveness and permanence as they use treatment technologies to reduce hazardous posed by contamination at this site. Alternative 4 uses a chemical treatment technology while Alternatives 5 and 6 use thermal destruction. Both chemical dechlorination and incineration are irreversible processes.

Alternative 3 would provide the similar level of protection for this site through source removal. However, the waste would not be destroyed, it would simply be relocated to another site. At 25 ppm, the average risks from the site would be reduced to 10^{-6} by Alternatives 3, 4, 5, and 6.

Alternative 1 leaves all of the contaminated soil at the site and relies entirely upon the existing soil cover. As the existing soil cover was not constructed to meet the RCRA cap requirements, nor to meet the Oklahoma Solid Waste Regulations final cover requirements, long-term effectiveness and permanence of the existing soil cover is questionable.

Reduction of Toxicity, Mobility, or Volume

Alternatives 4, 5, and 6 would treat the contaminated soil to reduce the toxicity, mobility and volume of contamination at the site. At a cleanup level of 25 ppm, approximately 7,500 cu. yd. of PCB contaminated soil would be treated. About 1,000 cu.yds. of soil with PCB concentrations of 25 ppm and below would remain at the site. Alternative 4 would treat the contaminated soil chemically and reduce the concentrations of contaminant to less than 2 ppm. Alternatives 5 and 6 would involve incineration processes that would have a DRE of 99.9999 percent.

Alternative 3, removal of the source of contaminantion and disposal in a chemical waste landfill, would simply transfer the contamination from one site to another and would not reduce the toxicity or volume of the contamination. Alternative 1 will not reduce toxicity, mobility, or volume of the contamination.

Short-term Effectiveness

Alternative 3, 4, 5, and 6 are anticipated to pose similar levels of short-term risks. However, Alternative 4 would provide the greatest short-term effectiveness and present the least amount of risk to workers, the community, and the environment.

Particulate emissions resulting from excavation and stockpiling of contaminated soil would be expected during implementation of Alternative 4. Emissions generated from KPEG treatment process would be kept at minimum. Water vapor and volatiles generated in the reactor will go through a condensor equipped with a carbon adsorption filter before discharging into a waste treatment unit. Any volatiles that are not condensed will be trapped by the filter. Spent carbon will be handled in accordance with the waste classification.

The reagents and byproducts used in the chemical dechlorination process will not pose any short term risks. Data generated in laboratory tests using rats indicates that ethylene glycolate-400 is 27 times less toxic than PCBs; dimethyl sulfoxide is 17 times less toxic than PCBs. These reagents are also 9 and 6 times, respectively, less toxic than table salt. The results of Ames toxicity tests indicates that the byproducts of the dechlorination process do not exhibit any carcinogenic potential.

Alternatives 3 and 6 are very similar with respect to short-term effectiveness. In addition to particulate emissions resulting from excavation of contaminated soil, potential release of contaminants along the route of transportation would exist, if an accident were to occur.

Alternatives 4 and 5 can be implemented in approximately 6 to 9 months. Alternatives 3 and 6 can be completed in approximately 3 months.

Implementability

Alternatives 1, 3, and 6 would be the simplest to conduct and operate. No special techniques, materials, permits, or labor would be required for implementation of these alternatives; they are readily available in the local area. Permitted PCB landfills and offsite PCB incinerators are commercially available.

Alternative 4, the KPEG treatment process, is more complex than Alternatives 3 and 6. It would require specialists to construct and operate the system. Pilot testing would be required to determine operating parameters and fine tune the operation. During operation, this treatment process would require constant attention and periodic adjustment.

Alternative 5 is probably the most complex alternative to operate. Despite anticipated downtime due to mechanical complexity, incineration could reliably meet the DRE. A mobile incinerator would have to be brought onsite. This alternative would require the most attention as incineration requires periodic sampling of the residue and modification of operating parameters. A test burn would be required to determinethe operating parameters. Mobile incinerators are commercially available from numerous vendors.

Cost

Alternative 1 has the lowest estimated present worth cost, $184,200. The cost for Alternative 3 is estimated at $4,037,000. Alternative 4 has an estimated cost similar to Alternative 3, $4,044,000. The estimated cost for Alternative 5 is $4,0406,000, which is about 10% higher than Alternative 4. Alternative 6 has the highest estimated cost, $17,829,000.00, which is about 4.5 times higher than Alternative 4.

State Acceptance

The State of Oklahoma currently prefers the "No Action" alternative. The State believes that because the baseline risk (10^{-4}) is within the remedial target range established in the National Contingency Plan (10^{-4} to 10^{-6})

that further action is not warranted at the site. The State also believes that the short-term risks of implementation of a remedy are greater than the long-term risks currently posed by the site, although the State did not offer any quantitative evidence to substantiate the belief.

Community Acceptance

Community response to the alternatives is discussed in the responsiveness summary, which addresses comments received during the public comment period. Citizens raised questions about exposure to fugitive dust from excavation, other locations where the technology has been used, and the possibility of local contractors implementing the remedy.

IX. THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives, and public comments, the U.S. EPA has selected Alternative 4 - Excavation, Onsite Chemical Teatment, and Disposal Onsite as the remedy for the Tenth Street Superfund site.

Soil sample analyses obtained during RI indicate that the estimated volume of PCB contaminated soil at the site is approximately 8,500 cu. yd. Based on the future industrial land use and compliance with the TSCA Spill Cleanup Policy, the remedial goal is set at 25 ppm. At this cleanup target, the increased cancer risk posed by the site would be reduced to 10^{-5}.

An estimated 7,500 cu. yd. of soil contaminated with greater than 25 ppm PCBs would be excavated and treated onsite by chemical dechlorination treatment unit. The treated soil would contain less than 2 ppm of PCB. A treatability study conducted during RI has demonstrated that the KPEG treatment process is capable of destroying PCB contamination at this site to below 1 ppm.

X. STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund Sites is to under take remedial actions that achieve adequate protection of human health and the environment. In addition, Section 121 of CERCLA established several other statutory requirements and preferences. These specify that when complete, the selected remedy for this site must comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws unless a statutory waiver is justified.

The selected remedy also must be cost effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

Finally, the statute includes a preference for remedies that use technologies that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

Protection of Human Health and the Environment

The selected remedy protects human health and the environment through treatment of the PCB contaminated soil. The contaminant will be permanently removed from the soil by glycolate dehalogenation process. The treatment process will degrade the PCBs into less toxic, water soluble compounds (glycol-ethers and chloride salts), which further degrade to form a totally dechlorinated species.

Destruction of PCBs from the soil and backfilling the treated soil, in the excavated area would reduce the excess cancer risk posed by the site to 10^{-6}. Becuase the chemical dechlorination process equipment is completely enclosed, there are no short-term threats associated with materials handling with the selected remedy.

Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy of excavation, onsite chemical treatment, and disposal of treated soil will comply with all applicable or relevant and appropriate requirements (ARARs). The ARARs are presented below.

Action-specific ARARs:

- o PCB Alternative Treatment Requirements (< 2 ppm PCBs) PCBs, using total waste analysis (40 CFR Part 761, Subpart D)

Other Criteria, Advisories or Guidance To Be Considered:

- o TSCA PCB Spill Cleanup Policy (Federal Register, April 2, 1990)
- o EPA Guidance on Selecting Remedies for Superfund Sites with PCB Contamination (August 1990)

Land Disposal Restrictions under RCRA are not ARARs for the PCB-contaminated soils at this site.

Cost - Effectiveness

The selected remedy is cost-effective, as it has been determined to provide a high degree of effectiveness proportional to its cost. The estimated total present worth value is $4,044,000. The selected remedy is the least costly of the Alternatives 4, 5, and 6 which are equally protective of human health and the environment.

Utilization of Permanent Solutions and Alternative Teatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

U.S. EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner for the final remedy at the Tenth Street Superfund site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the selected remedy provides the best balance of tradeoffs in terms of long-term effectiveness and permanence; reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, costs, also considering the statutory preference for treatment as a principal element and considering State and community input. Alternative 1 would not reduce the toxicity, mobility or volume of the contamination; would not comply with ARARs; would not provide reliable long-term effectiveness; would provide short-term effectiveness; would take 30 years to implement. Contamination will remain at the site and potential for contaminant migration will always exist.

Alternative 3 would protect human health and the environment for this site about equally as well as the selected remedy. It would also have similar long-term effectiveness, and short-term effectiveness. However, Alternative 3 would not reduce the toxicity or volume of the contaminant, it would simply relocate the contamination to another site. Alternatives 5 and 6 would provide equal protection of human health and the environment and long-term effectiveness as the selected remedy. They would also have the same level of reduction in toxicity, mobility, and volume as the selected remedy. However, Alternatives 5 and 6 would have higher costs and less short-term effectiveness.

Principal threats at Tenth Street are defined as those soils contaminated with greater than 300 ppm PCBs, an order of magnitude higher than the healthbased remedial goal. Low level threats are those soils with less than 300 ppm PCBs. The NCP expects that principal threats will be treated; low level threats will also be treated where cost-effective.

Containment of the low level threats was not considered because the cost of treating all soils above the health-based remedial goal is only approximately 10 percent of the cost of treating the high level threats. Therefore, EPA considers treatment of all soil contaminated with greater than 25 ppm PCBs to be cost-effective.

Preference for Treatment as a Principal Element

By treating the PCB contaminated soil at the site and disposing the treated soil onsite, the selected remedy addresses the principal threat of future direct contact/ingestion of contaminated soil posed by the site through the use of treatment technologies. Therefore, the statutory preference for remedies that employ treatment as a principal element is satisfied.

Documentation of No Significant Changes

The Proposed Plan for the Tenth Street site was released for public comment in August 1990. The Proposed Plan identified Alternative 4, chemical dechlorination of contaminated soil, as the preferred alternative.

EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

Tenth Street Site
- Community Relations Responsiveness Summary

The Community Relations Responsiveness Summary has been prepared to provide written responses to comments submitted regarding the Proposed Plan at the Tenth Street hazardous waste site. The summary is divided into two sections.

Section I: Background of Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during the remedial planning activities at the Tenth Street site.

Section II: Summary of Major Comments Received: The comments (both oral and written) are summarized and EPA's responses are provided.

I: Background of Community Involvement and Concerns

The involvement in environmental issues, including hazardous waste management is growing. Local chapters of national enviornmental organizations and a variety of governmental groups are involved in efforts to safeguard surface and groundwater resources. Community concerns are that the contaminants from the site have leached into the area's groundwater. In addition to concerns about grounwater quality, members of the community fear that before the site was capped rainfall could have washed hazardous waste from the surface of the landfill, spreading contaminants beyond the boundary of the site to affect offsite surface soil and water thus making the area unsafe for recreation.

II. Summary of Major Comments Received

Public notice announcing the public comment period and opportunity for a public meeting was printed in the Daily Oklahoman on Sunday August 5, 1990. The proposed plan fact sheet was distributed to the site mailing list on August 3, 1990. The comment period began on August 9, 1990 and ended September 7, 1990. A public meeting was held on August 14, 1990, at the James Stewart building in Oklahoma City, Oklahoma. The purpose of this meeting was to explain the contamination problems at the site and discuss the proposed and preferred alternatives.

Approximately 20 people were in attendance and 11 people asked questions or made comments. One letter was received with comments.

The comments/questions received during the public comment period concern the following:

1. Comment: Could the chemicals used in the chemical dechlorination process be conducted with the soil in place, instead of excavating the soil?

   EPA response: No, in place dechlorination would not work at the Tenth Street site. The clay soils on the site are too impermeable to allow the chemicals to mix properly unless excavation is done. Without proper mixing, the chemicals would not come in contact with the contaminated soils and proper decontamination could not occur. Research conducted by EPA in 1987 also indicated that soils contaminated at depths of greater than 2 feet were not adequately decontaminated by applying the chemicals directly to the soil. Treatment of the deeper contaminated soils at Tenth Street would not be effective unless excavated.

2. Comment: What is the depth of contamination at the Tenth Street site?

   EPA response: The soils at Tenth Street are contaminated with polychlorinated biphenyls (PCBs) to a depth of 6 feet. These soils are contaminated with PCBs at concentrations greater than 25 ppm, the remedial action goal set for this site.

3. Comment: Does EPA currently have specifications for the chemical dechlorination equipment to be used at Tenth Street?

   EPA response: No, the specifications for this equipment have not been written. Writing the specifications for remedial actions at Superfund sites is done as part of the design. However, the development of the technology in the feasibility study was done, in part, based on the specifications of equipment currently available from vendors.

4. Comment: Will vendors who currently own the chemical dechlorination equipment be the only companies allowed to supply the equipment for the remedy?

   EPA response: No. Any vendor who has the equipment, or access to the equipment that can implement the remedy will be allowed to bid on the project. EPA, by regulation (Federal Aquisition Regulations), must provide for fair and open competition among vendors when contracting for Superfund work. Bidders must be able to demonstrate the capability to perform the specified work during the bidding process with whatever equipment they have available.

5. Comment: Where has chemical dechlorination been used on a full scale?

   EPA response: Full-scale chemical dechlorination has been used to successfully treat PCB and dioxin-contaminated materials at the Niagara-Mohawk Power Company in New York, the Western Processing Company in Washington, and the Montana Pole Treating Company in Montana.

6. Comment: How much dust will be released into the air during remediation and what precautions will be taken to protect the community from windblown dust?

EPA response: During excavation, water sprays will be used to keep the soil wet, minimizing the potential for dust to be generated. The rate of soil excavation will also be correlated with the rate of treatment to minimize the area of soil exposed to the wind at any given time. Also, air monitors will be placed around the parimeter of the site. These monitors will allow the EPA to determine if wind conditions warrant a slower operation or temporarily ceasing operations due to fugitive dust emissions.

7. Comment: Will there be an emergency evacuation plan for an event where excessive dust is blown offsite?

EPA response: No. In the event that high winds generate excessive dust, as measured by the ambient air monitoring, excavation will be postponed until the wind conditions improve and fugitive emissions can be controlled.

8. Comment: How many Technical Assistance Grants (TAGs) have been awarded in Region 6?

EPA response: EPA Region 6 awarded a TAG to a community group in Albequerque, New Mexico for the South Valley Superfund site. This grant was awarded on February 23, 1990. Three other grants were awarded by EPA to a group in Jacksonville, Arkansas. However, competing local groups have challenged the grants and final award is pending the resolution of appeals.

9. Comment: One commentor requested a postponement of the public comment period until a local community group has been awarded a TAG and received the assistance necessary to evaluate EPA's Proposed Plan for the Tenth Street site.

EPA response: In a letter dated September 7, 1990, this request was denied by EPA. In arriving at this decision, EPA considered the time required by the group to procure the services of an advisor were the grant to be awarded in October 1990. EPA believes that, since the grant may be used by the community group to review the design and operation of the remedy, a delay in the selection of a remedial technology is not warranted.

10. Comment: One commentor believed that a TAG would give local citizens the opportunity to hire a consultant to conduct a remedial investigation and feasibility study at Tenth Street.

EPA response: A TAG is not available for this purpose. This grant are available for local citizen's groups to review and interpret EPA's studies during all phases of a Superfund project. Grants are not available for independent investigations conducted by local groups.

11. Comment: A TAG would not be helpful to the local community after the Record of Decision is signed for the Tenth Street project.

EPA response: This is not true. TAGs may be used by the community group to hire an advisor to review and interpret both the remedial design and construction activities conducted at Tenth Street.

12. Comment: At what stage is application for the TAG and when might it be awarded?

EPA response: A magnafax copy of the grant appliacation is being reviewed by the EPA Regional office in Dallas. The grant may be awarded in October 1990, provided that an original, signed copy of the application is received by the Regional office by September 30, 1990, and the application complies with Federal grant regulations.

13. Comment: EPA appears to be delaying the award of a TAG until the remedial action is completed.

EPA response: This is not true. Previous draft applications submitted by the local citizen's group since March 1990 have been incomplete or incorrect. EPA cannot, by grant regulations, award a TAG unless the application is complete and correct. Representatives from EPA have assisted the group on numerous occasions in correcting the application. In some cases, comments on draft applications were not addressed in subsequent submittals.

14. Comment: Why was Alternative #2, Capping in Place, not considered at Tenth Street?

EPA Response:. Construction of a cap on the Tenth Street site would not satisfy the preference for treatment to reduce mobility, toxicity, or volume stated in the Superfund law. EPA also expects, as outlined in the National Contingency Plan (NCP), to treat wastes that constitute a principal threat at a site. Soils contaminated with greater than 300 ppm PCBs are considered the principal threat at Tenth Street and by regulation should be treated. Also, capping was not considered an appropriate remedy because the site is in the 100-year flood plain of the North Canadian River and would require perpetual maintenance to prevent future exposure to contaminated soil.

15. Comment: How was the selection of the Proposed Plan among Alternatives 3, 4, and 5 made?

EPA response: These alternatives were compared against nine criteria outlined in the NCP and the statutory preferences in the Superfund law. Alternative 3, offsite land disposal, does not meet the statutory preference for treatment as a principal element of the remedy. Offsite disposal without treatment is also the least preferred alternative for Superfund sites. Alternative 5, onsite thermal destruction, was not proposed in favor of an innovative technology. The Superfund program expects to select innovative technologies at sites where such a technology is practiceable.

16. Comment: Why is EPA selecting a technology rather than writing performance specifications for cleaning up the site and taking bids on acceptible solutions for addressing the contaminants at Tenth Street?

EPA response: The process by which EPA selects remedies at Superfund sites is set forth in the National Contingency Plan (NCP). The NCP is the regulation that governs the Superfund program. This process allows EPA to screen out those technologies that are clearly inappropriate for the Tenth Street site. As part of the design phase of this project, performance specifications will be written. These specifications will include the required level of treatment and length of time required to complete the treatment process.

17. Comment: Has a health and safety plan for the construction at this site been written?

EPA response: No. However, a health and safety plan, outlining community and worker safety procedures, must be written and in place prior to the start of construction activities at the site.

18. Comment: What is the current project schedule?

EPA response: EPA will select the remedy for Tenth Street in September 1990. The design of the selected remedy is scheduled to begin in March 1991, after a statutorily required moratorium period to allow potentially responsible parties, if any, to take over the project. The design will be completed in March 1992, with an invitation for bids being released by EPA shortly thereafter. EPA expects field work to be begin in Summer 1992 and end in Summer 1993.

19. Comment: EPA had already selected the remedy at the time of the public meeting.

EPA response: This is not true. EPA had proposed a remedial technology for the Tenth Street site at the public meeting. The plan was proposed as the best technical solution for the site, based on the criteria outlined in the NCP. EPA does not select the remedy for a site until all of the comments made during the public comment period have been considered.

20. Comment: What was the predominant species of PCBs found at Tenth Street?

EPA response: The predominant species of PCBs found at Tenth Street was Aroclor 1260.

21. Comment: What are the toxicity and persistance of PCBs?

EPA response: EPA currently classifies PCBs as a Class B carcinogen, or a probable carcinogen. The EPA Cancer Assessment Group has estimated the cancer potency factor to be 4.0 $(mg/kg/day)^{-1}$ and has used this factor in health advisories issued by EPA. Based on laboratory animal data, there is a potential for reproductive effects, developmental toxicity in humans exposed to PCBs. PCBs are also extremely persistant in the environment and can bioaccumulate in the fatty tissues of exposed organisms (Federal Register, July 10, 1986).

22. Comment: Does the cap that is currently on the site provide adequate protection of human health and the environment form the contamination at Tenth Street?

    EPA response: No, it does not. The cap that was installed on the site in 1985 by EPA was intended to temporarily prevent direct contact and migration of contaminated soil. Stabilization of the site allowed EPA to evaluate more permanent solutions to the problems at Tenth Street. As seen by the current deterioration, the temporary cap does not provide adequate long-term protection. As stated previously, the degree of protection afforded by any cap is questionable because the site is located in a 100-year flood plain.

23. Comment: To what extent have PCBs migrated offsite?

    EPA response: Samples taken during the 1985 removal action indicates that the only offsite PCB contamination exists in the right-of-way between the north site boundary and Tenth Street at a depth of 3 to 4 feet below the surface. Surface soils are clean along the right-of-way and do not pose a threat to pedestrians.

24. Comment: How deep were soil borings drilled during the remedial investigation?

    EPA Response: Soil borings were drilled to a depth of six feet. Soil samples taken at this depth were not contaminated above the remedial goals, indicating that deeper borings were not necessary.

25. Comment: Can EPA promote the use of local firms for the remedial work at Tenth Street?

    EPA Response: EPA cannot give preference to local contractors because of their location. However, local companies can have a competitive advantage due to lower transportation costs. By the Federal Acquisition Regulations, the selection of a contractor to implement the selected remedy must be done through an open and competitive bidding process. EPA's prime contractor must also select subcontractors in this manner.

26. Comment: What will the consultant hired to design the remedy actually do?

    EPA response: The remedial design consultant will develop the contracts and bid documents necessary to procure a contractor to implement the remedy selected in the Record of Decision. The consultant will not be directed to select a remedy for Tenth Street. The consultant will also develop the specifications and blueprints for the remedy and methods of verifying the performance of the contractor.

27. Comment: Shouldn't a consultant be hired to recommend a remedy for Tenth Street?

    EPA response: Consultants may be hired to develop and evaluate potential remedial alternatives for consideration by EPA. The responsibility to recommend and select remedies at Superfund sites is solely EPA's by law.

28. Comment: Is the equipment necessary for chemical dechlorination commercially available?

    EPA response: Yes, one manufacturer, Galson Inc., of Syracuse, New York, has built a full-scale unit for use with contaminated soils. Other full-scale units have been used at the sites discussed in the response to comment #6.

29. Comment: How much time will be required to treat each batch of contaminated soil in the chemical dechlorination unit?

    EPA response: Experiences at other sites and the treatability study conducted on the Tenth Street soil indicate that each batch of soil can be treated to less than 2.0 ppm PCBs in approximately 4 hours. At this rate, the 7,500 cubic yards of soil at Tenth Street can be treated in approximately 9 months.

30. Comment: What volumes of soil and reagent are mixed together in the chemical dechlorination process?

    EPA response: Approximately 2 tons of soil are treated by 1 ton of reagent (potassium or sodium hydroxide, polyethylene glycolate 400, and dimethyl sulfoxide) in each batch treatment process. The reagents are recovered for reuse in subsequent batches.

31. Comment: How large will the excavation area onsite be during implementation of the remedy?

    EPA response: The excavated area will be approximately equal to the rate of treatment. For example, EPA assumed in the feasibility study that 30 cubic yards of soil would be treated per day. Excavation would be done at the same rate with some material being stockpiled prior to treatment.

32. Comment: Did the remedial investigation indicate the extent of the original landfill at the site?

    EPA response: No, it did not. EPA was primarily interested in PCB contamination at the site. However, samples taken from borings and monitoring wells indicated that no remnants from the original landfill exist at the site.

33. Comment: Will the material under the PCB-contaminated soil support heavy equipment that may be needed to implement the selected remedy?

EPA response: Yes. Soil logs taken from borings during the remedial investigation indicate that the deeper soil is solid and will support heavy equipment.

34. Comment: Will the selected remedy be sufficient to address any additional contamination that may be found after excavation begins?

EPA response: Yes, it will be able to handle any additional soil found at the site. However, the length of time required to complete the remedial action will increase.

35. Comment: Will there be any reason to close off parts of Tenth Street to traffic during remediation?

EPA response: No, there won't be any reason to close of the street to traffic. Windblown dust will be controlled by sprays and keeping the area of excavation to a minimum. Chemical dechlorination will be done in a completely enclosed unit, including reagent mixing, eliminating air emissions from the process. Should weather conditions inhibit excavation, operations would be postponed as a precaution.

36. Comment: Why was Tenth Street selected for cleanup as opposed to other sites in the area?

EPA response: Leaking drums discovered on the site in 1985 were removed by EPA to prevent any exposure to local populations or the environment. Because of the presence of PCBs in the soil and the potential for future exposure, the site was placed on the National Priorities List, becoming eligible for funding for investigations and permanent remedial action.

37. Comment: Does the Tenth Street site have the highest Hazard Ranking System score of any NPL site in the Oklahoma City area?

EPA response: No. Two other NPL sites, Tinker Air Force Base and the Mosley Road Landfill have higher scores. It should be noted that relative scores are not used to set remedial priorities among Superfund sites and represents only a conservative rating of potential threats before any intensive studies are conducted.

38. Comment: Will further treatment of residuals be required after chemical dechlorination is completed?

EPA response: Yes. Approximately 10 tons of solid residue from the treatment process will require offsite disposal as a PCB waste. Reagents are recovered and the treated soil will be used as backfill onsite.

39. Comment: Is the chemical dechlorination process a patented process?

EPA response: The general process is not patented. However, the use of proprietary chemicals or specialized equipment has led to patents on those variations by vendors. Contractors would have to negotiate for patent rights or leases with vendors to use specific equipment.

40. Comment: PCBs at Tenth Street do not currently pose a threat to the surrounding community; such a threat may potentially result only if the site was disturbed.

EPA response: EPA never indicated that the site posed a current threat to the community. The need to take remedial action is based on the reasonable maximum exposure expected under future commercial land use. The consideration of future land use in setting remedial action goals is consistent with the National Contingency Plan and the Risk Assessment Guidance for Superfund, Volume 1, December 1989. EPA considers future land use to be reasonable at Tenth Street based on the current surrounding land use (commercial) and inquiries that have been made to EPA by parties interested in commercial development of the property.

41. Comment: Remedial action at Tenth Street is contrary to national policy because the baseline (current) risk at the site is already within the remedial target range set by EPA.

EPA response: The National Contingency Plan (NCP) and national policy dictate that remedial action be taken at the site. The NCP 10^{-6} (i.e., 1 in 1,000,000) risk level as the "point of departure" for determining remedial action goals when other standards are not available. EPA expects to achieve this level of protection when practicable.

The NCP also dictates that remedial actions comply with Applicable and Relevant and Appropriate Regulations and other policies and guidelines. These are listed in the preamble to the NCP and include the Toxic Substances Control Act PCB Spill Cleanup Policy (Federal Register, April 2, 1987). As a matter of policy, EPA complies with the cleanup levels set in the Spill Cleanup Policy. For commercial areas, this level is set at 25 ppm PCBs in soil. Of the 32 Records of Decision signed since the passage of SARA, for sites where PCBs are the contaminant of concern, 5 have selected cleanup levels of 25 ppm PCBs. More stringent cleanup levels (10 ppm or less) have been set at sites where residential exposures were considered.

42. Comment: Physical and legal restrictions could provide a level of protection comparable to any remedial action taken at the site.

EPA response: Section 300.430 (a)(iii) of the NCP states that institutional controls shall not substitute for active response actions as the sole remedy unless such active measures are impracticable. As this is not the case at Tenth Street. SARA expects to use treatment, not physical restrictions, as the principal element of remedial actions at Superfund sites.

43. Comment: The risk associated with the operation of the chemical dechlorination process should be compared to the long-term risks posed by the existing site.

EPA response: EPA does not measure short-term risks in the same manner that long-term risks are measured. However, the toxicities of the reagents and byproducts of the process can be compared to the toxicity of PCBs as a measure of the relative risks. A comparison of the reagents, the byproducts, PCBs, and other reference materials is presented below:

MATERIAL	LD_{50}, ORAL-RATS
Polyethylene glycol-400	27,500 mg/kg
Dimethyl sulfoxide	17,500 mg/kg
PCBs	1,010 mg/kg

This data indicates that PCBs, the contaminants of concern at Tenth Street, are 27 times more toxic than polyethylene glycolate and 17 times more toxic than dimethyl sulfoxide, the reagents in the chemical dechlorination process. Ethylene glycol-400 is also approved by the Food and Drug Administration for use in food and cosmetics. The LD_{50} is the dose that causes mortality in 50 percent of the test organisms. These tests were conducted on laboratory rats, considering oral ingestion. EPA research also indicates that dechlorinated mixtures of 2,3,7,8-tetradioxin are 350 times less toxic than 2,3,7,8-tetradioxin itself. The treatment byproducts do not demonstrate any carcinogenic potential based on the results of Ames tests conducted by EPA.

Materials handling will not pose any short term risk during implementation of the remedy. Existing chemical dechlorination equipment is completely automated. Reagents, byproducts, and soils are handled in completely enclosed systems using pumps and conveyor belts for materials handling. The system also addresses air emissions through condensors for water vapor and carbon filters for volatile organics. No contaminants are released to the atmosphere during the treatment process.

INTRODUCTION

Section 113(j)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides that judicial review of any issues concerning the adequacy of any response action shall be limited to the administrative record which has been compiled for the site at issue.

Section 113(k)(1) of CERCLA, requires that the United States Environmental Protection Agency (Agency) establish administrative records for the selection of CERCLA response actions. The administrative record is the body of documents upon which the Agency based its selection of a response action. The Agency's decision on selection of a response action must be documented thoroughly in the administrative record. The Agency must ensure that the record is a compilation of documents leading up to and reflecting the Agency's response decision.

In accordance with U.S. EPA Headquarters OSWER Directive 9833.3, Section 113(k) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA) the U.S. EPA is required to compile and make available to the public Administrative records containing documents used to support response actions authorized under CERCLA and SARA. The Administrative Records are to be maintained at the relevant U.S. EPA Regional Offices as well as "at or near the facility at issue".

This Administrative Record File Index has been compiled in accordance with OSWER Directive Number 9833.1a Interim Guidance on Administrative Records for Decisions on Selection of CERCLA Response Actions. This guidance reflects, to the extent practicable, revisions being made to the National Contingency Plan (NCP).

This Administrative Record File Index consists of information upon which the Agency based its decision on selection of response actions. It is a subset of information included in the site files. The records in this Administrative Record File Index have been arranged in chronological order (from the earliest date to the most recent date), based on the date of the corresponding document. Each document contained in the Administrative Record File has been stamped with a unique Document Number, to assist in the location of the document within the Record File.

==

Document Number: 11-0001 Date: 02/07/83

Document Title : Potential Hazadrous Waste Site - Site Inspection Report: Frazier Pit [10th Street Site], N.E. 10th Street, Okla City, Oklahoma

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Philp E. Sumner, Jr., FIT Civil Engineer
Ecology & Environment, Inc.

Recipient: Staff
USEPA Region 6

Total Pages: 15

Document Number: 11-0002 Date: 09/21/84

Document Title : A memorandum providing information as requested by USEPA regarding 10th Street Site.

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Wib Truby
Oklahoma State Department of Health

Recipient: Fenton Rood
Oklahoma State Department of Health

Total Pages: 2

Document Number: 11-0003 Date: 10/01/84

Document Title : A Section 104(e) letter requesting information related to activities at the 10th Street Site.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
USEPA Region 6, Air & Waste Management Division

Recipient: William Spain, President
Southwest Electric Co.

Total Pages: 3

==

Document Number: 11-0004 Date: 10/01/84

Document Title : Sampling report for the N.E. 10th Street Site.

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Frank E. Onellion, TAT
Weston-Sper

Recipient: Charles A. Gazda, Chief
USEPA Region 6, Emergency Response Branch

Total Pages: 23

Document Number: 11-0005 Date: 10/02/84

Document Title : Site inspection to delinate the area that contained drums of suspected hazardous waste.

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Frank E. Onellion, TAT
Weston-Sper

Recipient: Charles A. Gazda, Chief
USEPA Region 6, Emergency Response Branch

Total Pages: 24

Document Number: 11-0006 Date: 10/17/84

Document Title : A response to the Section 104(e) request letter, from Southwest Electric Co.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: William L. Spain, President
Southwest Electric Co.

Recipient: Allyn M. Davis, Director
USEPA Region 6, Air & Waste Management Division

Total Pages: 3

Document Number: 11-0007 Date: 12/12/84

Document Title : A written record of Testimony before the Subcommittee on Environment, Energy and Natural Resources concernin geohydrology of the area of Tinker AFB.

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Dr. Charles J. Mankin, Director
Oklahoma Geological Survey

Recipient: Subcommittee on Environment,Energy & NtR
United States Congress

Total Pages: 12

Document Number: 11-0008 Date: 04/17/85

Document Title : CDC review of 10th Street Site data.

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Georgi A. Jones, Chief, Superfund Implementation Group
USHHS, Public Health Service, CDC

Recipient: George C. Buynoski,Public Health Advisor
USEPA Region 6

Total Pages: 1

Document Number: 11-0009 Date: 05/15/85

Document Title : Soil Sampling: Sampling of the 10th Street Site by the Technical Assistance Team.

Type: Report/Study
Document Qualifiers(s): Original/Duplicate of Original,

Author: Dennis M. Howard, TAT Member
Weston-Sper

Recipient: Gerald Fontenot, Deputy Project Officer
USEPA Region 6, Emergency Response Branch

Total Pages: 12

==

ent Number: 11-0010 Date: 05/23/85

Document Title : A letter describing the findings and possible health effects at the 10th Street Site, and requesting assistance in the limiting of access to the site.

Type: Letter with Attachments
Document Qualifiers(s): Original/Duplicate of Original,

Author: Fred P. Walker,PhD., Environmental Epidemiologist
Oklahoma State Department of Health

Recipient: Rollin Fullbright
Deadeye's Salvage Yard

Total Pages: 4

Document Number: 11-0011 Date: 06/05/85

Document Title : A Section 104(e) letter requesting information related to activities at the 10th Street Site.

Type: Letter
Do t Qualifiers(s): Original/Duplicate of Original,

Author: Allyn M. Davis, Director
USEPA Region 6, Air & Waste Management Division

Recipient: Oklahoma Gas & Electric
Oklahoma City, Oklahoma

Total Pages: 3

Document Number: 11-0012 Date: 06/21/85

Document Title : A Section 104(e) letter requesting information related to activities at the 10th Street Site.

ype: Letter
ocument Qualifiers(s): Original/Duplicate of Original,

uthor: Allyn M. Davis, Director
USEPA Region 6, Air & Waste Management Division

cipient: Cecil Joe
Jesus is Lord Salvage Yard

tal s: 3

Document Number: 11-0013 - Date: 06/28/85

Document Title : Response from Oklahoma Gas & Electric to Section 104(e) request letter.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: C.L. Tyree, Chief, Environmental Affairs
Oklahoma Gas & Electric

Recipient: Martha M. McKee
USEPA Region 6

Total Pages: 2

Document Number: 11-0014 Date: 07/10/85

Document Title : A Section 104(e) letter requesting information related to activity at the 10th Street Site.[Second Request]

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Robert Hannesschlager, Acting Chief
USEPA Region 6, Superfund Branch

Recipient: Sullivan Scott
Oklahoma City, Oklahoma

Total Pages: 2

Document Number: 11-0015 Date: 07/11/85

Document Title : A Section 104(e) letter requesting information relating to activities at the 10th Street Site.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: William B. Hathaway, Acting Director
USEPA Region 6, Air & Waste Management Division

Recipient: General Electric Company
Oklahoma City, Oklahoma

Total Pages: 3

Document Number: 11-0016 - Date: 07/11/85

Document Title : A Section 104(e) letter requesting information related to activity at the 10th Street Site.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: William B. Hathaway, Acting Director
USEPA Region 6, Air & Waste Management Division

Recipient: Elmer Cobb
Oklahoma City, Oklahoma

Total Pages: 3

Document Number: 11-0017 Date: 07/15/85

Document Title : A response from Joe Cecil to the Section 104(e) letter of June 21,1985.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Joe Cecil
Jesus is Lord Salvage Yard

Recipient: Staff
USEPA Region 6

Total Pages: 1

Document Number: 11-0018 Date: 08/07/85

Document Title : Response by the General Electric Company to the Section 104(e) request letter.

Type: Letter
Document Qualifiers(s): Original/Duplicate of Original,

Author: Eugene R. Baker, Counsel
General Electric Company, Engineerred Materials Group

Recipient: Martha McKee
USEPA Region 6

Total Pages: 1

Document Number: 11-0019 Date: 08/23/85

Document Title : ACTION MEMORANDUM - Immediate Removal Request for the 10th Street Site, Oklahoma City, Oklahoma.

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Karen Solari, OSC
USEPA Region 6, Field Response Section

Recipient: Dick Whittington,P.E.,Reg. Administrator
USEPA Region 6

Total Pages: 5

Document Number: 11-0020 Date: 08/29/85

Document Title : ADMINISTRATIVE ORDER directing that certain remedial activities be undertaken at the 10th Street Site.

Type: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original,

Author: Frances E. Phillips for Regional Administrator
USEPA Region 6

Recipient: Sullivan Scott/Elmer Cobb
Oklahoma City, Oklahoma

Total Pages: 12

Document Number: 11-0021 Date: 09/24/85

Document Title : Final Report: Off-site sampling at the 10th Street Site [08/85] [Includes Sampling Data]

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Thomas A. Walzer, FIT Chemical Engineer
Ecology & Environment, Inc.

Recipient: Keith Bradley, RPO Region VI
USEPA Region 6

Total Pages: 23

Document Number: 11-0022 Date: 10/29/85

Document Title : HRS Package: Includes sampling data for preliminary assessment with summaries.[Located in site file, USEPA Region 6, Dallas]

Type: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original,

Author: Reference as to location

Recipient:

Total Pages: 478

Document Number: 11-0023 Date: 10/30/85

Document Title : Sampling Data Results, Chain of Custody Records for Sept. 1985 [Available in ER Vol.4, USEPA Region 6, Dallas]

Type: Sampling/Analyses/Data
Document Qualifiers(s): Original/Duplicate of Original,

Author: Reference as to location

Recipient:

Total Pages: 0

Document Number: 11-0024 Date: 01/15/86

Document Title : A memo describing different areas and locations of hazardous wastes at the 10th Street Site, with a map.

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Staff
Sunbelt Environmental Management, Inc.

Recipient: Site File
USEPA Region 6

Total Pages: 2

Document Number: 11-0025 Date: 05/05/86

Document Title : ACTION MEMORANDUM - Six Month Time Exemption to Allow Continuation of Removal Activities at the 10th Street Site.

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Karen Solari, OSC
USEPA Region 6, Field Response Section

Recipient: Dick Whittington,P.E.,Reg. Administrator
USEPA Region 6

Total Pages: 2

Document Number: 11-0026 Date: 01/23/87

Document Title : "Salvage Yard Makes EPA List" A news article on the addition of the 10th Street Site to the NPL.

Type: Newspaper/Journal Article
Document Qualifiers(s): Original/Duplicate of Original,

Author: Wayne Singleterry
The Daily Oklahoman

Recipient: Site File
USEPA Region 6

Total Pages: 1

Document Number: 11-0027 Date: 09/24/87

Document Title : After Action Report for the 10th Street Removal Action.

Type: Memorandum
Document Qualifiers(s): Original/Duplicate of Original,

Author: Charles A. Gazda, Chief
USEPA Region 6, Emergency Response Branch

Recipient: Robert E. Hannesschlager, Chief
USEPA Region 6, Superfund Branch

Total Pages: 33

==

Document Number: 11-0028 - Date: 04/01/89

Document Title : Workplan; Site Sampling & Quality Assurance/Quality Control Plan; Site Safety plan for the 10th Street Superfund Site, Olahoma City, Oklahoma

Type: Miscellaneous
Document Qualifiers(s): Original/Duplicate of Original,

Author: Staff
USEPA Region 6, Hazardous Waste Mgmt Division

Recipient: Site file
USEPA Region 6

Total Pages: 119

Document Number: 11-0029 Date: 09/15/89

Document Title : Community Relations Plan

Type: Community Relations Plan
Document Qualifiers(s): Original/Duplicate of Original,

Author: Staff
USEPA Region 6, Hazardous Waste Division

Recipient: Site File
USEPA Region 6

Total Pages: 26

Document Number: 11-0030 Date: 09/28/89

Document Title : RI Sampling Data [Results currently in review and interpertation] (Contact RPM, USEPA Region 6)

Type: Sampling/Analyses/Data
Document Qualifiers(s): Original/Duplicate of Original,

Author: References as to location

Recipient:

Total Pages: 0

ADMINISTRATIVE RECORD INDEX

ADDENDUM

SITE NAME: TENTH STREET DUMP SITE

SITE NUMBER: OKD 980620967

INDEX DATE: 08/02/90

ADMINISTRATIVE RECORD INDEX

ADDENDUM

SITE NAME: TENTH STREET DUMP SITE
SITE NUMBER: OKD 980620967

DOCUMENT NUMBER: 31
DOCUMENT DATE: 05/31/89
NUMBER OF PAGES: 026
AUTHOR: Office fo Waste Programs Enforcement
COMPANY/AGENCY: U.S. EPA HQ
RECIPIENT: U.S. EPA Region 6 Site Files
DOCUMENT TYPE: Compendium and Users Manual
DOCUMENT TITLE: "Compendium of CERCLA Response Selection Guidance Documents - Users Manual"

DOCUMENT NUMBER: 32
DOCUMENT DATE: 03/31/90
NUMBER OF PAGES: 090
AUTHOR: EPA Staff
COMPANY/AGENCY: U.S. EPA Region 6
RECIPIENT: U.S. EPA Region 6 Site Files
DOCUMENT TYPE: Report
DOCUMENT TITLE: Remedial Investigation Report - Volume 1

DOCUMENT NUMBER: 33
DOCUMENT DATE: 03/31/90
NUMBER OF PAGES: 386
AUTHOR: EPA Staff
COMPANY/AGENCY: U.S. EPA Region 6
RECIPIENT: U.S. EPA Region 6 Site Files
DOCUMENT TYPE: Report
DOCUMENT TITLE: Remedial Investigation Report - Volume 2

DOCUMENT NUMBER: 34
DOCUMENT DATE: 05/31/90
NUMBER OF PAGES: 004
AUTHOR: EPA Staff
COMPANY/AGENCY: U.S. EPA Region 6
RECIPIENT: U.S. EPA Region 6 Site Files
DOCUMENT TYPE: Site Update
DOCUMENT TITLE: "Tenth Street Site Update"

ADMINISTRATIVE RECORD INDEX

ADDENDUM

SITE NAME:	TENTH STREET DUMP SITE
SITE NUMBER:	OKD 980620967

DOCUMENT NUMBER:	35
DOCUMENT DATE:	06/30/90
NUMBER OF PAGES:	068
AUTHOR:	EPA Staff
COMPANY/AGENCY:	U.S. EPA Region 6
RECIPIENT:	U.S. EPA Region 6 Site Files
DOCUMENT TYPE:	Assessment
DOCUMENT TITLE:	"Baseline Risk Assessment for the Tenth Street Dump Superfund Site, Oklahoma City, OK"

DOCUMENT NUMBER:	36
DOCUMENT DATE:	07/02/90
NUMBER OF PAGES:	017
AUTHOR:	EPA Staff
COMPANY/AGENCY:	U.S. EPA Region 6
RECIPIENT:	U.S. EPA Region 6 Site Files
DOCUMENT TYPE:	Plan
DOCUMENT TITLE:	"Proposed Plan - Tenth Street Superfund Site, Oklahoma City, OK"

DOCUMENT NUMBER:	37
DOCUMENT DATE:	07/31/90
NUMBER OF PAGES:	138
AUTHOR:	EPA Staff
COMPANY/AGENCY:	U.S. EPA Region 6
RECIPIENT:	U.S. EPA Region 6 Site Files
DOCUMENT TYPE:	Report
DOCUMENT TITLE:	Feasibility Study Report for Tenth Street Superfund Site - Oklahoma City, OK

Joan K. Leavitt, M.D.
Commissioner

OKLAHOMA STATE DEPARTMENT OF HEALTH
P.O. BOX 53551
1000 NE TENTH
OKLAHOMA CITY, OK 73152

September 6, 1990

Robert E. Layton Jr. (6A)
Regional Administrator
EPA Region VI
1445 Ross Ave.
Dallas, Texas 75202

Dear Mr. Layton:

I have reviewed the data gathered through the *Remedial Investigation* of the Tenth Street Superfund Site and the actions proposed in the *Feasibility Study (FS)*. I am concerned that the information contained therein does not justify the proposed remedial action as presented in the *Proposed Plan*.

The fact that PCBs are the only compounds detected at significant levels at the site is clearly stated in the Feasibility Study. Moreover, it is a given that due to the binding characteristics of the PCB molecules to soil particles, the likelihood of any migration of the contamination is extremely unlikely. This means that the PCBs do not currently pose a hazard to the surrounding community and that only through some mechanism of disturbance would the potential for exposure be realized.

The FS also states that to arrive at soil concentrations for target remediation goals for PCBs, an assumption is made that the most probable land use of this site would be industrial and therefore, the primary goal of remediation would be the protection of workers at an industrial facility. The lifetime risk posed by the site, assuming an industrial exposure scenario, is estimated in the FS as being 38 cancer incidents per 1,000,000 people (3.8E-5) if the average contaminant concentrations of 110 ppm are used. If the "worst case" scenario is postulated, 96 incidents per million people (9.6E-5) might be expected.

EPA guidance has established 1.0E-4 to 1.0E-6 as the acceptable range of risk for Superfund Remedial Actions. Both the "average" and "worst case" contaminant concentrations fall within this range, making clean up of this site for the most probable land use unnecessary and counter to national policy. The same public health protection could be achieved through the use of physical and legal land use restrictions. If the property was converted to industrial use the owner could be required to conduct any remedial actions necessary to protect the health of future workers.

The *Proposed Plan* for the Tenth Street Site recommends treating part of the PCB contaminated soils using the Potassium Polyethylene Glycol (KPEG) process. The KPEG, is a highly complex and intricate process that has a very limited testing and performance record at the scale of the proposed Tenth Street project. The limited scale tests that have been accomplished to date show that the process is based on sound chemical theory. But, my concern is that operation of a full size facility will prove realistically unfeasible and potentially dangerous due to the large volumes of hazardous chemicals required for the process. The risk associated with the operation of a KPEG facility should be quantified for comparison to the risks posed by the existing site. Without any comparison of relative risks or realistic operating experience for the KPEG process, I am concerned that the proposed remedial action is essentially an experiment with the public health of the people of Oklahoma.

If you have any questions or comments regarding this matter please call me at (405) 271-8056.

Sincerely yours,

Lawrence A. Gales RS.

Mark S. Coleman, Deputy Commissioner
for Environmental Health Services