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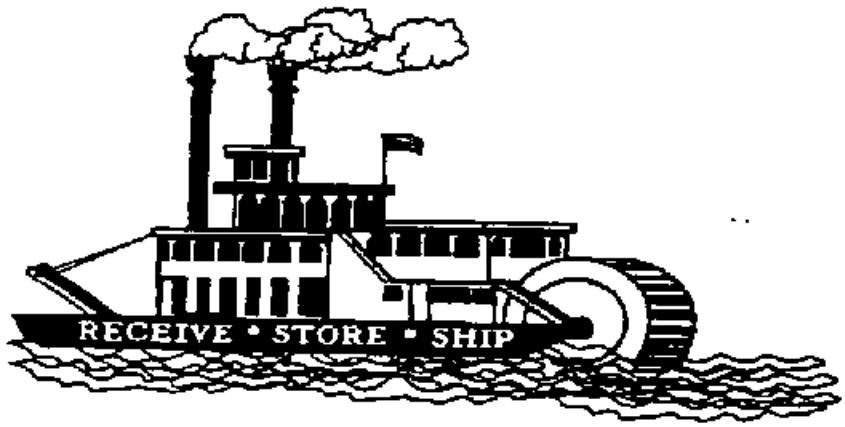
DEFENSE DEPOT MEMPHIS

BRAC SAMPLING PROGRAM REPORT



CH_2M Hill

May 1997

Executive Summary

BRAC Sampling Program
for
Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

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Executive Summary BRAC Sampling Program Defense Depot Memphis, Tennessee

The Base Realignment and Closure (BRAC) 95 Commission selected the Defense Depot Memphis, Tennessee (DDMT) for closure under the BRAC process. All 642 acres of this facility are considered BRAC property. As part of the preparation of the *Environmental Baseline Survey* (Woodward-Clyde, November 1996), the DDMT facility was split into 35 parcels based on the environmental condition of the property. All but 6 of the 35 parcels were sampled to better define the environmental condition of the property before transfer. Table ES-1 explains why soil sampling was not conducted at 6 of the BRAC parcels during the initial BRAC field sampling effort. Concrete wipe and air sampling will be completed during another sampling effort.

This report presents a summary of the BRAC sampling program conducted at DDMT. The attached Parcel letter reports are presented in a modular style so that the DDMT Parcels may be evaluated individually. The Parcel letter reports consist of text describing the site, sampling procedures, and data summary tables. The *Draft Sampling and Analyses Recommendations* (Woodward-Clyde, June 1996) were used as the basis for the BRAC sampling plan. Sampling was conducted for areas where data gaps exist and where sampling and analyses are required to verify the environmental condition of the property.

BRAC data were collected for surface soil, subsurface soil, and sediment. Samples were collected and sent to CH2M HILL Analytical Services in Montgomery, Alabama, in accordance with the procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995). Corps of Engineers' (COE) split samples were collected from approximately 10 percent of the samples collected at DDMT for a quality control check by the COE laboratory in Georgia. Results of the split samples will be reported in the final Remedial Investigation (RI) Report.

A relational, statistical database was used as the basis for creating data summary tables and for comparisons of BRAC data with screening level data. Screening level data are comparison criteria that were developed from applicable regulatory criteria, or from background values. The comparison criteria are used to "screen" sites to evaluate whether a potential release has occurred that exceeds an acceptable risk. Tables ES-2 presents the compounds that were detected in surface soils for all of the parcels and compares the detected compounds to five types of screening levels. The five types of screening levels include background values, soil ingestion risk-based concentrations (RBCs) in both a residential and industrial setting, soil screening levels for transfer from soil to groundwater, and terrestrial ecological values. Table ES-3 presents the compounds that were detected in subsurface soils for all of the parcels and compares the detected compounds to two types of screening levels. Subsurface soil screening levels consist of background values and soil screening levels for transfer from soil to groundwater.

Metals in both the surface soil and subsurface soil samples were detected at generally higher concentrations than background values. The maximum detected metal values in subsurface samples exceeded all available background values. Some of the maximum detected metal values in surface soil (aluminum, antimony, arsenic, beryllium, cadmium, chromium, iron, lead, and manganese) exceeded U.S. Environmental Protection Agency (EPA) risk-based criteria for residential areas. Only arsenic in the surface soil exceeded all five available surface soil screening levels. Beryllium and manganese in surface soil exceeded RBC residential criteria; however, their highest detected concentrations did not exceed the background values. Some of the detected metals in surface soil (arsenic, cadmium, chromium, lead, nickel, and selenium) exceeded both groundwater protection (GWP) and terrestrial ecological screening values. Some of the detected metals in the subsurface soil (arsenic, barium, chromium, lead, and nickel) exceeded both background values and GWP values.

Methlyene chloride and petroleum hydrocarbons were the only volatile organic compounds (VOCs) detected in surface soils that exceeded available screening levels. No VOC values exceeding available screening levels were detected in subsurface soil samples.

The highest detected pesticides/polychlorinated biphenyls (PCBs) in surface soil samples exceeded all available background values. Dieldrin also exceeded RBC industrial, RBC residential, and GWP screening values. Aroclor-1260, chlordane, 1,1,1-Dichloro-2-2-bis(4-chlorophenyl)ethylene (DDE), dichlorodiphenyltrichloroethane (DDT), and gamma-Chlordane also exceeded RBC residential criteria. The only pesticide/PCBs detected in subsurface soil samples were DDE and dieldrin. The detected subsurface soil dieldrin concentration did not exceed background values but did exceed the GWP value.

Although some of the highest detected concentrations of BRAC data exceeded screening levels, further evaluation is still needed to evaluate whether reported concentrations of those constituents are caused by DDMT operations, are naturally occurring, or are caused by ambient effects from the urban environment surrounding DDMT.

TABLE ES-1
DDMT/BRAC Parcel Locations Not Sampled
BRAC Sampling Program
Defense Depot Memphis, Tennessee
The following table presents the BRAC parcels and associated label locations that were not sampled during the October 1996 field effort.

Brac Parcel Number	Label Location Number	BRAC Parcel Description	Non-Sampling Explanation
7	7.2	Building 249	Parcel entailed only concrete wipe sampling.
12	12.2	Building 629	Parcel entailed only concrete wipe sampling.
19	19.1, 19.2, 19.3	Buildings 465, 467, 468, 469	Label locations 19.1 and 19.2 were not sampled because the area was completely paved. Label 19.6 entailed concrete wipe sampling.
26	26.2	Building 970	Parcel entailed only concrete wipe sampling.
27	27.2	Building 972	Parcel entailed only concrete wipe sampling.
30	30.4	Buildings 925 and P-949	Parcel entailed only concrete wipe sampling.

Table ES-2

Compounds Detected in Surface Soil Compared to Surface Soil Screening Levels for All Parcels

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
1	Dieldrin	0.59	0.53	.36	.04	.001	NA
2	Chlordane	1.2	0.029	4.4	.49	2	NA
2	DDE	2.3	0.16	17	1.9	0.5	NA
2	DDT	3.5	0.074	17	1.9	1	NA
2	Dieldrin	5.5	0.53	.36	.04	.001	NA
2	gamma-Chlordane	1.1	0.026	4.4	0.49	2	NA
3	Aluminum	17100	24000	100000	7800	NA	NA
3	Arsenic	101	22	3.8	.43	15	10
3	Barium	202	250	14000	550	32	500
3	Calcium	4260	5800	NA	NA	NA	NA
3	Chlordane	0.041 J	0.029	4.4	.49	2	NA
3	Chromium	39.3	27	1000	39	19	1
3	Cobalt	14.3	18	12000	470	NA	20
3	Copper	51.9	33	8200	310	NA	100
3	DDE	0.53	0.16	17	1.9	0.5	NA
3	DDT	0.14 J	0.074	17	1.9	1	NA
3	Dieldrin	10	0.53	.36	.04	.001	NA
3	gamma-Chlordane	0.023 J	0.026	4.4	0.49	2	NA
3	Iron	28400	37000	61000	2300	NA	NA
3	Lead	167	43	1000	200	1.5	50
3	Magnesium	3370	4600	NA	NA	NA	NA
3	Manganese	1070	1300	4700	180	NA	NA
3	Nickel	27	33	4100	160	21	30
3	Potassium	2770	2000	NA	NA	NA	NA
3	Vanadium	43.2	52	1400	55	NA	2
3	Zinc	170	130	61000	2300	42000	50
5	Chlordane	0.017 J	0.029	4.4	.49	2	NA
5	DDD	0.026 J	0.0067	24	2.7	0.7	NA

Table ES-2

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BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
5	DDE	0.13	0.16	17	1.9	0.5	NA
5	DDT	0.25	0.074	17	1.9	1	NA
5	Dieldrin	0.034 J	0.53	.36	.04	.001	NA
5	gamma-Chlordane	0.017 J	0.026	4.4	0.49	2	NA
6	Aroclor-1260	2.9 J	0.11	4.1	.16	NA	40
6	DDE	0.82	0.16	17	1.9	0.5	NA
6	DDT	0.83	0.074	17	1.9	1	NA
6	Dieldrin	1.4	0.53	.36	.04	.001	NA
8	DDE	0.098	0.16	17	1.9	0.5	NA
8	DDT	0.16	0.074	17	1.9	1	NA
8	Dieldrin	0.9	0.53	.36	.04	.001	NA
9	DDE	0.7	0.16	17	1.9	0.5	NA
9	DDT	0.37	0.074	17	1.9	1	NA
9	Dieldrin	5.6	0.53	.36	.04	.001	NA
10	DDE	1.4	0.16	17	1.9	0.5	NA
10	DDT	0.99	0.074	17	1.9	1	NA
10	Dieldrin	2.7	0.53	.36	.04	.001	NA
11	DDE	0.44	0.16	17	1.9	0.5	NA
11	DDT	0.26	0.074	17	1.9	1	NA
11	Dieldrin	4.5	0.53	.36	.04	.001	NA
13	Chlordane	0.026 J	0.029	4.4	.49	2	NA
13	DDE	0.12	0.16	17	1.9	0.5	NA
13	DDT	0.17	0.074	17	1.9	1	NA
13	Dieldrin	0.28	0.53	.36	.04	.001	NA
13	gamma-Chlordane	0.088	0.026	4.4	0.49	2	NA
14	Chlordane	0.033 J	0.029	4.4	.49	2	NA
14	DDE	0.39	0.16	17	1.9	0.5	NA
14	DDT	0.44	0.074	17	1.9	1	NA

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BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
14	Dieldrin	1.3	0.53	.36	.04	.001	NA
14	gamma-Chlordane	0.098 J	0.026	4.4	0.49	2	NA
15	Dieldrin	1.9	0.53	.36	.04	.001	NA
16	Chlordane	0.019 J	0.029	4.4	.49	2	NA
16	DDE	0.42	0.16	17	1.9	0.5	NA
16	DDT	0.41	0.074	17	1.9	1	NA
16	Dieldrin	1.3	0.53	.36	.04	.001	NA
16	gamma-Chlordane	0.02	0.026	4.4	0.49	2	NA
17	DDE	0.27 J	0.16	17	1.9	0.5	NA
17	DDT	0.33 J	0.074	17	1.9	1	NA
17	Dieldrin	3.3	0.53	.36	.04	.001	NA
18	DDE	0.0038 J	0.16	17	1.9	0.5	NA
18	DDT	0.012	0.074	17	1.9	1	NA
18	Dieldrin	0.028	0.53	.36	.04	.001	NA
20	Acenaphthene	3.1 J	NA	12000	470	200	NA
20	Aluminum	3910	24000	100000	7800	NA	NA
20	Anthracene	4.7 J	0.096	61000	2300	4300	NA
20	Arsenic	26.4	22	3.8	.43	15	10
20	Barium	43.9	250	14000	550	32	500
20	Benzo(a)anthracene	13	0.71	7.8	.88	.7	NA
20	Benzo(a)pyrene	12	0.96	.78	.088	4	NA
20	Benzo(b)fluoranthene	12	0.9	7.8	.88	4	NA
20	Benzo(g,h,i)perylene	9.1	0.82	6100	230	1400	NA
20	Benzo(k)fluoranthene	11	0.78	78	8.8	4	NA
20	Cadmium	12	1.4	100	3.9	6	3
20	Calcium	79600	5800	NA	NA	NA	NA
20	Carbazole	4 J	0.067	290	32	.5	NA
20	Chromium	29.6	27	1000	39	19	1

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Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
20	Chrysene	15	0.94	780	88	1	NA
20	Cobalt	6.7	18	12000	470	NA	20
20	Copper	38.3	33	8200	310	NA	100
20	Dibenz(a,h)anthracene	4 J	0.26	.78	.088	11	NA
20	Dibenzofuran	1.2 J	NA	820	31	12	NA
20	Dieldrin	1.1	0.53	.36	.04	.001	NA
20	Fluoranthene	33	1.6	8200	310	980	NA
20	Fluorene	2.2 J	NA	8200	310	160	NA
20	Indeno(1,2,3-cd)pyrene	9	0.7	7.8	.88	35	NA
20	Iron	12900	37000	61000	2300	NA	NA
20	Lead	217	43	1000	200	1.5	50
20	Magnesium	2320	4600	NA	NA	NA	NA
20	Manganese	87.4	1300	4700	180	NA	NA
20	Methylene chloride	0.002 J	NA	760	85	.01	NA
20	Naphthalene	1.4 J	NA	8200	310	30	NA
20	Nickel	8.3	33	4100	160	21	30
20	Phenanthrene	23	0.61	61000	2300	4300	NA
20	Pyrene	26	1.5	6100	230	1400	NA
20	Sodium	330	NA	NA	NA	NA	NA
20	Toluene	0.001 J	0.002	41000	1600	5	NA
20	Vanadium	14.4	52	1400	55	NA	2
20	Zinc	184	130	61000	2300	42000	50
21	Dieldrin	5.3	0.53	.36	.04	.001	NA
22	DDD	0.022 J	0.0067	24	2.7	0.7	NA
22	DDE	0.039	0.16	17	1.9	0.5	NA
22	DDT	0.19	0.074	17	1.9	1	NA
23	Aluminum	19700	24000	100000	7800	NA	NA
23	Barium	156	250	14000	550	32	500

Table ES-2

Compounds Detected in Surface Soil Compared to Surface Soil Screening Levels for All Parcels

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
23	bis(2-Ethylhexyl)phthalate	0.04 J	NA	410	46	11	NA
23	Calcium	**35600**	**5800**	NA	NA	NA	NA
23	Chromium	**29.5**	**27**	1000	39	**19**	**1**
23	Cobalt	14.7	18	12000	470	NA	20
23	Copper	20.6	33	8200	310	NA	100
23	DDE	0.02	0.16	17	1.9	0.5	NA
23	DDT	0.049	0.074	17	1.9	1	NA
23	Di-n-butylphthalate	0.26 J	NA	20000	780	120	NA
23	Dieldrin	**0.024**	0.53	.36	.04	**.001**	NA
23	Iron	**26100**	37000	61000	**2300**	NA	NA
23	Lead	**22.1**	43	1000	200	**1.5**	50
23	Magnesium	**4620**	**4600**	NA	NA	NA	NA
23	Manganese	**941**	1300	4700	**180**	NA	NA
23	Nickel	**27.6**	33	4100	160	**21**	30
23	Potassium	1390	2000	NA	NA	NA	NA
23	Selenium	**18.9**	**0.81**	1000	39	**3**	**1**
23	Vanadium	**50.3**	52	1400	55	NA	**2**
23	Zinc	**74.9**	130	61000	2300	42000	**50**
24	Aluminum	**10800**	24000	100000	**7800**	NA	NA
24	Anthracene	**0.44 J**	**0.096**	61000	2300	4300	NA
24	Arsenic	**84.2**	**22**	**3.8**	**.43**	**15**	**10**
24	Barium	**75**	250	14000	550	**32**	500
24	Benzo(a)anthracene	**1.2 J**	**0.71**	7.8	**.88**	**.7**	NA
24	Benzo(a)pyrene	**1 J**	**0.96**	**.78**	**.088**	4	NA
24	Benzo(b)fluoranthene	**0.89 J**	0.9	7.8	**.88**	4	NA
24	Benzo(g,h,i)perylene	0.65 J	0.82	6100	230	1400	NA
24	Benzo(k)fluoranthene	**1 J**	**0.78**	78	8.8	4	NA
24	bis(2-Ethylhexyl)phthalate	0.53 J	NA	410	46	11	NA

Table ES-2

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BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
24	Butylbenzylphthalate	0.2 J	NA	41000	1600	68	NA
24	Calcium	65000	5800	NA	NA	NA	NA
24	Chromium	13.4	27	1000	39	19	1
24	Chrysene	1.4 J	0.94	780	88	1	NA
24	Cobalt	2.2	18	12000	470	NA	20
24	Copper	12.8	33	8200	310	NA	100
24	DDT	0.011	0.074	17	1.9	1	NA
24	Di-n-butylphthalate	0.75 J	NA	20000	780	120	NA
24	Dibenz(a,h)anthracene	0.34 J	0.26	.78	.088	11	NA
24	Dieldrin	0.0027 J	0.53	.36	.04	.001	NA
24	Fluoranthene	2.2 J	1.6	8200	310	980	NA
24	Indeno(1,2,3-cd)pyrene	0.62 J	0.7	7.8	.88	35	NA
24	Iron	11100	37000	61000	2300	NA	NA
24	Lead	47.4	43	1000	200	1.5	50
24	Magnesium	5680	4600	NA	NA	NA	NA
24	Manganese	485	1300	4700	180	NA	NA
24	Nickel	10.6	33	4100	160	21	30
24	Pentachlorophenol	0.094 J	NA	48	5.3	.2	NA
24	Petroleum Hydrocarbons[6]	1570	NA	100	NA	NA	NA
24	Phenanthrene	1.7 J	0.61	61000	2300	4300	NA
24	Potassium	887	2000	NA	NA	NA	NA
24	Pyrene	2.3	1.5	6100	230	1400	NA
24	Vanadium	17.5	52	1400	55	NA	2
24	Zinc	64.2	130	61000	2300	42000	50
25	Acetone	0.004 J	NA	20000	780	8	NA
25	Aluminum	4180	24000	100000	7800	NA	NA
25	Arsenic	2.4	22	3.8	.43	15	10
25	Barium	33.7	250	14000	550	32	500

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BRAC Sampling Program

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Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
25	Benzo(a)anthracene	0.082 J	0.71	7.8	.88	.7	NA
25	Benzo(a)pyrene	0.088 J	0.96	.78	.088	4	NA
25	Benzo(b)fluoranthene	0.084 J	0.9	7.8	.88	4	NA
25	Benzo(g,h,i)perylene	0.048 J	0.82	6100	230	1400	NA
25	Benzo(k)fluoranthene	0.098 J	0.78	78	8.8	4	NA
25	Calcium	**31200**	**5800**	NA	NA	NA	NA
25	Chlordane	**0.071**	**0.029**	4.4	.49	2	NA
25	Chromium	**5.5**	27	1000	39	19	1
25	Chrysene	0.12 J	0.94	780	88	1	NA
25	Copper	3.3	33	8200	310	NA	100
25	Di-n-butylphthalate	0.075 J	NA	20000	780	120	NA
25	Fluoranthene	0.16 J	1.6	8200	310	980	NA
25	gamma-Chlordane	**0.092**	**0.026**	4.4	0.49	2	NA
25	Indeno(1,2,3-cd)pyrene	0.052 J	0.7	7.8	.88	35	NA
25	Iron	**5220**	37000	61000	**2300**	NA	NA
25	Lead	**2.8**	43	1000	200	1.5	50
25	Magnesium	1850	4600	NA	NA	NA	NA
25	Manganese	66.3	1300	4700	180	NA	NA
25	Methylene chloride	0.001 J	NA	760	85	.01	NA
25	Phenanthrene	0.092 J	0.61	61000	2300	4300	NA
25	Pyrene	0.18 J	1.5	6100	230	1400	NA
25	Vanadium	**8.9**	52	1400	55	NA	2
25	Zinc	23.4	130	61000	2300	42000	50
28	Acetone	0.009 J	NA	20000	780	8	NA
28	Aluminum	**24700**	**24000**	100000	**7800**	NA	NA
28	Arsenic	**17.6**	22	**3.8**	**.43**	**15**	**10**
28	Barium	**246**	250	14000	550	**32**	500
28	Benzo(a)anthracene	0.056 J	0.71	7.8	.88	.7	NA

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Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
28	Benzo(a)pyrene	0.065 J	0.96	.78	.088	4	NA
28	Benzo(b)fluoranthene	0.083 J	0.9	7.8	.88	4	NA
28	Benzo(g,h,i)perylene	0.072 J	0.82	6100	230	1400	NA
28	Benzo(k)fluoranthene	0.077 J	0.78	78	8.8	4	NA
28	Beryllium	**0.95**	**1.1**	1.3	.15	180	10
28	bis(2-Ethylhexyl)phthalate	0.12 J	NA	410	46	**11**	NA
28	Cadmium	0.7	**1.4**	100	3.9	6	3
28	Calcium	**104000**	**5800**	NA	NA	NA	NA
28	Chromium	**26.1**	27	1000	39	**19**	**1**
28	Chrysene	0.088 J	0.94	780	88	**1**	NA
28	Cobalt	13.7	18	12000	470	NA	20
28	Copper	**34.5**	**33**	8200	310	NA	100
28	DDD	**0.046**	**0.0067**	24	2.7	0.7	NA
28	DDE	0.044	0.16	17	1.9	0.5	NA
28	DDT	**0.22**	**0.074**	17	1.9	**1**	NA
28	Di-n-butylphthalate	0.28 J	NA	20000	780	120	NA
28	Fluoranthene	0.14 J	1.6	8200	310	980	NA
28	Indeno(1,2,3-cd)pyrene	0.068 J	0.7	7.8	.88	35	NA
28	Iron	**38400**	**37000**	61000	**2300**	NA	NA
28	Lead	**58.8**	**43**	1000	200	**1.5**	**50**
28	Magnesium	**7200**	**4600**	NA	NA	NA	NA
28	Manganese	**1100**	1300	4700	**180**	NA	NA
28	Mercury	**2.13**	**0.43**	61	2.3	3	**.3**
28	Methylene chloride	0.005 J	NA	760	85	.01	NA
28	Nickel	**37.4**	**33**	4100	160	**21**	**30**
28	Phenanthrene	0.07 J	0.61	61000	2300	4300	NA
28	Potassium	**2650**	**2000**	NA	NA	NA	NA
28	Pyrene	0.13 J	1.5	6100	230	1400	NA

Table ES-2

Compounds Detected In Surface Soil Compared to Surface Soil Screening Levels for All Parcels

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
28	Toluene	0.001 J	0.002	41000	1600	5	NA
28	Vanadium	49.8	52	1400	55	NA	2
28	Zinc	185	130	61000	2300	42000	50
29	Acetone	0.019	NA	20000	780	8	NA
29	Aluminum	9240	24000	100000	7800	NA	NA
29	Arsenic	12.8	22	3.8	.43	15	10
29	Barium	142	250	14000	550	32	500
29	Benzo(a)anthracene	0.037 J	0.71	7.8	.88	.7	NA
29	Benzo(a)pyrene	0.057 J	0.96	.78	.088	4	NA
29	Benzo(b)fluoranthene	0.09 J	0.9	7.8	.88	4	NA
29	Benzo(g,h,i)perylene	0.051 J	0.82	6100	230	1400	NA
29	Benzo(k)fluoranthene	0.072 J	0.78	78	8.8	4	NA
29	bis(2-Ethylhexyl)phthalate	0.083 J	NA	410	46	11	NA
29	Butylbenzylphthalate	0.7	NA	41000	1600	68	NA
29	Calcium	6590	5800	NA	NA	NA	NA
29	Chlordane	0.011	0.029	4.4	.49	2	NA
29	Chloromethane	0.001 J	NA	440	49	.0066	NA
29	Chromium	54.7	27	1000	39	19	1
29	Chrysene	0.071 J	0.94	780	88	1	NA
29	Cobalt	8.7	18	12000	470	NA	20
29	Copper	25.3	33	8200	310	NA	100
29	DDT	0.043	0.074	17	1.9	1	NA
29	Di-n-butylphthalate	0.13 J	NA	20000	780	120	NA
29	Di-n-octylphthalate	0.12 J	NA	4100	160	1000000	NA
29	Dieldrin	0.13	0.53	.36	.04	.001	NA
29	Fluoranthene	0.11 J	1.6	8200	310	980	NA
29	gamma-Chlordane	0.017	0.026	4.4	0.49	2	NA
29	Iron	20800	37000	61000	2300	NA	NA

Table ES-2

Compounds Detected In Surface Soil Compared to Surface Soil Screening Levels for All Parcels

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
29	Lead	223	43	1000	200	1.5	50
29	Magnesium	2110	4600	NA	NA	NA	NA
29	Manganese	601	1300	4700	180	NA	NA
29	Methylene chloride	0.032	NA	760	85	.01	NA
29	Nickel	15.5	33	4100	160	21	30
29	Pentachlorophenol	0.096 J	NA	48	5.3	.2	NA
29	Phenanthrene	0.042 J	0.61	61000	2300	4300	NA
29	Potassium	911	2000	NA	NA	NA	NA
29	Pyrene	0.11 J	1.5	6100	230	1400	NA
29	Selenium	12.5	0.81	1000	39	3	1
29	Vanadium	27.4	52	1400	55	NA	2
29	Zinc	152	130	61000	2300	42000	50
31	Acetone	0.007 J	NA	20000	780	8	NA
31	Aluminum	7150	24000	100000	7800	NA	NA
31	Barium	32.5	250	14000	550	32	500
31	bis(2-Ethylhexyl)phthalate	0.09 J	NA	410	46	11	NA
31	Calcium	32400	5800	NA	NA	NA	NA
31	Chromium	15.4	27	1000	39	19	1
31	Cobalt	2.2	18	12000	470	NA	20
31	Copper	4.8	33	8200	310	NA	100
31	DDT	0.0092	0.074	17	1.9	1	NA
31	Iron	12300	37000	61000	2300	NA	NA
31	Lead	22.4	43	1000	200	1.5	50
31	Magnesium	984	4600	NA	NA	NA	NA
31	Manganese	106	1300	4700	180	NA	NA
31	Methylene chloride	0.002 J	NA	760	85	.01	NA
31	Nickel	7.3	33	4100	160	21	30
31	Potassium	293	2000	NA	NA	NA	NA

Table ES-2

Compounds Detected in Surface Soil Compared to Surface Soil Screening Levels for All Parcels

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
31	Toluene	0.002 J	0.002	41000	1600	5	NA
31	Vanadium	**19.8**	52	1400	55	NA	**2**
31	Zinc	25.2	130	61000	2300	42000	50
32	Acetone	0.005 J	NA	20000	780	8	NA
32	Aluminum	7720	24000	100000	7800	NA	NA
32	Arsenic	**14.8**	22	**3.8**	**.43**	15	**10**
32	Barium	22.2	250	14000	550	32	500
32	bis(2-Ethylhexyl)phthalate	0.048 J	NA	410	46	11	NA
32	Calcium	**22400**	**5800**	NA	NA	NA	NA
32	Chromium	**22.7**	27	1000	39	**19**	1
32	Cobalt	2.2	18	12000	470	NA	20
32	Copper	7.5	33	8200	310	NA	100
32	DDT	0.044	0.074	17	1.9	1	NA
32	Iron	**16000**	37000	61000	**2300**	NA	NA
32	Lead	**13.5**	43	1000	**200**	**1.5**	50
32	Magnesium	719	4600	NA	NA	NA	NA
32	Manganese	93.7	1300	4700	180	NA	NA
32	Methylene chloride	0.007 J	NA	760	85	.01	NA
32	Nickel	15.3	33	4100	160	21	30
32	Potassium	246	2000	NA	NA	NA	NA
32	Vanadium	**26.5**	52	1400	55	NA	2
32	Zinc	16.5	130	61000	2300	42000	50
33	Acetone	0.006 J	NA	20000	780	8	NA
33	Aluminum	**22800**	24000	100000	**7800**	NA	NA
33	Anthracene	0.057 J	0.096	61000	2300	4300	NA
33	Antimony	**9.6**	**7**	82	**3.1**	NA	**5**
33	Arsenic	**63.1**	**22**	**3.8**	**.43**	**15**	**10**
33	Barium	**258**	**250**	14000	550	**32**	500

Table ES-2

Compounds Detected In Surface Soil Compared to Surface Soil Screening Levels for All Parcels

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
33	Benzo(a)anthracene	1.2 J	0.71	7.8	.88	.7	NA
33	Benzo(a)pyrene	1.4 J	0.96	.78	.088	4	NA
33	Benzo(b)fluoranthene	1.5 J	0.9	7.8	.88	4	NA
33	Benzo(k)fluoranthene	1.4 J	0.78	78	8.8	4	NA
33	bis(2-Ethylhexyl)phthalate	0.47 J	NA	410	46	11	NA
33	Calcium	38200	5800	NA	NA	NA	NA
33	Carbazole	0.21 J	0.067	290	32	.5	NA
33	Chromium	41.5	27	1000	39	19	1
33	Chrysene	1.7 J	0.94	780	88	1	NA
33	Cobalt	14.8	18	12000	470	NA	20
33	Copper	38.5	33	8200	310	NA	100
33	DDE	0.012	0.16	17	1.9	0.5	NA
33	DDT	0.045	0.074	17	1.9	1	NA
33	Di-n-butylphthalate	0.26 J	NA	20000	780	120	NA
33	Fluoranthene	2.4	1.6	8200	310	980	NA
33	Iron	32600	37000	61000	2300	NA	NA
33	Lead	145	43	1000	200	1.5	50
33	Magnesium	3940	4600	NA	NA	NA	NA
33	Manganese	948	1300	4700	180	NA	NA
33	Methylene chloride	0.008 J	NA	760	85	.01	NA
33	Nickel	30.5	33	4100	160	21	30
33	Phenanthrene	1.4 J	0.61	61000	2300	4300	NA
33	Potassium	3000	2000	NA	NA	NA	NA
33	Pyrene	2.3	1.5	6100	230	1400	NA
33	Selenium	22.4	0.81	1000	39	3	1
33	Vanadium	51.7	52	1400	55	NA	2
33	Zinc	295	130	61000	2300	42000	50
34	Chlordane	0.14	0.029	4.4	.49	2	NA

Table ES-2

Compounds Detected In Surface Soil Compared to Surface Soil Screening Levels for All Parcels

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
34	gamma-Chlordane	**0.15**	**0.026**	4.4	0.49	2	NA
35	Aluminum	**13600**	24000	100000	**7800**	NA	NA
35	Arsenic	**71.6**	**22**	**3.8**	**.43**	**15**	**10**
35	Barium	**479**	**250**	14000	550	**32**	500
35	Benzo(a)anthracene	0.039 J	0.71	7.8	.88	.7	NA
35	Benzo(a)pyrene	0.039 J	0.96	.78	.088	4	NA
35	Benzo(b)fluoranthene	0.045 J	0.9	7.8	.88	4	NA
35	Benzo(g,h,i)perylene	0.037 J	0.82	6100	230	1400	NA
35	Benzo(k)fluoranthene	0.043 J	0.78	78	8.8	4	NA
35	bis(2-Ethylhexyl)phthalate	0.092 J	NA	410	46	11	NA
35	Cadmium	4.9	1.4	100	3.9	6	3
35	Calcium	**60200**	**5800**	NA	NA	NA	NA
35	Chromium	**122**	**27**	1000	**39**	**19**	**1**
35	Chrysene	0.046 J	0.94	780	88	1	NA
35	Cobalt	**5.6**	18	12000	470	NA	20
35	Copper	**95.2**	**33**	8200	310	NA	100
35	DDE	0.066	0.16	17	1.9	**0.5**	NA
35	DDT	**0.15**	**0.074**	17	1.9	1	NA
35	Di-n-butylphthalate	0.25 J	NA	20000	780	120	NA
35	Dieldrin	**0.086**	0.53	.36	**.04**	**.001**	NA
35	Fluoranthene	0.076 J	1.6	8200	310	980	NA
35	Iron	**24500**	37000	61000	**2300**	NA	NA
35	Lead	**744**	**43**	1000	**200**	**1.5**	**50**
35	Magnesium	3910	4600	NA	NA	NA	NA
35	Manganese	**534**	1300	4700	**180**	NA	NA
35	Mercury	0.28	0.43	61	2.3	3	.3
35	Nickel	**21.3**	33	4100	160	**21**	30
35	Petroleum Hydrocarbons[6]	**274**	NA	**100**	NA	NA	NA

Table ES-2

Compounds Detected in Surface Soil Compared to Surface Soil Screening Levels for All Parcels

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[1]	Detected Values (mg/kg)	Background Values[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial Ecological[5] (mg/kg)
				Industrial	Residential		
35	Phenanthrene	0.053 J	0.61	61000	2300	4300	NA
35	Potassium	1090	2000	NA	NA	NA	NA
35	Pyrene	0.076 J	1.5	6100	230	1400	NA
35	Sodium	399	NA	NA	NA	NA	NA
35	Vanadium	**27.1**	52	1400	55	NA	2
35	Zinc	**463**	130	61000	2300	42000	50

Notes:

1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the Draft Background Sampling Program Technical Memorandum, CH2M HILL. September 1996.
3. Risk Based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R. L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R. L. Smith, April 30, 1996.
5. Terrestrial Ecological values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.
6. For petroleum hydrocarbon comparisons, the most conservative value of 100 ppm, from *Soil Clean-Up Levels for Petroleum Contaminated Sites* (provided by TDEC), was used.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.

NA - Indicates screening level values are not available for comparison.

J - Indicates estimated value above the method detection limit but below the reporting limit.

Table ES-3

Compounds Detected in Subsurface Soil Compared to Subsurface Soil Screening Levels for all Parcels[1]
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parcel	Parameter[2]	Detected Values (mg/kg)	Background Values[3] (mg/kg)	Groundwater Protection[4] (mg/kg)
3	DDE	**0.0057 J**	**0.0015**	0.5
3	Dieldrin	**0.047**	0.37	**.001**
20	Aluminum	**22100**	**22000**	NA
20	Arsenic	**20.6**	**17**	**15**
20	Barium	**175**	300	32
20	Beryllium	**1.5**	**1.2**	180
20	bis(2-Ethylhexyl)phthalate	0.041 J	NA	**11**
20	Calcium	**2750**	**2400**	NA
20	Chromium	**96.6**	**26**	**19**
20	Chrysene	0.04 J	NA	**1**
20	Cobalt	**34**	**20**	NA
20	Copper	21.3	33	NA
20	Di-n-butylphthalate	0.054 J	NA	120
20	Fluoranthene	**0.1 J**	**0.045**	980
20	Iron	**49500**	**38000**	NA
20	Lead	**30.5**	**24**	**1.5**
20	Magnesium	3760	4900	NA
20	Manganese	**4520**	**1500**	NA
20	Methylene chloride	0.003 J	NA	.01
20	Nickel	**24.6**	37	**21**
20	Phenanthrene	0.069 J	NA	4300
20	Potassium	**1810**	**1800**	NA
20	Pyrene	**0.081 J**	**0.042**	1400
20	Vanadium	**74.9**	**51**	NA
20	Zinc	67	**110**	42000
23	Aluminum	**39000**	**22000**	NA
23	Arsenic	14.4	17	15
23	Barium	**182**	300	**32**
23	Benzo(a)anthracene	0.068 J	NA	.7
23	Benzo(a)pyrene	0.08 J	NA	4
23	Benzo(b)fluoranthene	0.088 J	NA	4
23	Benzo(g,h,i)perylene	0.1 J	NA	1400
23	Benzo(k)fluoranthene	0.081 J	NA	4
23	Beryllium	**1.7**	**1.2**	180
23	Calcium	**3890**	**2400**	NA
23	Chromium	**35.1**	**26**	**19**
23	Chrysene	0.093 J	NA	1
23	Cobalt	17.4	20	NA
23	Copper	**40.2**	**33**	NA
23	Indeno(1,2,3-cd)pyrene	0.09 J	NA	35

Table ES-3

Compounds Detected in Subsurface Soil Compared to Subsurface Soil Screening Levels for all Parcels[1]
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parcel	Parameter[2]	Detected Values (mg/kg)	Background Values[3] (mg/kg)	Groundwater Protection[4] (mg/kg)
23	Iron	**46700**	**38000**	NA
23	Lead	**24.3**	**24**	1.5
23	Magnesium	4600	4900	NA
23	Manganese	1000	1500	NA
23	Nickel	34.2	37	**21**
23	Petroleum Hydrocarbons[5]	3.2	NA	NA
23	Potassium	**2530**	**1800**	NA
23	Vanadium	**69.3**	**51**	NA
23	Zinc	100	110	42000
24	Aluminum	24900	22000	NA
24	Arsenic	**22.1**	**17**	**15**
24	Barium	**271**	300	**32**
24	Benzo(a)anthracene	0.074 J	NA	.7
24	Benzo(a)pyrene	0.071 J	NA	4
24	Benzo(b)fluoranthene	0.082 J	NA	4
24	Benzo(g,h,i)perylene	0.044 J	NA	1400
24	Benzo(k)fluoranthene	0.039 J	NA	4
24	Beryllium	**1**	1.2	180
24	bis(2-Ethylhexyl)phthalate	**180**	NA	**11**
24	Calcium	**3350**	**2400**	NA
24	Chromium	**24.2**	26	**19**
24	Chrysene	0.076 J	NA	**1**
24	Cobalt	16	20	NA
24	Copper	**33.9**	**33**	NA
24	Di-n-butylphthalate	0.68	NA	120
24	Fluoranthene	**0.1 J**	**0.045**	980
24	Iron	**39800**	**38000**	NA
24	Lead	**27.6**	**24**	**1.5**
24	Magnesium	**168000**	**4900**	NA
24	Manganese	**1670**	**1500**	NA
24	N-Nitrosodiphenylamine (1)	0.14 J	NA	.2
24	Nickel	**38.2**	**37**	**21**
24	Petroleum Hydrocarbons[5]	19.8	NA	NA
24	Phenanthrene	0.049 J	NA	4300
24	Potassium	**7430**	**1800**	NA
24	Pyrene	**0.09 J**	**0.042**	1400
24	Selenium	**2.7**	**0.64**	3
24	Sodium	526	NA	NA
24	Vanadium	**51.1**	**51**	NA
24	Zinc	**120**	**110**	42000

Table ES-3

Compounds Detected In Subsurface Soil Compared to Subsurface Soil Screening Levels for all Parcels[1]

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[2]	Detected Values (mg/kg)	Background Values[3] (mg/kg)	Groundwater Protection[4] (mg/kg)
25	2-Hexanone	0.003 J	NA	NA
25	Aluminum	**29400**	**22000**	NA
25	Arsenic	**21.3**	**17**	**15**
25	Barium	**301**	**300**	**32**
25	Benzo(a)anthracene	0.044 J	NA	.7
25	Beryllium	1.1	1.2	180
25	bis(2-Ethylhexyl)phthalate	0.52	NA	11
25	Calcium	**3580**	**2400**	NA
25	Chromium	**25.8**	**26**	**19**
25	Chrysene	0.053 J	NA	1
25	Cobalt	**17.1**	20	NA
25	Copper	**36.3**	**33**	NA
25	Di-n-butylphthalate	0.34 J	NA	120
25	Fluoranthene	**0.092 J**	**0.045**	980
25	Iron	**41700**	**38000**	NA
25	Lead	**31.6**	**24**	**1.5**
25	Magnesium	**5180**	**4900**	NA
25	Manganese	**2330**	**1500**	NA
25	Methylene chloride	0.002 J	NA	.01
25	Nickel	**41.1**	**37**	**21**
25	Phenanthrene	0.056 J	NA	4300
25	Potassium	**4210**	**1800**	NA
25	Pyrene	**0.083 J**	**0.042**	1400
25	Sodium	366	NA	NA
25	Vanadium	**54**	**51**	NA
25	Zinc	**122**	**110**	42000
28	Aluminum	**25000**	**22000**	NA
28	Arsenic	**22.9**	**17**	**15**
28	Barium	**352**	**300**	**32**
28	bis(2-Ethylhexyl)phthalate	0.041 J	NA	11
28	Calcium	**21700**	**2400**	NA
28	Chromium	**27.1**	**26**	**19**
28	Cobalt	16.8	20	NA
28	Copper	**41.1**	**33**	NA
28	Di-n-butylphthalate	0.058 J	NA	120
28	Iron	**46900**	**38000**	NA
28	Lead	**25.7**	**24**	**1.5**
28	Magnesium	**15500**	**4900**	NA
28	Manganese	1230	1500	NA
28	Methylene chloride	0.004 J	NA	.01

Table ES-3

Compounds Detected in Subsurface Soil Compared to Subsurface Soil Screening Levels for all Parcels[1]

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[2]	Detected Values (mg/kg)	Background Values[3] (mg/kg)	Groundwater Protection[4] (mg/kg)
28	Nickel	**44.8**	**37**	**21**
28	Potassium	**2390**	**1800**	NA
28	Sodium	353	NA	NA
28	Vanadium	**57.6**	**51**	NA
28	Zinc	**123**	**110**	42000
29	Aluminum	**22200**	**22000**	NA
29	Arsenic	**19.1**	**17**	**15**
29	Barium	**258**	300	**32**
29	Beryllium	0.98	1.2	**180**
29	bis(2-Ethylhexyl)phthalate	0.085 J	NA	**11**
29	Bromomethane	0.002 J	NA	**.1**
29	Calcium	**3430**	**2400**	NA
29	Chloromethane	0.002 J	NA	.0066
29	Chromium	**22.8**	26	**19**
29	Cobalt	16.4	20	NA
29	Copper	32.9	33	NA
29	Di-n-butylphthalate	0.062 J	NA	120
29	Iron	**38700**	**38000**	NA
29	Lead	**21.8**	24	**1.5**
29	Magnesium	4660	4900	NA
29	Manganese	1150	1500	NA
29	Methylene chloride	0.002 J	NA	.01
29	Nickel	37	37	**21**
29	Potassium	**2260**	**1800**	NA
29	Vanadium	48.3	51	NA
29	Zinc	109	110	42000
31	Aluminum	**28200**	**22000**	NA
31	Arsenic	**22.5**	**17**	**15**
31	Barium	**286**	300	**32**
31	bis(2-Ethylhexyl)phthalate	0.076 J	NA	**11**
31	Calcium	**2850**	**2400**	NA
31	Chromium	**25.5**	26	**19**
31	Cobalt	**21.3**	20	NA
31	Copper	**41.2**	**33**	NA
31	Di-n-butylphthalate	0.043 J	NA	120
31	Iron	**44300**	**38000**	NA
31	Lead	**29.6**	**24**	**1.5**
31	Magnesium	**5420**	**4900**	NA
31	Manganese	**1590**	**1500**	NA
31	Methylene chloride	0.003 J	NA	.01

Table ES-3

Compounds Detected In Subsurface Soil Compared to Subsurface Soil Screening Levels for all Parcels[1]

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[2]	Detected Values (mg/kg)	Background Values[3] (mg/kg)	Groundwater Protection[4] (mg/kg)
31	Nickel	**38.6**	**37**	**21**
31	Potassium	**2350**	**1800**	NA
31	Sodium	538	NA	NA
31	Vanadium	**57.1**	**51**	NA
31	Zinc	**136**	**110**	42000
32	Aluminum	20300	22000	NA
32	Arsenic	**17.1**	**17**	**15**
32	Barium	**278**	300	**32**
32	bis(2-Ethylhexyl)phthalate	0.2 J	NA	11
32	Butylbenzylphthalate	0.43	NA	68
32	Calcium	**3760**	**2400**	NA
32	Chromium	**20.4**	26	**19**
32	Cobalt	14.4	20	NA
32	Copper	32.4	33	NA
32	Di-n-butylphthalate	0.09 J	NA	120
32	Iron	35100	38000	NA
32	Lead	**20.8**	24	**1.5**
32	Magnesium	4490	4900	NA
32	Manganese	1100	1500	NA
32	Methylene chloride	0.004 J	NA	.01
32	Nickel	**35.6**	37	**21**
32	Potassium	**2440**	**1800**	NA
32	Vanadium	44.1	51	NA
32	Zinc	104	110	42000
33	2-Butanone	0.011 J	NA	NA
33	Acetone	0.048	NA	8
33	Aluminum	**36300**	**22000**	NA
33	Arsenic	**25.3**	**17**	**15**
33	Barium	**313**	**300**	**32**
33	Beryllium	1.1	1.2	180
33	bis(2-Ethylhexyl)phthalate	0.18 J	NA	11
33	Calcium	**3830**	**2400**	NA
33	Chloromethane	0.001 J	NA	.0066
33	Chromium	**32.4**	**26**	**19**
33	Cobalt	**27.3**	**20**	NA
33	Copper	**41.7**	**33**	NA
33	Di-n-butylphthalate	0.3 J	NA	120
33	Dimethylphthalate	0.18 J	NA	1200
33	Iron	**46500**	**38000**	NA
33	Lead	**43.6**	**24**	**1.5**

Table ES-3

Compounds Detected in Subsurface Soil Compared to Subsurface Soil Screening Levels for all Parcels[1]

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parcel	Parameter[2]	Detected Values (mg/kg)	Background Values[3] (mg/kg)	Groundwater Protection[4] (mg/kg)
33	Magnesium	**5670**	**4900**	NA
33	Manganese	**2160**	**1500**	NA
33	Methylene chloride	0.003 J	NA	.01
33	Nickel	**45**	**37**	**21**
33	Potassium	**5120**	**1800**	NA
33	Sodium	250	NA	NA
33	Vanadium	**74.1**	**51**	NA
33	Zinc	**189**	**110**	42000
35	Aluminum	**38100**	**22000**	NA
35	Arsenic	**17.5**	**17**	**15**
35	Barium	**168**	300	**32**
35	Beryllium	**1.5**	**1.2**	160
35	Calcium	**3060**	**2400**	NA
35	Chromium	**54.5**	**26**	**19**
35	Cobalt	13.6	20	NA
35	Copper	28.6	33	NA
35	Iron	**43400**	**38000**	NA
35	Lead	**23.8**	24	**1.5**
35	Magnesium	3880	4900	NA
35	Manganese	959	1500	NA
35	Methylene chloride	0.004 J	NA	.01
35	Nickel	**29.9**	37	**21**
35	Potassium	**2390**	**1800**	NA
35	Vanadium	**63.8**	**51**	NA
35	Zinc	73.2	110	42000

Notes:

1. Only parcels with subsurface soil samples from soil borings are presented.
2. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
3. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R. L. Smith, April 30, 1996.
5. For petroleum hydrocarbon comparisons, the most conservative value of 100 ppm, from *Soil Clean-Up Levels for Petroleum Contaminated Sites* (provided by TDEC), was used.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.

NA - indicates screening level values are not available for comparison.

J - indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDE	1,1,1-Dichloro-2-2-bis(4-chlorophenyl)ethylene
DDMT	Defense Depot Memphis, Tennessee
DDT	Dichlorodiphenyltrichloroethane
EPA	Environmental Protection Agency
GWP	Groundwater protection
mg/kg	Milligrams per kilogram
PCB	Polychlorinated biphenyl
RBC	Risk-based concentrations
RI	Remedial Investigation
TDEC	Tennessee Department of Environment and Conservation
VOC	Volatile organic compound

Parcel 1 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

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Parcel 1 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Number	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
1	144	1.8	32,8	3	N/A	N/A

Site Description

Parcel 1 is a 5,449 ft^2 parcel in the east central part of the Main Installation, in OU-3, as shown on Drawing 1. Parcel 1 consists of the administration building (Building 144) and the parking lots located north and south of Building 144. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), the southern parking lot in this parcel was the location of former housing units. These housing units were demolished.

Soil sampling was conducted at Label 1.8. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. Label 1.8 is associated with the southern parking lot within this parcel. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

In addition, this parcel is associated with two previously reported petroleum, oil, and lubricant spills. A 4-gallon motor oil spill was reported on March 22, 1995, at the Gate 1 parking lot. In addition, a minor diesel spill was reported on October 28, 1993, in the street at Gate 1 (Defense Logistics Agency, DDMT 1995 Spill Response Checklist, 1993 Spill Response Summary as cited in Woodward-Clyde, November 1996). The precise locations of the spills are unknown. Application of absorbent was sufficient to contain the spills, and no further remedial action was deemed necessary. Therefore, the current sampling activities are not in response to these remediated spills.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 1.8. Sample A(1.8) was located towards the southwestern corner of the southern parking lot and Sample B(1.8) was located toward the northwestern corner of the southern parking lot (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Both samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The two samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedures

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 1 which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Table 1

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 1
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Dieldrin	A(1.8)	0 to .5	**0.31**	0.53	**.04**	.36	**.001**	NA
	B(1.8)	0 to .5	**0.59**	**0.53**	**.04**	**.36**	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceed a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 3 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

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Parcel 3 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Facility Number	Labels	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
3	Golf Course Area	3.5, 3.10	31,6	3	N/A	N/A

Site Description

Parcel 3 is a 15,022 ft^2 parcel in the southeast corner of the Main Installation in OU-3, as shown on Drawing 1. Parcel 3 consists of the golf course, Lake Danielson, the golf course pond, and Buildings 188, 189, 192, 193, 194, 195, 196, 197, and 198.

Soil sampling was conducted at Labels 3.5 and 3.10. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. Label 3.5 includes the golf course area. Pesticide application has been periodically performed to provide routine golf course maintenance. Label 3.10 is associated with the location of a former pistol range. A 1947 installation map shows a pistol range directly behind the current location of Building 271, near the 9th hole of the golf course (Chemical Systems Laboratory 1981; Office of Post Engineer, DDMT 1947 as cited in Woodward-Clyde, November 1996). For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

The descriptions below present the labels sampled within this parcel. All samples received at CH2M HILL's Analytical Services in Montgomery, Alabama were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Label 3.5 - Golf Course Area

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, six samples were collected for Label 3.5. Sample A(3.5) was located north of the rip rap surrounding the golf course pond. Sample B(3.5) was located west of the drainage ditch and the 9th green. Sample C(3.5) was located west of 1st Street. Sample D(3.5) was located east of the 8th hole fairway. Sample E(3.5) was located at the northeastern corner of Lake Danielson. Sample F(3.5) was located in the southeastern corner where two drainage ditches meet (See Drawing 1, BRAC Soil Sample Locations).

A stainless steel trowel was used to remove the top layer of sod and collect the soil sample directly into the sample jars. All six samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The six samples were sent to CH2M HILL's laboratory for pesticides and PCBs analyses.

Label 3.10 - Former Pistol Range

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 3.10. Sample A(3.10) was located southwest of Building 271 and north of the 9th green.

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless steel trowel was used to collect the soil sample directly into the sample jars. Sample A(3.10) was collected from beneath the grass to less than 6 inches bgs.

The sample A(3.10) was sent to CH2M HILL's laboratory for pesticides, PCBs, and TAL metals analyses.

Subsurface Soil Sampling and Analyses Procedure

Subsurface soil samples were collected using a 2-foot, stainless-steel, split-spoon sampler. Samples were collected from intervals of zero to 4 ft, 4 to 7 ft, and 7 to 10 ft. Soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Soil Boring SB-1, is at the same location where surface soil sample B(3.5) was collected. Soil Boring SB-2, is at the same location where surface soil sample D(3.5) was collected.

Three samples were collected from each of the two soil borings (SB-1 and SB-2). The six samples were sent to CH2M HILL's laboratory for pesticides and PCBs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 3-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 3-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Table 3A

Summary of Detected Compounds In Surface Soil Compared to Screening Levels for Parcel 3
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Aluminum	A(3.10)	0 to .5	17100	24000	7800	100000	NA	NA
Arsenic	A(3.10)	0 to .5	101	22	.43	3.8	15	10
Barium	A(3.10)	0 to .5	202	250	550	14000	32	500
Calcium	A(3.10)	0 to .5	4260	5800	NA	NA	NA	NA
Chlordane	A(3.5)	0 to .5	0.041 J	0.029	.49	4.4	2	NA
Chromium	A(3.10)	0 to .5	39.3	27	39	1000	19	1
Cobalt	A(3.10)	0 to .5	14.3	18	470	12000	NA	20
Copper	A(3.10)	0 to .5	51.9	33	310	8200	NA	100
DDE	A(3.10)	0 to .5	0.019	0.16	1.9	17	0.5	NA
	A(3.5)	0 to .5	0.26	0.16	1.9	17	0.5	NA
	E(3.5)	0 to .5	0.53	0.16	1.9	17	0.5	NA
	F(3.5)	0 to .5	0.17 J	0.16	1.9	17	0.5	NA
DDT	A(3.10)	0 to .5	0.023	0.074	1.9	17	1	NA
	A(3.5)	0 to .5	0.13	0.074	1.9	17	1	NA
	F(3.5)	0 to .5	0.14 J	0.074	1.9	17	1	NA
Dieldrin	A(3.10)	0 to .5	0.06	0.53	.04	.36	.001	NA
	A(3.5)	0 to .5	0.5	0.53	.04	.36	.001	NA
	B(3.5)	0 to .5	10	0.53	.04	.36	.001	NA
	C(3.5)	0 to .5	0.068	0.53	.04	.36	.001	NA
	D(3.5)	0 to .5	1.4	0.53	.04	.36	.001	NA
	E(3.5)	0 to .5	0.57	0.53	.04	.36	.001	NA
	F(3.5)	0 to .5	0.44	0.53	.04	.36	.001	NA
gamma-Chlorda	A(3.5)	0 to .5	0.023 J	0.026	0.49	4.4	2	NA
Iron	A(3.10)	0 to .5	28400	37000	2300	61000	NA	NA
Lead	A(3.10)	0 to .5	167	43	200	1000	1.5	50
Magnesium	A(3.10)	0 to .5	3370	4600	NA	NA	NA	NA
Manganese	A(3.10)	0 to .5	1070	1300	180	4700	NA	NA
Nickel	A(3.10)	0 to .5	27	33	160	4100	21	30
Potassium	A(3.10)	0 to .5	2770	2000	NA	NA	NA	NA
Vanadium	A(3.10)	0 to .5	43.2	52	55	1400	NA	2

Table 3-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 3
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Zinc	A(3.10)	0 to .5	**170**	130	2300	61000	42000	**50**

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Table 3-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 3
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
DDE	B(3.5)	0 to 4	**0.0057 J**	**0.0015**	0.5
Dieldrin	B(3.5)	0 to 4	**0.042**	0.37	**.001**
	D(3.5)	0 to 4	**0.047**	0.37	**.001**
	D(3.5)	7 to 10	**0.016**	0.37	**.001**

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical* Memorandum, CH2M HILL, September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 4 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

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136410.BR.ZZ

Parcel 4 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Labels	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
4	251, 252, 253, 254, 256, 257, 260, 261, 263, 265, 270, 271, 273	4.12,4.13	31,9 and 31,8	3	N/A	N/A

Site Description

Parcel 4 is a 3,001 ft^2 parcel in the southeast/east corner of the Main Installation in OU-3, as shown on Drawing 1. Parcel 4 consists of Buildings 251, 252, 253, 254, 256, 257, 260, 261, 263, 265, 270, 271, and 273.

Sump sediment sampling was conducted at Labels 4.12 and 4.13. Label is a term used in the *Environmental Baseline Survey Report* (Woodward Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. Label 4.12 is associated with Building 251. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), a visual inspection noted a sump/waste oil tank located inside the building. Label 4.13 is associated with Building 265. A visual inspection indicated a floor drain inside the building that is connected to the sanitary sewer. No previous sampling had been conducted at either Label 4.12 or Label 4.13. Sampling and analyses were conducted for sump sediments in both buildings.

Sediment Sampling and Analyses Procedure

The descriptions below present the labels sampled within this parcel. All samples received at CH2M HILL's Analytical Services in Montgomery, Alabama were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Label 4.12 - Building 251

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 4.12. Sample A(4.12) was taken from a sump beneath a floor drain located towards the south end of Building 251 (See Drawing 1, BRAC Soil Sample Locations).

A stainless-steel spoon was used to collect the sediment sample directly from the sump into the sample containers. The sample was sent to CH2M HILL's laboratory for SVOCs, TAL metals, and TPH Method 418.1 analyses.

Label 4.13 - Building 265

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 4.13. Sample A(4.13) was taken from a sump beneath a floor drain located towards the east side of Building 265 (See Drawing 1, BRAC Soil Sample Locations).

A stainless-steel spoon was used to collect the sediment sample directly from the sump into the sample containers. The sample was sent to CH2M HILL's laboratory for SVOCs, TAL metals, and TPH Method 418.1 analyses.

Surface Soil Sampling Procedure

No surface soil samples were collected at this site during this sampling event.

Subsurface Soil Sampling Procedures

No subsurface soil samples were collected at this site during this sampling event.

Results

Sump sediment sampling locations with values above detection limits are shown in Table 4. Detected compounds from sump samples have no appropriate screening criteria to use for comparison.

Table 4
Summary of Detected Compounds in Sump Samples for Parcel 4
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value[2] (mg/kg)
Acenaphthene	A(4.12)	0 to .5	0.56 J
Aluminum	A(4.12)	0 to .5	6550
	A(4.13)	0 to .5	16400
Anthracene	A(4.12)	0 to .5	1.2 J
Antimony	A(4.12)	0 to .5	2420
	A(4.13)	0 to .5	307
Arsenic	A(4.13)	0 to .5	10.8
Barium	A(4.12)	0 to .5	7300
	A(4.13)	0 to .5	7270
Benzo(a)anthracene	A(4.12)	0 to .5	6.5
	A(4.13)	0 to .5	0.62 J
Benzo(a)pyrene	A(4.12)	0 to .5	5.4
	A(4.13)	0 to .5	0.65 J
Benzo(b)fluoranthene	A(4.12)	0 to .5	6.7
	A(4.13)	0 to .5	1.2 J
Benzo(g,h,i)perylene	A(4.12)	0 to .5	0.39 J
Benzo(k)fluoranthene	A(4.12)	0 to .5	8.1
	A(4.13)	0 to .5	0.95 J
Cadmium	A(4.12)	0 to .5	65
	A(4.13)	0 to .5	54.3
Calcium	A(4.12)	0 to .5	61600
	A(4.13)	0 to .5	158000
Carbazole	A(4.12)	0 to .5	0.83 J
Chromium	A(4.12)	0 to .5	315
	A(4.13)	0 to .5	513
Chrysene	A(4.12)	0 to .5	9.8
	A(4.13)	0 to .5	1.2 J
Cobalt	A(4.12)	0 to .5	131
	A(4.13)	0 to .5	182
Copper	A(4.12)	0 to .5	5000
	A(4.13)	0 to .5	28500
Dibenz(a,h)anthracene	A(4.12)	0 to .5	0.86 J
Fluoranthene	A(4.12)	0 to .5	9
	A(4.13)	0 to .5	0.56 J
Iron	A(4.12)	0 to .5	192000
	A(4.13)	0 to .5	242000
Lead	A(4.12)	0 to .5	7130
	A(4.13)	0 to .5	6220
Magnesium	A(4.12)	0 to .5	34100
	A(4.13)	0 to .5	23300
Manganese	A(4.12)	0 to .5	1010
	A(4.13)	0 to .5	1480
Mercury	A(4.12)	0 to .5	0.67
Nickel	A(4.12)	0 to .5	277
	A(4.13)	0 to .5	165
Petroleum Hydrocarbons	A(4.12)	0 to .5	1460
	A(4.13)	0 to .5	1410

Table 4
Summary of Detected Compounds in Sump Samples for Parcel 4
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value[2] (mg/kg)
Phenanthrene	A(4.12)	0 to .5	6.7
	A(4.13)	0 to .5	0.36 J
Phenol	A(4.13)	0 to .5	0.39 J
Potassium	A(4.12)	0 to .5	2110
	A(4.13)	0 to .5	2790
Pyrene	A(4.12)	0 to .5	9.7
	A(4.13)	0 to .5	0.9 J
Selenium	A(4.12)	0 to .5	364
	A(4.13)	0 to .5	99.8
Silver	A(4.12)	0 to .5	97.9
Sodium	A(4.12)	0 to .5	1610
	A(4.13)	0 to .5	3500
Thallium	A(4.13)	0 to .5	42
Vanadium	A(4.12)	0 to .5	30.8
	A(4.13)	0 to .5	22.9
Zinc	A(4.12)	0 to .5	11100
	A(4.13)	0 to .5	9950

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Detected compounds from sump samples have no appropriate screening criteria to use for comparison.

J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 5 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

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136410.BR.ZZ

Parcel 5 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
5	272, 274	5.1	29,7	3	N/A	N/A

Site Description

Parcel 5 is a 605 ft^2 parcel in the southeast portion of the Main Installation in OU-3, as shown on Drawing 1. Parcel 5 consists of Buildings 272 and 274.

Soil sampling was conducted at Label 5.1, which is associated with Building 272. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 5.1. Sample A(5.1) was located southwest of Building 272 and directly west of a bin filled with bark (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample A(5.1) was collected from beneath the grass to less than 6 inches below ground surface (bgs).

The sample was sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995).

Subsurface Soil Sampling Procedures

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 5, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Ta[illegible]5

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 5
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Chlordane	A(5.1)	0 to .5	0.017 J	0.029	.49	4.4	2	NA
DDD	A(5.1)	0 to .5	**0.026 J**	**0.0067**	2.7	24	0.7	NA
DDE	A(5.1)	0 to .5	0.039 J	0.16	1.9	17	0.5	NA
	A(5.1)	0 to .5	0.13	0.16	1.9	17	0.5	NA
DDT	A(5.1)	0 to .5	**0.081**	**0.074**	1.9	17	1	NA
	A(5.1)	0 to .5	**0.25**	**0.074**	1.9	17	1	NA
Dieldrin	A(5.1)	0 to .5	**0.034 J**	0.53	.04	.36	**.001**	NA
gamma-Chlordane	A(5.1)	0 to .5	0.017 J	0.026	0.49	4.4	2	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 6 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

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Parcel 6 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
6	250, 349, 350	6.1	29,10	3	N/A	N/A

Site Description

Parcel 6 is a 4,129 ft^2 parcel in the central east part of the Main Installation in OU-3, as shown on Drawing 1. Parcel 6 consists of Buildings 250, 349, 350 and the adjacent railroad tracks.

Soil sampling was conducted at Label 6.1, which is associated with Buildings 250, 349, and 350. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, three samples were collected for Label 6.1. Sample A(6.1) was located south of Building 250. Sample B(6.1) was located west of Building 349. Sample C(6.1) was located south of Building 350 between two transformer poles (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. All samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The three samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in

accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedures

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 6, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Table 6

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 6
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Aroclor-1260	A(6.1)	0 to .5	**2.3**	**0.11**	**.16**	4.1	NA	40
	A(6.1)	0 to .5	**2.9 J**	**0.11**	**.16**	4.1	NA	40
DDE	A(6.1)	0 to .5	**0.67**	**0.16**	1.9	17	**0.5**	NA
	A(6.1)	0 to .5	**0.82**	**0.16**	1.9	17	**0.5**	NA
	B(6.1)	0 to .5	**0.18**	**0.16**	1.9	17	0.5	NA
	C(6.1)	0 to .5	**0.24 J**	**0.16**	1.9	17	0.5	NA
DDT	A(6.1)	0 to .5	**0.44**	**0.074**	1.9	17	1	NA
	A(6.1)	0 to .5	**0.45**	**0.074**	1.9	17	1	NA
	B(6.1)	0 to .5	**0.098 J**	**0.074**	1.9	17	1	NA
	C(6.1)	0 to .5	**0.83**	**0.074**	1.9	17	1	NA
Dieldrin	A(6.1)	0 to .5	**0.54**	**0.53**	**.04**	**.36**	**.001**	NA
	A(6.1)	0 to .5	**0.59**	**0.53**	**.04**	**.36**	**.001**	NA
	B(6.1)	0 to .5	**0.38**	0.53	**.04**	**.36**	**.001**	NA
	C(6.1)	0 to .5	**1.4**	**0.53**	**.04**	**.36**	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 8 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

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136410.BR.ZZ

Parcel 8 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
8	229, 230, 329, 330	8.1	28,13	3	N/A	N/A

Site Description

Parcel 8 is a 5,554 ft^2 parcel in the northeast portion of the Main Installation in OU-3, as shown on Drawing 1. Parcel 8 consists of Buildings 229, 230, 329, 330 and the adjacent railroad tracks.

Soil sampling was conducted at Label 8.1, which consists of Buildings 229, 230, 329, and 330. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, four samples were collected for Label 8.1. Sample A(8.1) was located southeast of Building 330. Sample B(8.1) was located east of Building 230. Sample C(8.1) was located north of Building 229. Sample D(8.1) was located northwest of Building 329 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. All samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The four samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in

accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedures

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 8, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Table 8

Summary of Detected Compounds in Surface Soil Comparted to Screening Levels for Parcel 8
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
DDE	A(8.1)	0 to .5	0.06 J	0.16	1.9	17	0.5	NA
	B(8.1)	0 to .5	0.047 J	0.16	1.9	17	0.5	NA
	C(8.1)	0 to .5	0.098	0.16	1.9	17	0.5	NA
	D(8.1)	0 to .5	0.045	0.16	1.9	17	0.5	NA
DDT	A(8.1)	0 to .5	**0.14 J**	**0.074**	1.9	17	1	NA
	B(8.1)	0 to .5	**0.078 J**	**0.074**	1.9	17	1	NA
	C(8.1)	0 to .5	**0.16**	**0.074**	1.9	17	1	NA
	D(8.1)	0 to .5	0.046	0.074	1.9	17	1	NA
Dieldrin	A(8.1)	0 to .5	**0.4**	0.53	**.04**	**.36**	**.001**	NA
	A(8.1)	0 to .5	**0.9**	**0.53**	**.04**	**.36**	**.001**	NA
	B(8.1)	0 to .5	**0.16**	0.53	**.04**	.36	**.001**	NA
	C(8.1)	0 to .5	**0.27**	0.53	**.04**	.36	**.001**	NA
	D(8.1)	0 to .5	**0.052**	0.53	**.04**	.36	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 9 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

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Parcel 9 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
9	429, 430, 449, 450	9.1	22,15	3	N/A	N/A

Site Description

Parcel 9 is a 5,524 ft^2 parcel in the central part of the Main Installation in OU-3, as shown on Drawing 1. Parcel 9 consists of Buildings 429, 430, 449, and 450 and the adjacent railroad tracks.

Soil sampling was conducted at Label 9.1, which consists of Buildings 429, 430, 449, and 450. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, three samples were collected for Label 9.1. Sample A(9.1) was located towards the northwest corner of Building 429. Sample B(9.1) was located towards the southwest corner of Building 430. Sample C(9.1) was located towards the southeast corner of Building 450 between two transformer poles (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. All samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The three samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

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Subsurface Soil Sampling Procedures

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 9, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

T 9

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 9
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
DDE	B(9.1)	0 to .5	**0.7**	**0.16**	1.9	17	**0.5**	NA
DDT	B(9.1)	0 to .5	**0.37**	**0.074**	1.9	17	**1**	NA
Dieldrin	A(9.1)	0 to .5	**1.8**	**0.53**	**.04**	**.36**	**.001**	NA
	A(9.1)	0 to .5	**5.6**	**0.53**	**.04**	**.36**	**.001**	NA
	B(9.1)	0 to .5	**0.47**	**0.53**	**.04**	**.36**	**.001**	NA
	C(9.1)	0 to .5	**4**	**0.53**	**.04**	**.36**	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 10 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

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136410.BR.ZZ

Parcel 10 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
10	549, 550, 649, 650	10.2	19,13	Bldg. 549, 550 - 3 Bldg. 649, 650 - 4	N/A	N/A

Site Description

Parcel 10 is a 5,479 ft^2 parcel in the central part of the Main Installation in OU's 3 and 4, as shown on Drawing 1. Parcel 10 consists of Buildings 549, 550, 649, 650 and the adjacent railroad tracks. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility.

Soil sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, four samples were collected for Label 10.2. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. Sample A(10.2) was located north of Building 549. Sample B(10.2) was located east of Building 550. Sample C(10.2) was located west of Building 469. Sample D(10.2) was located south of Building 650 between two transformer poles (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. All samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The four samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in

accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedures

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 10, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Table 10

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 10
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
DDE	A(10.2)	0 to .5	**0.88 J**	**0.16**	1.9	17	**0.5**	NA
	A(10.2)	0 to .5	**1.4**	**0.16**	1.9	17	**0.5**	NA
	B(10.2)	0 to .5	**0.37**	**0.16**	1.9	17	0.5	NA
	C(10.2)	0 to .5	**0.62 J**	**0.16**	1.9	17	**0.5**	NA
	D(10.2)	0 to .5	0.076 J	0.16	1.9	17	0.5	NA
DDT	A(10.2)	0 to .5	**0.69 J**	**0.074**	1.9	17	1	NA
	A(10.2)	0 to .5	**0.99**	**0.074**	1.9	17	1	NA
	B(10.2)	0 to .5	**0.24**	**0.074**	1.9	17	1	NA
	C(10.2)	0 to .5	**0.52 J**	**0.074**	1.9	17	1	NA
	D(10.2)	0 to .5	0.062 J	0.074	1.9	17	1	NA
Dieldrin	A(10.2)	0 to .5	**1.6**	**0.53**	**.04**	**.36**	**.001**	NA
	A(10.2)	0 to .5	**2.7**	**0.53**	**.04**	**.36**	**.001**	NA
	B(10.2)	0 to .5	**0.16**	0.53	**.04**	.36	**.001**	NA
	C(10.2)	0 to .5	**1.3**	**0.53**	**.04**	**.36**	**.001**	NA
	D(10.2)	0 to .5	**0.2**	0.53	**.04**	.36	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 11 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

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Parcel 11 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
11	529, 530, 630	11.1	18,15	Bldgs. 529, 530 - 3 Bldg. 630 - 4	N/A	N/A

Site Description

Parcel 11 is a 4,184 ft^2 parcel in the north central part of the Main Installation in OU's 3 and 4, as shown on Drawing 1. Parcel 11 consists of Buildings 529, 530, 630 and the adjacent railroad tracks.

Soil sampling was conducted at Label 11.1, which consists of Buildings 529, 530, and 630. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, three samples were collected for Label 11.1. Sample A(11.1) was located west of Building 529. Sample B(11.1) was located east of Building 530. Sample C(11.1) was located west of Building 630 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. All samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The three samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedures

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 11, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Table 11

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 11
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
DDE	B(11.1)	0 to .5	**0.44**	**0.16**	1.9	17	0.5	NA
	C(11.1)	0 to .5	**0.34**	**0.16**	1.9	17	0.5	NA
DDT	B(11.1)	0 to .5	**0.26**	**0.074**	1.9	17	1	NA
	C(11.1)	0 to .5	**0.24 J**	**0.074**	1.9	17	1	NA
Dieldrin	A(11.1)	0 to .5	**3.4**	**0.53**	**.04**	**.36**	**.001**	NA
	A(11.1)	0 to .5	**4.5**	**0.53**	**.04**	**.36**	**.001**	NA
	C(11.1)	0 to .5	**0.98**	**0.53**	**.04**	**.36**	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Table 13

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 13
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Chlordane	A(13.5)	0 to .5	0.026 J	0.029	.49	4.4	2	NA
	B(13.5)	0 to .5	0.023 J	0.029	.49	4.4	2	NA
DDE	A(13.5)	0 to .5	0.12	0.16	1.9	17	0.5	NA
DDT	A(13.5)	0 to .5	**0.17**	**0.074**	1.9	17	1	NA
Dieldrin	A(13.5)	0 to .5	**0.28**	0.53	**.04**	.36	**.001**	NA
	B(13.5)	0 to .5	**0.24**	0.53	**.04**	.36	**.001**	NA
gamma-Chlordane	A(13.5)	0 to .5	**0.088**	**0.026**	0.49	4.4	2	NA
	B(13.5)	0 to .5	**0.034 J**	**0.026**	0.49	4.4	2	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Subsurface Soil Sampling Procedure

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 13, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Parcel 13 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Number	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
13	210	13.5	30,16	4	N/A	N/A

Site Description

Parcel 13 is a 3,119 ft^2 parcel in the northeast corner of the Main Installation in OU-4, as shown on Drawing 1. Parcel 13 consists of Building 210 and the adjacent railroad tracks.

Soil sampling was conducted at Label 13.5, which consists of Building 210. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 13.5. Sample A(13.5) was located south of Building 210. Sample B(13.5) was located towards the southeast corner of Building 210 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Both samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The two samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Parcel 13 Report
BRAC Sampling Program
for
Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

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244 80

Parcel 14 Report
BRAC Sampling Program
for
Defense Depot Memphis, Tennessee

April 1997

Prepared for

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Parcel 14 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Number	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
14	S209	14.2	28,18	4	N/A	N/A

Site Description

Parcel 14 is a 3,752 ft^2 parcel in the northeast corner of the Main Installation, in OU-4, as shown on Drawing 1. Parcel 14 consists of Building 209 and the adjacent railroad tracks.

Soil sampling was conducted at Label 14.2, which is associated with Building 209. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

In addition, this parcel is associated with a 12,000-gallon heating oil tank that was located outside of Building 209, but was removed in July of 1994 (The Pickering Firm, Inc., 1993 Storage Tank Survey as cited in Woodward-Clyde, November 1996). There has been no documented release associated with this tank. No evidence was found of disposal, or migration of hazardous substances or petroleum products from an adjacent property.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 14.2. Sample A(14.2) was located towards the northwest section of Building 209. Sample B(14.2) was located towards the northeast section of Building 209 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the

sample jars. All samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The two samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedure

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 14, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Table 14

Summary of Detected Compounds In Surface Soil Compared to Screening Levels for Parcel 14
BRAC Sampling Program
Defense Depot Memphis, Tennesee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Chlordane	B(14.2)	0 to .5	**0.033 J**	**0.029**	.49	4.4	2	NA
DDE	A(14.2)	0 to .5	**0.39**	**0.16**	1.9	17	0.5	NA
	B(14.2)	0 to .5	0.085 J	0.16	1.9	17	0.5	NA
DDT	A(14.2)	0 to .5	**0.44**	**0.074**	1.9	17	1	NA
	B(14.2)	0 to .5	**0.16 J**	**0.074**	1.9	17	1	NA
Dieldrin	A(14.2)	0 to .5	**1.3**	**0.53**	**.04**	**.36**	**.001**	NA
	B(14.2)	0 to .5	1	**0.53**	**.04**	**.36**	**.001**	NA
gamma-Chlordane	B(14.2)	0 to .5	**0.098 J**	**0.026**	0.49	4.4	2	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 15 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

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Parcel 15 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building or Facility Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
15	308, 309, 319, 416, 417, 702, X09, Y10, Y50	15.6	21,17	4	N/A	N/A

Site Description

Parcel 15 is a 18,936 ft^2 parcel in the north central part of the Main Installation, in OU-4, as shown on Drawing 1. Parcel 15 consists of Buildings 308, 309, 319, 416, 417, 702, the open storage areas X09, Y10, Y50, and the adjacent railroad tracks.

Soil sampling was conducted at Label 15.6, which consists of open storage area X09 and Building 702. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), spills of a dark liquid were observed on the concrete pad (Real Property 88015) located south of Building 702 and west of Building 629. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

In addition, this parcel is associated with a 4,000-gallon heating oil tank that was located outside of Building 319, but was removed in July of 1994 (The Pickering Firm, Inc., 1993 Storage Tank Survey as cited in Woodward-Clyde, November 1996). There has been no documented release associated with this tank. No evidence was found of disposal, or migration of hazardous substances or petroleum products from an adjacent property.

This parcel is also associated with a 30-gallon solvent spill south of Building 309 that was reported on December 2, 1991. The precise location of the spill is currently unknown. The contaminated soils associated with this release have been removed, and no further removal or remedial actions are required (Defense Logistics Agency, DDMT 1992 as cited in Woodward-Clyde, November 1996). Therefore the current sampling activities are not in response to this remediated spill.

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Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 15.6. Sample A(15.6) was located north of the railroad tracks in open storage area X09. Sample B(15.6) was located north of the drainage swale and south of the railroad tracks in open storage area X09 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. All samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The two samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedure

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 15, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Ta[illegible]15

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 15
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Dieldrin	A(15.6)	0 to .5	**1.9**	0.53	**.04**	**.36**	**.001**	NA
	B(15.6)	0 to .5	**0.19**	0.53	**.04**	**.36**	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

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Parcel 16 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

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Parcel 16 Report
244 91
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Number	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
16	558, 559	16.1	16,10	3	N/A	N/A

Site Description

Parcel 16 is a 2,744 ft^2 parcel in the center of the Main Installation, in OU-3, as shown on Drawing 1. Parcel 16 consists of Buildings 558 and 559 and the adjacent railroad tracks.

Soil sampling was conducted at Label 16.1, which consists of Building 559. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 16.1. Sample A(16.1) was located towards the northwest section of Building 559. Sample B(16.1) was located towards the northeast section of Building 559 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. All samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The two samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in

accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedure

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 16, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Table 16

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 16
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Chlordane	A(16.1)	0 to .5	0.019 J	0.029	.49	4.4	2	NA
	A(16.1)	0 to .5	0.067	0.16	1.9	17	0.5	NA
	B(16.1)	0 to .5	**0.42**	**0.16**	1.9	17	0.5	NA
DDT	A(16.1)	0 to .5	**0.076**	**0.074**	1.9	17	1	NA
	B(16.1)	0 to .5	**0.41**	**0.074**	1.9	17	1	NA
Dieldrin	A(16.1)	0 to .5	**0.19**	0.53	**.04**	.36	**.001**	NA
	B(16.1)	0 to .5	1.3	0.53	**.04**	.36	**.001**	NA
gamma-Chlordane	A(16.1)	0 to .5	0.02	0.026	0.49	4.4	2	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

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Parcel 17 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

2567 Fairlane Drive

Montgomery, Alabama 36116

136410.BR.ZZ

Parcel 17 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
17	359, 459	17.2	24,10	3	N/A	N/A

Site Description

Parcel 17 is a 3,114 ft^2 parcel in the east central part of the Main Installation, in OU-3, as shown on Drawing 1. Parcel 17 consists of Buildings 359, 459 and the adjacent railroad tracks.

Soil sampling was conducted at Label 17.2, which consists of Building 359. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

In addition, this parcel is associated with the following tanks:

- A 12,000-gallon and a 500-gallon fuel oil tank that were located at Building 359 and were closed in place in July 1994 and September 1995, respectively (The Pickering Firm, Inc., 1993 Storage Tank Survey as cited in Woodward-Clyde, November 1996).
- A 1,000-gallon fuel oil tank and a 500-gallon diesel tank that were located at Building 359, but were removed in 1993 (The Pickering Firm, Inc., 1993 Storage Tank Survey; Facilities Engineering Division, DDMT 1993 as cited in Woodward-Clyde, November 1996).
- A 12,000-gallon and a 500-gallon fuel oil tank that were located at Building 359, but were removed in 1993 (The Pickering Firm, Inc., 1993 Storage Tank Survey; Facilities Engineering Division, DDMT 1993 as cited in Woodward-Clyde, November 1996).

There have been no documented releases associated with these tanks, and no evidence was found of disposal, or migration of hazardous substances or petroleum products from an

adjacent property. Therefore the current sampling activities are not associated with these tanks.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 17.2. Sample A(17.2) was located towards the northwest section of Building 359. Sample B(17.2) was located towards the northeast section of Building 359 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. All samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

The two samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedure

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 17, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

T[illegible]17

Summary of Detected Compounds In Surface Soil Compared to Screening Levels for Parcel 17
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
DDE	A(17.2)	0 to .5	**0.27 J**	**0.16**	1.9	17	0.5	NA
	B(17.2)	0 to .5	0.047	0.16	1.9	17	0.5	NA
DDT	A(17.2)	0 to .5	**0.33 J**	**0.074**	1.9	17	1	NA
	B(17.2)	0 to .5	0.071	0.074	1.9	17	1	NA
Dieldrin	A(17.2)	0 to .5	**3.3**	**0.53**	**.04**	**.36**	**.001**	NA
	B(17.2)	0 to .5	**0.083**	0.53	**.04**	.36	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 18 Report
BRAC Sampling Program
for
Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL
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Montgomery, Alabama 36116

136410.BR.ZZ

Parcel 18 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Number	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
18	560	18.2	17,8	3	N/A	N/A

Site Description

Parcel 18 is a 2,490 ft^2 parcel in the center of the Main Installation, in OU-3, as shown on Drawing 1. Parcel 18 consists of Building 560 and the adjacent railroad tracks.

Soil sampling was conducted at Label 18.2, which consists of Building 560. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 18.2. Sample A(18.2) was located south of Building 560 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. The sample was collected from beneath the grass to less than 6 inches below ground surface (bgs).

The sample were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. Samples received at the laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

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Subsurface Soil Sampling Procedure

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 18, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

T 18

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 18
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
DDE	A(18.2)	0 to .5	0.0038 J	0.16	1.9	17	0.5	NA
DDT	A(18.2)	0 to .5	0.012	0.074	1.9	17	1	NA
Dieldrin	A(18.2)	0 to .5	**0.028**	0.53	.04	.36	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 20 Report
BRAC Sampling Program
for
Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL
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Parcel 20 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Labels	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
20	470, 489, 670	20.5, 20.6	19,6 and 20,4	3	N/A	N/A

Site Description

Parcel 20 is a 8,752 ft^2 parcel in the south central part of the Main Installation, in OU-3, as shown on Drawing 1. Parcel 20 consists of Buildings 470, 489, 670 and the adjacent railroad tracks.

Soil sampling was conducted at Labels 20.5 and 20.6. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations.

Label 20.5 is associated with Building 670, and Label 20.6 is associated with Building 489. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. Label 20.6 is associated with the location of a sulfuric acid spill that was reported on June 10, 1993, between Buildings 489 and 490 (Defense Logistics Agency, DDMT 1993 Spill Response Summary as cited in Woodward-Clyde, November 1996). The precise location of the spill, the action taken, and the quantity of the spill are unknown. Current sampling activities are associated with this spill. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

The descriptions below present the labels sampled within this parcel. All samples received at CH2M HILL's Analytical Services in Montgomery, Alabama were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Label 20.5 - Building 670

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 20.5. Sample A(20.5) was located southeast of Building 670 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. The sample was collected from beneath the grass to less than 6 inches below ground surface (bgs).

The sample was sent to CH2M HILL's laboratory for pesticides and PCBs analyses.

Label 20.6 - Building 489

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 20.6. Sample A(20.6) was located south of Building 489 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of gravel. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. The sample was collected from beneath the surface gravel to less than 1 ft bgs.

The sample was sent to CH2M HILL's laboratory for metals, VOCs, and SVOCs analyses.

Subsurface Soil Sampling and Analyses Procedure

Subsurface soil samples were collected using a 2-foot, stainless-steel, split-spoon sampler. Samples were collected from intervals of 1 to 4 ft, 4 to 7 ft, and 7 to 10 ft at the same sample location where the surface soil sample A(20.6) was collected. VOC soil samples were collected directly from the continuous sampler using stainless-steel spoons. The remaining soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Three samples were collected from the soil boring (SB-21). The samples were sent to CH2M HILL's laboratory for metals, VOCs, and SVOCs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 20-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 20-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Tab[illegible]20-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 20
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Acenaphthene	A(20.6)	.5 to 1	3.1 J	NA	470	12000	200	NA
Aluminum	A(20.6)	.5 to 1	3910	24000	7800	100000	NA	NA
Anthracene	A(20.6)	.5 to 1	4.7 J	0.096	2300	61000	4300	NA
Arsenic	A(20.6)	.5 to 1	26.4	22	.43	3.8	15	10
Barium	A(20.6)	.5 to 1	43.9	250	550	14000	32	500
Benzo(a)anthracene	A(20.6)	.5 to 1	13	0.71	.88	7.8	.7	NA
Benzo(a)pyrene	A(20.6)	.5 to 1	12	0.96	.088	.78	4	NA
Benzo(b)fluoranthene	A(20.6)	.5 to 1	12	0.9	.88	7.8	4	NA
Benzo(g,h,i)perylene	A(20.6)	.5 to 1	9.1	0.82	230	6100	1400	NA
Benzo(k)fluoranthene	A(20.6)	.5 to 1	11	0.78	8.8	78	4	NA
Cadmium	A(20.6)	.5 to 1	12	1.4	3.9	100	6	3
Calcium	A(20.6)	.5 to 1	79600	5800	NA	NA	NA	NA
Carbazole	A(20.6)	.5 to 1	4 J	0.067	32	290	.5	NA
Chromium	A(20.6)	.5 to 1	29.6	27	39	1000	19	1
Chrysene	A(20.6)	.5 to 1	15	0.94	88	780	1	NA
Cobalt	A(20.6)	.5 to 1	6.7	18	470	12000	NA	20
Copper	A(20.6)	.5 to 1	38.3	33	310	8200	NA	100
Dibenz(a,h)anthracene	A(20.6)	.5 to 1	4 J	0.26	.088	.78	11	NA
Dibenzofuran	A(20.6)	.5 to 1	1.2 J	NA	31	820	12	NA
Dieldrin	A(20.5)	0 to .5	1.1	0.53	.04	.36	.001	NA
Fluoranthene	A(20.6)	.5 to 1	33	1.6	310	8200	980	NA
Fluorene	A(20.6)	.5 to 1	2.2 J	NA	310	8200	160	NA
Indeno(1,2,3-cd)pyrene	A(20.6)	.5 to 1	9	0.7	.88	7.8	35	NA
Iron	A(20.6)	.5 to 1	12900	37000	2300	61000	NA	NA
Lead	A(20.6)	.5 to 1	217	43	200	1000	1.5	50
Magnesium	A(20.6)	.5 to 1	2320	4600	NA	NA	NA	NA
Manganese	A(20.6)	.5 to 1	87.4	1300	180	4700	NA	NA
Methylene chloride	A(20.6)	.5 to 1	0.002 J	NA	85	760	.01	NA
Naphthalene	A(20.6)	.5 to 1	1.4 J	NA	310	8200	30	NA
Nickel	A(20.6)	.5 to 1	8.3	33	160	4100	21	30
Phenanthrene	A(20.6)	.5 to 1	23	0.61	2300	61000	4300	NA
Pyrene	A(20.6)	.5 to 1	26	1.5	230	6100	1400	NA

Table 20-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 20
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Sodium	A(20.6)	.5 to 1	330	NA	NA	NA	NA	NA
Toluene	A(20.6)	.5 to 1	0.001 J	0.002	1600	41000	5	NA
Vanadium	A(20.6)	.5 to 1	**14.4**	52	55	1400	NA	**2**
Zinc	A(20.6)	.5 to 1	**184**	130	2300	61000	42000	**50**

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Table 20-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 20
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Aluminum	A(20.6)	1 to 4	**22100**	**22000**	NA
	A(20.6)	4 to 7	21100	22000	NA
	A(20.6)	7 to 10	22000	22000	NA
Arsenic	A(20.6)	1 to 4	7.9	17	15
	A(20.6)	4 to 7	12.5	17	15
	A(20.6)	7 to 10	**20.6**	17	15
Barium	A(20.6)	1 to 4	**143**	300	32
	A(20.6)	4 to 7	**117**	300	32
	A(20.6)	7 to 10	**175**	300	32
Beryllium	A(20.6)	1 to 4	0.98	1.2	180
	A(20.6)	4 to 7	**1.5**	1.2	180
	A(20.6)	7 to 10	**1.5**	1.2	180
bis(2-Ethylhexyl)phthalate	A(20.6)	1 to 4	0.041 J	NA	11
Calcium	A(20.6)	1 to 4	**2750**	**2400**	NA
	A(20.6)	4 to 7	2110	2400	NA
	A(20.6)	7 to 10	2180	2400	NA
Chromium	A(20.6)	1 to 4	**27.5**	26	19
	A(20.6)	4 to 7	**96.6**	26	19
	A(20.6)	7 to 10	**45.7**	26	19
Chrysene	A(20.6)	1 to 4	0.04 J	NA	1
Cobalt	A(20.6)	1 to 4	11.3	20	NA
	A(20.6)	4 to 7	9.4	20	NA
	A(20.6)	7 to 10	**34**	20	NA
Copper	A(20.6)	1 to 4	21.3	33	NA
	A(20.6)	4 to 7	16.9	33	NA
	A(20.6)	7 to 10	18.7	33	NA
Di-n-butylphthalate	A(20.6)	1 to 4	0.054 J	NA	120
Fluoranthene	A(20.6)	1 to 4	**0.1 J**	**0.045**	980
Iron	A(20.6)	1 to 4	27400	38000	NA
	A(20.6)	4 to 7	**41200**	**38000**	NA
	A(20.6)	7 to 10	**49500**	**38000**	NA
Lead	A(20.6)	1 to 4	**13.7**	24	**1.5**
	A(20.6)	4 to 7	**15**	24	**1.5**
	A(20.6)	7 to 10	**30.5**	**24**	**1.5**
Magnesium	A(20.6)	1 to 4	3760	4900	NA
	A(20.6)	4 to 7	2530	4900	NA
	A(20.6)	7 to 10	1830	4900	NA
Manganese	A(20.6)	1 to 4	761	1500	NA
	A(20.6)	4 to 7	567	1500	NA
	A(20.6)	7 to 10	**4520**	**1500**	NA
Methylene chloride	A(20.6)	1 to 4	0.002 J	NA	.01
	A(20.6)	4 to 7	0.003 J	NA	.01
	A(20.6)	7 to 10	0.002 J	NA	.01
Nickel	A(20.6)	1 to 4	**24.6**	37	**21**
	A(20.6)	4 to 7	**22.3**	37	**21**
	A(20.6)	7 to 10	16.3	37	21
Phenanthrene	A(20.6)	1 to 4	0.069 J	NA	4300

Table 20-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 20
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Potassium	A(20.6)	1 to 4	1690	1800	NA
	A(20.6)	4 to 7	898	1800	NA
	A(20.6)	7 to 10	1810	1800	NA
Pyrene	A(20.6)	1 to 4	0.081 J	0.042	1400
Vanadium	A(20.6)	1 to 4	55.6	51	NA
	A(20.6)	4 to 7	74.9	51	NA
	A(20.6)	7 to 10	62	51	NA
Zinc	A(20.6)	1 to 4	67	110	42000
	A(20.6)	4 to 7	46.8	110	42000
	A(20.6)	7 to 10	48.8	110	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical* Memorandum, CH2M HILL, September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 21 Report
BRAC Sampling Program
for
Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL
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136410.BR.ZZ

Parcel 21 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
21	490, 685, 689, 690	21.5	20,2	3	N/A	N/A

Site Description

Parcel 21 is a 7,906 ft^2 parcel in the south central part of the Main Installation, in OU-3, as shown on Drawing 1. Parcel 21 consists of Buildings 490, 685, 689, and 690.

Soil sampling was conducted at Label 21.5, which consists of Building 490. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Samples collected from Label 21.5 were collected for both CH2M HILL and Corps of Engineers (COE) laboratory analysis. Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, a total of four samples were collected for Label 21.5. Samples A(21.5) and a split sample were located towards the southwest section of Building 490. Samples B(21.5) and a split sample were located towards the southeast section of Building 490 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. The samples were collected from beneath the grass to less than 6 inches below ground surface (bgs).

Samples A(21.5) and B(21.5) were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. The split samples were sent to COE's Atlanta, Georgia laboratory for pesticides and PCBs analyses. Samples received at CH2M HILL's laboratory were analyzed in accordance with procedures outlined in the *Generic Quality*

Assurance Project Plan (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling Procedure

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 21, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

T[illegible]21

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 21
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Dieldrin	A(21.5)	0 to .5	**0.86**	**0.53**	**.04**	**.36**	**.001**	NA
	B(21.5)	0 to .5	**5.3**	**0.53**	**.04**	**.36**	**.001**	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 22 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

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Parcel 22 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
22	Between Buildings 689 and 690	22.1	18,4	3	N/A	N/A

Site Description

Parcel 22 is a 376 ft^2 parcel in the south central part of the Main Installation, in OU-3, as shown on Drawing 1. Parcel 22 consists of an area between Buildings 689 and 690.

Soil sampling was conducted at Label 22.1, which consists of an area between Buildings 689 and 690. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Samples collected from Label 22.1 were collected for both CH2M HILL and Corps of Engineers (COE) laboratory analysis. Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, a total of two samples were collected for Label 22.1. Sample A(22.1) and a split sample were located towards the southern edge of the northern corridor foundation between Buildings 689 and 690 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. All samples were collected from beneath the surface to less than 6 inches below ground surface (bgs).

Sample A(22.1) was sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. The split sample was sent to COE's Atlanta, Georgia laboratory for pesticides and PCBs analyses. Samples received at CH2M HILL's laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

244 120

Subsurface Soil Sampling Procedure

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 22, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Ta[illegible]22

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 22
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
DDD	A(22.1)	0 to .5	**0.022 J**	**0.0067**	2.7	24	0.7	NA
DDE	A(22.1)	0 to .5	0.039	0.16	1.9	17	0.5	NA
DDT	A(22.1)	0 to .5	**0.19**	**0.074**	1.9	17	1	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 23 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

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136410.BR.ZZ

Parcel 23 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building or Facility Number	Labels	CERFA Map Locations	RI/FS OU	Site No.	CERCLA Status
23	783, 787, 793, 995, X01	23.6, 23.9, 23.10	10,1: 8,2: 4,2	2	N/A	N/A

Site Description

Parcel 23 is a 8,815 ft^2 parcel in the southwest portion of the Main Installation, in OU-2, as shown on Drawing 1. Parcel 23 consists of Buildings 783, 787, 793, 995, open storage area X01 and the adjacent railroad tracks.

Soil sampling was conducted at Labels 23.6, 23.9, and 23.10. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. Label 23.6 is associated with the western portion of Parcel 23. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Label 23.9 is associated with the location of a gasoline spill that was reported on September 13, 1993 outside of Building 995. The precise location of the spill, action taken, and quantity of the spill are unknown (Defense Logistics Agency, DDMT 1993 Spill Response Summary as cited in Woodward-Clyde, November 1996). Sampling was performed to provide information on the presence of gasoline in soil.

Label 23.10 is associated with open storage area X01. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), open storage area X01 is the site of a former lake. The former lake sediments were possibly contaminated with PCB and pesticide/herbicide residues.

Surface Soil Sampling and Analyses Procedure

The descriptions below present the labels sampled within this parcel. All samples received at CH2M HILL's Analytical Services in Montgomery, Alabama were analyzed in

accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Label 23.6 - West Portion of Parcel 23

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 23.6. Sample A(23.6) was located south of the parking lot located west of Gate 8. Sample B(23.6) was located northwest of the K Street and 9th Street intersection (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod at sample location A(23.6). A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample A(23.6) was collected from beneath the grass to less than 6 inches below ground surface (bgs).

A pick-hoe and sharpshooter shovel were used to remove the gravel and rock surface at sample location B(23.6). A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample B(23.6) was collected from beneath a gravel layer to less than 6 inches bgs.

Both samples were sent to CH2M HILL's laboratory for pesticides and PCBs analyses.

Label 23.9 - Building 995

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 23.9. Sample A(23.9) was located west of Building 995 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample A(23.9) was collected from beneath the surface to less than 6 inches bgs.

The sample was sent to CH2M HILL's laboratory for SVOCs, metals, and TPH Gas method 8015 and BTEX method 8020.

Label 23.10 - Open Storage Area X01

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 23.10. Sample A(23.10) was located south of Building 875 and M Street in open storage area X01 (See Drawing 1, BRAC Soil Sample Locations).

A pick-hoe and sharpshooter shovel were used to remove the gravel and rock surface at sample location A(23.10). A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample A(23.10) was collected from beneath the highly compacted gravel surface to less than 1 ft bgs.

The sample was sent to CH2M HILL's laboratory for pesticides and PCBs analyses.

Subsurface Soil Sampling and Analyses Procedure

Subsurface soil samples were collected using a 2-foot, stainless-steel, split-spoon sampler. Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, samples were collected from intervals of 0 to 4 ft, 4 to 7 ft, and 7 to 10 ft.

Label 23.9 - Building 995

Soil Boring, SB-6, is at the same location where surface soil sample A(23.9) was collected. Soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Three samples were collected from the soil boring (SB-6). The samples were sent to CH2M HILL's laboratory for metals, SVOCs, and TPH method 418.1 analyses.

Label 23.10 - Open Storage Area X01

Samples collected from the Label 23.10 soil boring were collected for both CH2M HILL and Corps of Engineers (COE) laboratory analysis. Soil Boring, SB-7, is at the same location where surface soil sample A(23.10) was collected. Soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

A total of six samples were collected from the soil boring (SB-7). Three samples were sent to CH2M HILL's laboratory for pesticides and PCBs analyses. Three quality assurance split samples were sent to COE's Atlanta, Georgia laboratory for pesticides and PCBs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 23-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 23-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Table 5-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 23
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Aluminum	A(23.9)	0 to .5	**19700**	24000	**7800**	100000	NA	NA
Barium	A(23.9)	0 to .5	**156**	250	550	14000	**32**	500
bis(2-Ethylhexyl)phthalate	A(23.9)	0 to .5	0.04 J	NA	46	410	**11**	NA
Calcium	A(23.9)	0 to .5	**35600**	5800	NA	NA	NA	NA
Chromium	A(23.9)	0 to .5	**29.5**	27	39	1000	**19**	**1**
Cobalt	A(23.9)	0 to .5	14.7	18	470	12000	NA	20
Copper	A(23.9)	0 to .5	20.6	33	310	8200	NA	100
DDE	A(23.10)	0 to 1	0.02	0.16	1.9	17	0.5	NA
	B(23.6)	0 to .5	0.014 J	0.16	1.9	17	0.5	NA
DDT	A(23.10)	0 to 1	0.049	0.074	1.9	17	1	NA
	B(23.6)	0 to .5	0.047	0.074	1.9	17	1	NA
Di-n-butylphthalate	A(23.9)	0 to .5	0.26 J	NA	780	20000	120	NA
Dieldrin	A(23.10)	0 to 1	**0.024**	0.53	.04	.36	**.001**	NA
	B(23.6)	0 to .5	**0.0074 J**	0.53	.04	.36	**.001**	NA
Iron	A(23.9)	0 to .5	**26100**	37000	**2300**	61000	NA	NA
Lead	A(23.9)	0 to .5	**22.1**	43	200	1000	**1.5**	50
Magnesium	A(23.9)	0 to .5	**4620**	**4600**	NA	NA	NA	NA
Manganese	A(23.9)	0 to .5	**941**	1300	**160**	4700	NA	NA
Nickel	A(23.9)	0 to .5	**27.6**	33	160	4100	**21**	30
Potassium	A(23.9)	0 to .5	1390	2000	NA	NA	NA	NA
Selenium	A(23.9)	0 to .5	**18.9**	**0.81**	39	1000	**3**	**1**
Vanadium	A(23.9)	0 to .5	**50.3**	52	55	1400	NA	**2**
Zinc	A(23.9)	0 to .5	**74.9**	130	2300	61000	42000	50

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Table 23-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 23
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Aluminum	A(23.9)	0 to 4	21000	22000	NA
	A(23.9)	4 to 7	**26100**	**22000**	NA
	A(23.9)	7 to 10	**39000**	**22000**	NA
Arsenic	A(23.9)	0 to 4	7.6	17	15
	A(23.9)	4 to 7	12.3	17	15
	A(23.9)	7 to 10	14.4	17	15
Barium	A(23.9)	0 to 4	**153**	300	**32**
	A(23.9)	4 to 7	**117**	300	**32**
	A(23.9)	7 to 10	**182**	300	**32**
Benzo(a)anthracene	A(23.9)	0 to 4	0.068 J	NA	.7
Benzo(a)pyrene	A(23.9)	0 to 4	0.08 J	NA	4
Benzo(b)fluoranthene	A(23.9)	0 to 4	0.088 J	NA	4
Benzo(g,h,i)perylene	A(23.9)	0 to 4	0.1 J	NA	1400
Benzo(k)fluoranthene	A(23.9)	0 to 4	0.081 J	NA	4
Beryllium	A(23.9)	0 to 4	1	1.2	160
	A(23.9)	4 to 7	1.1	1.2	160
	A(23.9)	7 to 10	**1.7**	**1.2**	160
Calcium	A(23.9)	0 to 4	**3390**	**2400**	NA
	A(23.9)	4 to 7	2350	2400	NA
	A(23.9)	7 to 10	**3890**	**2400**	NA
Chromium	A(23.9)	0 to 4	**35.1**	**26**	**19**
	A(23.9)	4 to 7	**29.7**	**26**	**19**
	A(23.9)	7 to 10	**32.4**	**26**	**19**
Chrysene	A(23.9)	0 to 4	0.093 J	NA	**1**
Cobalt	A(23.9)	0 to 4	14.8	20	NA
	A(23.9)	4 to 7	13.1	20	NA
	A(23.9)	7 to 10	17.4	20	NA
Copper	A(23.9)	0 to 4	15.1	**33**	NA
	A(23.9)	4 to 7	20.1	**33**	NA
	A(23.9)	7 to 10	**40.2**	**33**	NA
Indeno(1,2,3-cd)pyrene	A(23.9)	0 to 4	0.09 J	NA	35
Iron	A(23.9)	0 to 4	28500	38000	NA
	A(23.9)	4 to 7	33100	38000	NA
	A(23.9)	7 to 10	**46700**	38000	NA
Lead	A(23.9)	0 to 4	**17.2**	24	**1.5**
	A(23.9)	4 to 7	**16.8**	24	**1.5**
	A(23.9)	7 to 10	**24.3**	**24**	**1.5**
Magnesium	A(23.9)	0 to 4	2930	4900	NA
	A(23.9)	4 to 7	1630	4900	NA
	A(23.9)	7 to 10	4600	4900	NA
Manganese	A(23.9)	0 to 4	969	1500	NA
	A(23.9)	4 to 7	411	1500	NA
	A(23.9)	7 to 10	1000	1500	NA
Nickel	A(23.9)	0 to 4	21	37	21
	A(23.9)	4 to 7	20.3	37	21
	A(23.9)	7 to 10	**34.2**	37	**21**
Petroleum Hydrocarbons[4]	A(23.9)	0 to 4	3.2	NA	NA

Table 23-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 23
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Potassium	A(23.9)	0 to 4	1640	1800	NA
	A(23.9)	4 to 7	949	1800	NA
	A(23.9)	7 to 10	**2530**	**1800**	NA
Vanadium	A(23.9)	0 to 4	**61**	**51**	NA
	A(23.9)	4 to 7	**53.8**	**51**	NA
	A(23.9)	7 to 10	**69.3**	**51**	NA
Zinc	A(23.9)	0 to 4	57	**110**	42000
	A(23.9)	4 to 7	52.3	**110**	42000
	A(23.9)	7 to 10	100	**110**	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical* Memorandum, CH2M HILL, September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. For petroleum hydrocarbon comparisons, the most conservative value of 100 ppm, from *Soil* Clean-Up Levels for Petroleum *Contaminated Sites* (provided by TDEC), was used.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 24 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

2567 Fairlane Drive

Montgomery, Alabama 36116

136410.BR.ZZ

Parcel 24 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building or Facility Numbers	Label	CERFA Map Locations	RI/FS OU	Site No.	CERCLA Status
24	770, 771, X03	24.2	12,8	2	N/A	N/A

Site Description

Parcel 24 is a 5,614 ft^2 parcel in the southwest portion of the Main Installation, in OU-2, as shown on Drawing 1. Parcel 24 consists of Buildings 770, 771, open storage area X03, and the adjacent railroad tracks.

Soil sampling was conducted at Label 24.2, which consists of Building 770. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), this parcel is associated with area X03 which was used for storage of flammable materials in 55-gallon drums until 1988. The area was then used for steel storage. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 24.2. Sample A(24.2) was located towards the northeast section of Building 770. Sample B(24.2) was located southeast of Building 770 (See Drawing 1, BRAC Soil Sample Locations).

A pick-hoe and sharpshooter shovel were used to remove the gravel and rock surface. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample A(24.2) was collected from beneath a gravel layer to less than 1 ft below ground surface (bgs). Sample B(24.2) was collected from beneath a gravel layer to less than 6 inches bgs.

Both samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides, PCBs, metals, SVOCs, and TPH method 418.1 analyses. All samples received at

CH2M HILL's laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, subsurface soil samples were collected using a 2-foot, stainless-steel, split-spoon sampler. Soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Soil Boring, SB-16, is at the same location where surface soil sample A(24.2) was collected. SB-16 samples were collected from intervals of 0 to 4 ft and 7 to 10 ft. There was no sample recovery from 4 to 7 ft.

Soil Boring, SB-17, is at the same location where surface soil sample B(24.2) was collected. SB-17 samples were collected from intervals of 0 to 4 ft, 4 to 7 ft, and 7 to 10 ft.

The five samples were sent to CH2M HILL's laboratory for metals, pesticides, PCBs, SVOCs, and TPH method 418.1 analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 24-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 24-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Table 24-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 24
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Aluminum	A(24.2)	0 to 1	6960	24000	7800	100000	NA	NA
	A(24.2)	0 to 1	7080	24000	7800	100000	NA	NA
	B(24.2)	0 to .5	10800	24000	7800	100000	NA	NA
Anthracene	A(24.2)	0 to 1	0.44 J	0.096	2300	61000	4300	NA
Arsenic	A(24.2)	0 to 1	4.1	22	.43	3.8	15	10
	A(24.2)	0 to 1	5.9	22	.43	3.8	15	10
	B(24.2)	0 to .5	84.2	22	.43	3.8	15	10
Barium	A(24.2)	0 to 1	63.9	250	550	14000	32	500
	A(24.2)	0 to 1	75	250	550	14000	32	500
	B(24.2)	0 to .5	22.9	250	550	14000	32	500
Benzo(a)anthracene	A(24.2)	0 to 1	0.3 J	0.71	.88	7.8	.7	NA
	A(24.2)	0 to 1	1.2 J	0.71	.88	7.8	.7	NA
Benzo(a)pyrene	A(24.2)	0 to 1	0.3 J	0.96	.088	.78	4	NA
	A(24.2)	0 to 1	1 J	0.96	.088	.78	4	NA
Benzo(b)fluoranthene	A(24.2)	0 to 1	0.23 J	0.9	.88	7.8	4	NA
	A(24.2)	0 to 1	0.89 J	0.9	.88	7.8	4	NA
Benzo(g,h,i)perylene	A(24.2)	0 to 1	0.65 J	0.82	230	6100	1400	NA
Benzo(k)fluoranthene	A(24.2)	0 to 1	0.34 J	0.78	8.8	78	4	NA
	A(24.2)	0 to 1	1 J	0.78	8.8	78	4	NA
bis(2-Ethylhexyl)phthalate	A(24.2)	0 to 1	0.53 J	NA	46	410	11	NA
	B(24.2)	0 to .5	0.11 J	NA	46	410	11	NA
Butylbenzylphthalate	A(24.2)	0 to 1	0.2 J	NA	1600	41000	68	NA
Calcium	A(24.2)	0 to 1	19000	5800	NA	NA	NA	NA
	A(24.2)	0 to 1	65000	5800	NA	NA	NA	NA
	B(24.2)	0 to .5	9100	5800	NA	NA	NA	NA
Chromium	A(24.2)	0 to 1	10.6	27	39	1000	19	1
	A(24.2)	0 to 1	13.4	27	39	1000	19	1
	B(24.2)	0 to .5	11.3	27	39	1000	19	1
Chrysene	A(24.2)	0 to 1	0.35 J	0.94	88	780	1	NA
	A(24.2)	0 to 1	1.4 J	0.94	88	780	1	NA
Cobalt	B(24.2)	0 to .5	2.2	18	470	12000	NA	20
Copper	A(24.2)	0 to 1	10.5	33	310	8200	NA	100

Table 24-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 24
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
	A(24.2)	0 to 1	12.8	33	310	8200	NA	100
	B(24.2)	0 to .5	5.8	33	310	8200	NA	100
DDT	B(24.2)	0 to .5	0.011	0.074	1.9	17	1	NA
Di-n-butylphthalate	A(24.2)	0 to 1	0.51 J	NA	780	20000	120	NA
	A(24.2)	0 to 1	0.75 J	NA	780	20000	120	NA
	B(24.2)	0 to .5	0.17 J	NA	780	20000	120	NA
Dibenz(a,h)anthracene	A(24.2)	0 to 1	0.34 J	0.26	.088	.78	11	NA
Dieldrin	B(24.2)	0 to .5	0.0027 J	0.53	.04	.36	.001	NA
Fluoranthene	A(24.2)	0 to 1	0.52 J	1.6	310	8200	980	NA
	A(24.2)	0 to 1	2.2 J	1.6	310	8200	980	NA
Indeno(1,2,3-cd)pyrene	A(24.2)	0 to 1	0.62 J	0.7	.88	7.8	35	NA
Iron	A(24.2)	0 to 1	8380	37000	2300	61000	NA	NA
	A(24.2)	0 to 1	11100	37000	2300	61000	NA	NA
	B(24.2)	0 to .5	9730	37000	2300	61000	NA	NA
Lead	A(24.2)	0 to 1	39.6	43	200	1000	1.5	50
	A(24.2)	0 to 1	47.4	43	200	1000	1.5	50
	B(24.2)	0 to .5	10	43	200	1000	1.5	50
Magnesium	A(24.2)	0 to 1	2230	4600	NA	NA	NA	NA
	A(24.2)	0 to 1	5680	4600	NA	NA	NA	NA
	B(24.2)	0 to .5	553	4600	NA	NA	NA	NA
Manganese	A(24.2)	0 to 1	382	1300	180	4700	NA	NA
	A(24.2)	0 to 1	485	1300	180	4700	NA	NA
	B(24.2)	0 to .5	68.7	1300	180	4700	NA	NA
Nickel	A(24.2)	0 to 1	8.8	33	160	4100	21	30
	A(24.2)	0 to 1	10.6	33	160	4100	21	30
	B(24.2)	0 to .5	4.6	33	160	4100	21	30
Pentachlorophenol	B(24.2)	0 to .5	0.094 J	NA	5.3	48	.2	NA
Petroleum Hydrocarbons[6]	A(24.2)	0 to 1	1300	NA	NA	100	NA	NA
	A(24.2)	0 to 1	1570	NA	NA	100	NA	NA
Phenanthrene	A(24.2)	0 to 1	0.27 J	0.61	2300	61000	4300	NA
	A(24.2)	0 to 1	1.7 J	0.61	2300	61000	4300	NA
Potassium	A(24.2)	0 to 1	656	2000	NA	NA	NA	NA

Table 5-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 24
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
	A(24.2)	0 to 1	749	2000	NA	NA	NA	NA
Potassium	B(24.2)	0 to .5	887	2000	NA	NA	NA	NA
Pyrene	A(24.2)	0 to 1	0.56 J	1.5	230	6100	1400	NA
	A(24.2)	0 to 1	**2.3**	1.5	230	6100	1400	NA
Vanadium	A(24.2)	0 to 1	**14**	52	55	1400	NA	**2**
	A(24.2)	0 to 1	**15.2**	52	55	1400	NA	**2**
	B(24.2)	0 to .5	**17.5**	52	55	1400	NA	**2**
Zinc	A(24.2)	0 to 1	42	130	2300	61000	42000	50
	A(24.2)	0 to 1	**64.2**	130	2300	61000	42000	**50**
	B(24.2)	0 to .5	11.2	130	2300	61000	42000	50

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.
6. For petroleum hydrocarbon comparisons, the most conservative value of 100 ppm, from Soil Clean-Up Levels for Petroleum Contaminated Sites (provided by TDEC), was used.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Table 24-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 24
BRAC Sampling Program
Defense Depot Memphis, Tennessee

244 137

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Aluminum	A(24.2)	0 to 4	3600	22000	NA
	A(24.2)	7 to 10	19700	22000	NA
	B(24.2)	0 to 4	24900	22000	NA
	B(24.2)	4 to 7	19300	22000	NA
	B(24.2)	7 to 10	15300	22000	NA
Arsenic	A(24.2)	0 to 4	3.8	17	15
	A(24.2)	7 to 10	13.4	17	15
	B(24.2)	0 to 4	20.4	17	15
	B(24.2)	4 to 7	22.1	17	15
	B(24.2)	7 to 10	14.5	17	15
Barium	A(24.2)	0 to 4	13.4	300	32
	A(24.2)	7 to 10	162	300	32
	B(24.2)	0 to 4	250	300	32
	B(24.2)	4 to 7	271	300	32
	B(24.2)	7 to 10	198	300	32
Benzo(a)anthracene	A(24.2)	7 to 10	0.074 J	NA	.7
Benzo(a)pyrene	A(24.2)	7 to 10	0.071 J	NA	4
Benzo(b)fluoranthene	A(24.2)	7 to 10	0.082 J	NA	4
Benzo(g,h,i)perylene	A(24.2)	7 to 10	0.044 J	NA	1400
Benzo(k)fluoranthene	A(24.2)	7 to 10	0.039 J	NA	4
Beryllium	B(24.2)	4 to 7	1	1.2	180
bis(2-Ethylhexyl)phthalate	A(24.2)	0 to 4	0.081 J	NA	11
	A(24.2)	7 to 10	180 D	NA	11
	B(24.2)	0 to 4	0.041 J	NA	11
	B(24.2)	4 to 7	0.23 J	NA	11
	B(24.2)	7 to 10	0.12 J	NA	11
Calcium	A(24.2)	7 to 10	3350	2400	NA
	B(24.2)	0 to 4	2020	2400	NA
	B(24.2)	4 to 7	1620	2400	NA
	B(24.2)	7 to 10	2790	2400	NA
Chromium	A(24.2)	0 to 4	3.7	26	19
	A(24.2)	7 to 10	24.2	26	19
	B(24.2)	0 to 4	23	26	19
	B(24.2)	4 to 7	19.3	26	19
	B(24.2)	7 to 10	17.9	26	19
Chrysene	A(24.2)	7 to 10	0.076 J	NA	1
Cobalt	A(24.2)	0 to 4	2.1	20	NA
	A(24.2)	7 to 10	11.2	20	NA
	B(24.2)	0 to 4	15	20	NA
	B(24.2)	4 to 7	16	20	NA
	B(24.2)	7 to 10	13.6	20	NA
Copper	A(24.2)	0 to 4	6	33	NA
	A(24.2)	7 to 10	25.7	33	NA
	B(24.2)	0 to 4	33.9	33	NA
	B(24.2)	4 to 7	33.1	33	NA
	B(24.2)	7 to 10	27.5	33	NA
Di-n-butylphthalate	A(24.2)	0 to 4	0.24 J	NA	120
	A(24.2)	7 to 10	0.4	NA	120
	B(24.2)	4 to 7	0.66	NA	120
	B(24.2)	7 to 10	0.3 J	NA	120
Fluoranthene	A(24.2)	0 to 4	0.05 J	0.045	980
	A(24.2)	7 to 10	0.1 J	0.045	980

Table 24-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 24
BRAC Sampling Program
Defense Depot Memphis, Tennessee

244 138

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Iron	A(24.2)	0 to 4	6900	38000	NA
	A(24.2)	7 to 10	29800	38000	NA
	B(24.2)	0 to 4	39800	38000	NA
	B(24.2)	4 to 7	36400	38000	NA
	B(24.2)	7 to 10	31700	38000	NA
Lead	A(24.2)	0 to 4	9.1	24	1.5
	A(24.2)	7 to 10	20.3	24	1.5
	B(24.2)	0 to 4	27.6	24	1.5
	B(24.2)	4 to 7	22.3	24	1.5
	B(24.2)	7 to 10	17.1	24	1.5
Magnesium	A(24.2)	0 to 4	168000	4900	NA
	A(24.2)	7 to 10	3690	4900	NA
	B(24.2)	0 to 4	4790	4900	NA
	B(24.2)	4 to 7	4400	4900	NA
	B(24.2)	7 to 10	4090	4900	NA
Manganese	A(24.2)	0 to 4	331	1500	NA
	A(24.2)	7 to 10	838	1500	NA
	B(24.2)	0 to 4	1120	1500	NA
	B(24.2)	4 to 7	1670	1500	NA
	B(24.2)	7 to 10	908	1500	NA
N-Nitrosodiphenylamine	A(24.2)	7 to 10	0.14 J	NA	.2
Nickel	A(24.2)	0 to 4	6.6	37	21
	A(24.2)	7 to 10	28.9	37	21
	B(24.2)	0 to 4	34.3	37	21
	B(24.2)	4 to 7	38.2	37	21
	B(24.2)	7 to 10	33	37	21
Petroleum Hydrocarbons[4]	A(24.2)	0 to 4	18.5	NA	NA
	A(24.2)	7 to 10	19.8	NA	NA
Phenanthrene	A(24.2)	7 to 10	0.049 J	NA	4300
Potassium	A(24.2)	0 to 4	7430	1800	NA
	A(24.2)	7 to 10	3410	1800	NA
	B(24.2)	0 to 4	1930	1800	NA
	B(24.2)	4 to 7	1600	1800	NA
	B(24.2)	7 to 10	1570	1800	NA
Pyrene	A(24.2)	0 to 4	0.044 J	0.042	1400
	A(24.2)	7 to 10	0.09 J	0.042	1400
Selenium	B(24.2)	4 to 7	2.7	0.64	3
Sodium	A(24.2)	0 to 4	526	NA	NA
Vanadium	A(24.2)	0 to 4	10.2	51	NA
	A(24.2)	7 to 10	45.1	51	NA
	B(24.2)	0 to 4	51.1	51	NA
	B(24.2)	4 to 7	44.2	51	NA
	B(24.2)	7 to 10	39.8	51	NA
Zinc	A(24.2)	0 to 4	19.7	110	42000
	A(24.2)	7 to 10	85.9	110	42000
	B(24.2)	0 to 4	120	110	42000

Table 24-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 24
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	B(24.2)	4 to 7	108	110	42000
	B(24.2)	7 to 10	96.1	110	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical* Memorandum, CH2M HILL September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. For petroleum hydrocarbon comparisons, the most conservative value of 100 ppm, from Soil Clean-Up Levels for Petroleum*Contaminated Sites* (provided by TDEC), was used.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
D - indicates estimated value identified at a secondary dilution factor.
J - indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 25 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

2567 Fairlane Drive

Montgomery, Alabama 36116

136410.BR.ZZ

Parcel 25 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
25	873, 875	25.2	8,7	2	N/A	N/A

Site Description

Parcel 25 is a 5,770 ft^2 parcel in the southwest part of the Main Installation, in OU-2, as shown on Drawing 1. Parcel 25 consists of Buildings 873, 875 and the adjacent railroad tracks.

Soil sampling was conducted at Label 25.2, which consists of Building 875. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

In addition, this parcel is associated with a 1,000-gallon heating oil tank that was located outside of Building 875 and was closed in place in July of 1994 (The Pickering Firm, Inc., 1993 Storage Tank Survey as cited in Woodward-Clyde, November 1996). There has been no documented release associated with this tank. No evidence was found of disposal, or migration from an adjacent property of hazardous substances or petroleum products.

Surface Soil Sampling and Analyses Procedure

Samples collected from Label 25.2 were collected for both CH2M HILL and Corps of Engineers (COE) laboratory analysis. Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, a total of two samples were collected from Label 25.2. Sample A(25.2) and a quality assurance split sample were located east of Building 875 (See Drawing 1, BRAC Soil Sample Locations).

A pick-hoe and sharpshooter shovel were used to remove the gravel and rock surface. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. The samples were collected from beneath the gravel surface to less than 6 inches below ground surface (bgs).

Sample A(25.2) was sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides, PCBs, metals, SVOCs, and VOCs analyses. The split sample was sent to COE's Atlanta, Georgia laboratory for pesticides, PCBs, metals, semivolatiles, and volatiles analyses. All samples received at QAL's Montgomery laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, subsurface soil samples were collected using a 2-foot, stainless-steel, split-spoon sampler. Samples were collected from intervals of 0 to 4 ft, 4 to 7 ft, and 7 to 10 ft at the same sample location where the surface soil sample A(25.2) was collected. VOC soil samples were collected directly from the continuous sampler using stainless-steel spoons. The remaining soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Three samples were collected from the soil boring (SB-8). The samples were sent to CH2M HILL's laboratory for metals, pesticides, PCBs, VOCs, and SVOCs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 25-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 25-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Table 25-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 25
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Acetone	A(25.2)	0 to .5	0.004 J	NA	780	20000	8	NA
Aluminum	A(25.2)	0 to .5	4180	24000	7800	100000	NA	NA
Arsenic	A(25.2)	0 to .5	**2.4**	22	**.43**	3.8	15	10
Barium	A(25.2)	0 to .5	**33.7**	250	550	**14000**	**32**	500
Benzo(a)anthracene	A(25.2)	0 to .5	0.082 J	0.71	.88	7.8	.7	NA
Benzo(a)pyrene	A(25.2)	0 to .5	0.088 J	0.96	.088	.78	4	NA
Benzo(b)fluoranthene	A(25.2)	0 to .5	0.084 J	0.9	.88	7.8	4	NA
Benzo(g,h,i)perylene	A(25.2)	0 to .5	0.048 J	0.82	230	6100	1400	NA
Benzo(k)fluoranthene	A(25.2)	0 to .5	0.098 J	0.78	8.8	78	4	NA
Calcium	A(25.2)	0 to .5	**31200**	**5800**	NA	NA	NA	NA
Chlordane	A(25.2)	0 to .5	**0.071**	**0.029**	.49	4.4	2	NA
Chromium	A(25.2)	0 to .5	**5.5**	27	39	1000	**19**	**1**
Chrysene	A(25.2)	0 to .5	0.12 J	0.94	88	780	1	NA
Copper	A(25.2)	0 to .5	3.3	33	310	8200	NA	100
Di-n-butylphthalate	A(25.2)	0 to .5	0.075 J	NA	780	20000	120	NA
Fluoranthene	A(25.2)	0 to .5	0.16 J	1.6	310	8200	980	NA
gamma-Chlordane	A(25.2)	0 to .5	**0.092**	**0.026**	0.49	4.4	2	NA
Indeno(1,2,3-cd)pyrene	A(25.2)	0 to .5	0.052 J	0.7	.88	7.8	35	NA
Iron	A(25.2)	0 to .5	**5220**	**37000**	**2300**	61000	NA	NA
Lead	A(25.2)	0 to .5	**2.8**	43	200	1000	**1.5**	**50**
Magnesium	A(25.2)	0 to .5	1850	4600	NA	NA	NA	NA
Manganese	A(25.2)	0 to .5	66.3	1300	180	4700	NA	NA
Methylene chloride	A(25.2)	0 to .5	0.001 J	NA	85	760	.01	NA
Phenanthrene	A(25.2)	0 to .5	0.092 J	0.61	2300	61000	4300	NA
Pyrene	A(25.2)	0 to .5	0.18 J	1.5	230	6100	1400	NA
Vanadium	A(25.2)	0 to .5	**8.9**	52	55	1400	NA	**2**

Table 5-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 25
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Zinc	A(25.2)	0 to .5	23.4	130	2300	61000	42000	50

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Table 25-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 25
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
2-Hexanone	A(25.2)	4 to 7	0.003 J	NA	NA
Aluminum	A(25.2)	0 to 4	**29400**	**22000**	NA
	A(25.2)	4 to 7	**22800**	**22000**	NA
	A(25.2)	7 to 10	18000	22000	NA
Arsenic	A(25.2)	0 to 4	**20**	**17**	**15**
	A(25.2)	4 to 7	**21.3**	**17**	**15**
	A(25.2)	7 to 10	**17.3**	**17**	**15**
Barium	A(25.2)	0 to 4	160	300	**32**
	A(25.2)	4 to 7	**301**	**300**	**32**
	A(25.2)	7 to 10	**242**	300	**32**
Benzo(a)anthracene	A(25.2)	0 to 4	0.044 J	NA	.7
Beryllium	A(25.2)	4 to 7	1.1	1.2	180
bis(2-Ethylhexyl)phthalate	A(25.2)	0 to 4	0.52	NA	11
	A(25.2)	4 to 7	0.15 J	NA	11
	A(25.2)	7 to 10	0.098 J	NA	11
Calcium	A(25.2)	0 to 4	**2540**	**2400**	NA
	A(25.2)	4 to 7	**3040**	**2400**	NA
	A(25.2)	7 to 10	**3580**	**2400**	NA
Chromium	A(25.2)	0 to 4	**25.8**	26	**19**
	A(25.2)	4 to 7	**23.3**	26	**19**
	A(25.2)	7 to 10	**23.9**	26	**19**
Chrysene	A(25.2)	0 to 4	0.053 J	NA	1
	A(25.2)	4 to 7	0.043 J	NA	1
Cobalt	A(25.2)	0 to 4	15.3	20	NA
	A(25.2)	4 to 7	17.1	20	NA
	A(25.2)	7 to 10	13.3	20	NA
Copper	A(25.2)	0 to 4	**35.2**	**33**	NA
	A(25.2)	4 to 7	**36.3**	**33**	NA
	A(25.2)	7 to 10	31.1	33	NA
Di-n-butylphthalate	A(25.2)	0 to 4	0.34 J	NA	120
	A(25.2)	4 to 7	0.27 J	NA	120
	A(25.2)	7 to 10	0.32 J	NA	120
Fluoranthene	A(25.2)	0 to 4	**0.092 J**	**0.045**	980
	A(25.2)	4 to 7	**0.069 J**	**0.045**	980
Iron	A(25.2)	0 to 4	**41700**	**38000**	NA
	A(25.2)	4 to 7	**38800**	**38000**	NA
	A(25.2)	7 to 10	35800	38000	NA
Lead	A(25.2)	0 to 4	**31.6**	**24**	**1.5**
	A(25.2)	4 to 7	**23.7**	**24**	**1.5**
	A(25.2)	7 to 10	**19.5**	**24**	**1.5**
Magnesium	A(25.2)	0 to 4	**5180**	**4900**	NA
	A(25.2)	4 to 7	**4940**	**4900**	NA
	A(25.2)	7 to 10	4700	4900	NA
Manganese	A(25.2)	0 to 4	1280	1500	NA
	A(25.2)	4 to 7	**2330**	**1500**	NA
	A(25.2)	7 to 10	941	1500	NA
Methylene chloride	A(25.2)	0 to 4	0.002 J	NA	.01
	A(25.2)	4 to 7	0.001 J	NA	.01

Table 25-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 25
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Nickel	A(25.2)	0 to 4	**34.6**	37	21
	A(25.2)	4 to 7	**41.1**	37	21
	A(25.2)	7 to 10	**38.4**	37	21
Phenanthrene	A(25.2)	0 to 4	0.056 J	NA	4300
	A(25.2)	0 to 4	**4010**	1800	NA
	A(25.2)	4 to 7	**4210**	1800	NA
	A(25.2)	7 to 10	**3640**	1800	NA
Pyrene	A(25.2)	0 to 4	**0.083 J**	0.042	1400
	A(25.2)	4 to 7	**0.064 J**	0.042	1400
Sodium	A(25.2)	4 to 7	366	NA	NA
Vanadium	A(25.2)	0 to 4	**54**	51	NA
	A(25.2)	4 to 7	**53.5**	51	NA
	A(25.2)	7 to 10	46.5	51	NA
Zinc	A(25.2)	0 to 4	**122**	110	42000
	A(25.2)	4 to 7	**121**	110	42000
	A(25.2)	7 to 10	**111**	110	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J -indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 28 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

2567 Fairlane Drive

Montgomery, Alabama 36116

136410.BR.ZZ

Parcel 28 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building or Facility Number	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
28	1089, X04	28.1	3,7	2	N/A	N/A

Site Description

Parcel 28 is a 3,725 ft^2 parcel in the southwest part of the Main Installation, in OU-2, as shown on Drawing 1. Parcel 28 consists of Building 1089, open storage area X04, and the adjacent railroad tracks.

Soil sampling was conducted at Label 28.1, which consists of open storage area X04. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), the open storage areas have the potential for hazardous materials to have been released. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, samples collected from Label 28.1 were collected for both CH2M HILL and Corps of Engineers (COE) laboratory analysis. Sample A(28.1) was located northeast of Building 1089. Sample B(28.1) was located north of Sample A(28.1) in open storage area X04 (See Drawing 1, BRAC Soil Sample Locations).

A pick-hoe and sharpshooter shovel were used to remove the gravel and rock surface. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample A(28.1) was collected from beneath the gravel surface to less than 8 inches below ground surface (bgs). Sample B(28.1) was collected from beneath the gravel surface to less than 6 inches bgs.

Samples A(28.1) and B(28.1) were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides, PCBs, metals, SVOCs , and VOCs analyses. The quality assurance

split sample was sent to COE's Atlanta, Georgia, laboratory for pesticides, PCBs, metals, semivolatiles, and volatiles analyses. All samples received at CH2M HILL's laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, subsurface soil samples were collected, using a 2-foot, stainless-steel, split-spoon sampler. Samples were collected from intervals of 0 to 4 ft, 4 to 7 ft, and 7 to 10 ft. VOC soil samples were collected directly from the continuous sampler using stainless-steel spoons. The remaining soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Soil Boring, SB-3, is at the same location where surface soil sample A(28.1) was collected. Soil Boring, SB-4, is at the same location where surface soil sample B(28.1) was collected.

Three samples were collected from each of the two soil borings (SB-3 and SB-4). The six samples were sent to CH2M HILL's laboratory for metals, pesticides, PCBs, VOCs, and SVOCs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 28-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 28-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Table 28-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 28
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Acetone	A(28.1)	0 to .7	0.004 J	NA	780	20000	8	NA
	A(28.1)	0 to .7	0.005 J	NA	780	20000	8	NA
	B(28.1)	0 to .7	0.009 J	NA	780	20000	8	NA
Aluminum	A(28.1)	0 to .7	2820	24000	7800	100000	NA	NA
	A(28.1)	0 to .7	3690	24000	7800	100000	NA	NA
	B(28.1)	0 to .7	**24700**	**24000**	**7800**	100000	NA	NA
Arsenic	A(28.1)	0 to .7	**3.4**	22	**.43**	**3.8**	15	10
	A(28.1)	0 to .7	**6.2**	22	**.43**	**3.8**	15	10
	B(28.1)	0 to .7	**17.6**	22	**.43**	**3.8**	15	10
Barium	A(28.1)	0 to .7	**39.3**	250	550	14000	**32**	500
	A(28.1)	0 to .7	**63.1**	250	550	14000	**32**	500
	B(28.1)	0 to .7	**246**	250	550	14000	**32**	500
Benzo(a)anthracene	A(28.1)	0 to .7	0.053 J	0.71	.88	7.8	.7	NA
	A(28.1)	0 to .7	0.056 J	0.71	.88	7.8	.7	NA
Benzo(a)pyrene	A(28.1)	0 to .7	0.053 J	0.96	.088	.78	4	NA
	A(28.1)	0 to .7	0.065 J	0.96	.088	.78	4	NA
Benzo(b)fluoranthene	A(28.1)	0 to .7	0.062 J	0.9	.88	7.8	4	NA
	A(28.1)	0 to .7	0.083 J	0.9	.88	7.8	4	NA
Benzo(g,h,i)perylene	A(28.1)	0 to .7	0.054 J	0.82	230	6100	1400	NA
	A(28.1)	0 to .7	0.072 J	0.82	230	6100	1400	NA
Benzo(k)fluoranthene	A(28.1)	0 to .7	0.066 J	0.78	8.8	78	4	NA
	A(28.1)	0 to .7	0.077 J	0.78	8.8	78	4	NA
Beryllium	B(28.1)	0 to .7	**0.95**	1.1	**.15**	**1.3**	180	10
bis(2-Ethylhexyl)phthalate	A(28.1)	0 to .7	0.048 J	NA	46	410	11	NA
	A(28.1)	0 to .7	0.12 J	NA	46	410	11	NA
	B(28.1)	0 to .7	0.048 J	NA	46	410	11	NA
Cadmium	A(28.1)	0 to .7	**0.54**	1.4	3.9	100	6	3
	A(28.1)	0 to .7	**0.7**	1.4	3.9	100	6	3
Calcium	A(28.1)	0 to .7	**86400**	**5800**	NA	NA	NA	NA
	A(28.1)	0 to .7	**104000**	**5800**	NA	NA	NA	NA
	B(28.1)	0 to .7	**24600**	**5800**	NA	NA	NA	NA
Chromium	A(28.1)	0 to .7	**18.7**	27	39	1000	**19**	1
	A(28.1)	0 to .7	**19.9**	27	39	1000	**19**	1

Table 28-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 28
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
	B(28.1)	0 to .7	26.1	27	39	1000	19	1
Chrysene	A(28.1)	0 to .7	0.073 J	0.94	88	780	1	NA
	A(28.1)	0 to .7	0.088 J	0.94	88	780	1	NA
Cobalt	B(28.1)	0 to .7	13.7	18	470	12000	NA	20
Copper	A(28.1)	0 to .7	13.8	33	310	8200	NA	100
	A(28.1)	0 to .7	15.5	33	310	8200	NA	100
	B(28.1)	0 to .7	34.5	33	310	8200	NA	100
DDD	A(28.1)	0 to .7	0.041	0.0067	2.7	24	0.7	NA
	A(28.1)	0 to .7	0.046	0.0067	2.7	24	0.7	NA
DDE	A(28.1)	0 to .7	0.04	0.16	1.9	17	0.5	NA
	A(28.1)	0 to .7	0.044	0.16	1.9	17	0.5	NA
DDT	A(28.1)	0 to .7	0.2	0.074	1.9	17	1	NA
	A(28.1)	0 to .7	0.22	0.074	1.9	17	1	NA
Di-n-butylphthalate	A(28.1)	0 to .7	0.21 J	NA	780	20000	120	NA
	A(28.1)	0 to .7	0.28 J	NA	780	20000	120	NA
	B(28.1)	0 to .7	0.099 J	NA	780	20000	120	NA
Fluoranthene	A(28.1)	0 to .7	0.13 J	1.6	310	8200	980	NA
	A(28.1)	0 to .7	0.14 J	1.6	310	8200	980	NA
Indeno(1,2,3-cd)pyrene	A(28.1)	0 to .7	0.048 J	0.7	.88	7.8	35	NA
	A(28.1)	0 to .7	0.068 J	0.7	.88	7.8	35	NA
Iron	A(28.1)	0 to .7	7800	37000	2300	61000	NA	NA
	A(28.1)	0 to .7	9180	37000	2300	61000	NA	NA
	B(28.1)	0 to .7	38400	37000	2300	61000	NA	NA
Lead	A(28.1)	0 to .7	48.1	43	200	1000	1.5	50
	A(28.1)	0 to .7	58.8	43	200	1000	1.5	50
	B(28.1)	0 to .7	28.7	43	200	1000	1.5	50
Magnesium	A(28.1)	0 to .7	3350	4600	NA	NA	NA	NA
	A(28.1)	0 to .7	4700	4600	NA	NA	NA	NA
	B(28.1)	0 to .7	7200	4600	NA	NA	NA	NA
Manganese	A(28.1)	0 to .7	131	1300	180	4700	NA	NA
	A(28.1)	0 to .7	186	1300	180	4700	NA	NA
	B(28.1)	0 to .7	1100	1300	180	4700	NA	NA
Mercury	B(28.1)	0 to .7	2.13	0.43	2.3	61	3	.3

Table 28-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 28
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Methylene chloride	A(28.1)	0 to .7	0.001 J	NA	85	760	.01	NA
	A(28.1)	0 to .7	0.002 J	NA	85	760	.01	NA
	B(28.1)	0 to .7	0.005 J	NA	85	760	.01	NA
Nickel	A(28.1)	0 to .7	7.2	33	160	4100	21	30
	A(28.1)	0 to .7	13.2	33	160	4100	21	30
	B(28.1)	0 to .7	**37.4**	**33**	160	4100	**21**	**30**
Phenanthrene	A(28.1)	0 to .7	0.054 J	0.61	2300	61000	4300	NA
	A(28.1)	0 to .7	0.07 J	0.61	2300	61000	4300	NA
Potassium	B(28.1)	0 to .7	**2650**	**2000**	NA	NA	NA	NA
Pyrene	A(28.1)	0 to .7	0.11 J	1.5	230	6100	1400	NA
	A(28.1)	0 to .7	0.13 J	1.5	230	6100	1400	NA
Toluene	A(28.1)	0 to .7	0.001 J	0.002	1600	41000	5	NA
Vanadium	A(28.1)	0 to .7	7.3	52	55	1400	NA	2
	A(28.1)	0 to .7	9.4	52	55	1400	NA	2
	B(28.1)	0 to .7	49.8	52	55	1400	NA	2
Zinc	A(28.1)	0 to .7	**184**	**130**	2300	61000	42000	50
	A(28.1)	0 to .7	**165**	**130**	2300	61000	42000	50
	B(28.1)	0 to .7	128	130	2300	61000	42000	50

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Table 28-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 28
BRAC Sampling Program
Defense Depot Memphis, Tennessee

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Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Aluminum	A(28.1)	0 to 4	**25000**	**22000**	NA
	A(28.1)	4 to 7	16600	22000	NA
	A(28.1)	7 to 10	14400	22000	NA
	B(28.1)	0 to 4	15000	22000	NA
	B(28.1)	4 to 7	14500	22000	NA
	B(28.1)	7 to 10	12000	22000	NA
Arsenic	A(28.1)	0 to 4	**22.9**	17	**15**
	A(28.1)	4 to 7	**15.3**	17	**15**
	A(28.1)	7 to 10	13.3	17	15
	B(28.1)	0 to 4	**17.3**	17	**15**
	B(28.1)	4 to 7	**15.8**	17	**15**
	B(28.1)	7 to 10	9.5	17	15
Barium	A(28.1)	0 to 4	**352**	300	**32**
	A(28.1)	4 to 7	**248**	300	**32**
	A(28.1)	7 to 10	**136**	300	**32**
	B(28.1)	0 to 4	**297**	300	**32**
	B(28.1)	4 to 7	**208**	300	**32**
	B(28.1)	7 to 10	**118**	300	**32**
bis(2-Ethylhexyl)phthalate	B(28.1)	7 to 10	0.041 J	NA	11
Calcium	A(28.1)	0 to 4	2090	2400	NA
	A(28.1)	4 to 7	**2470**	2400	NA
	A(28.1)	7 to 10	**3650**	2400	NA
	B(28.1)	0 to 4	**3070**	2400	NA
	B(28.1)	4 to 7	**5390**	2400	NA
	B(28.1)	7 to 10	**21700**	2400	NA
Chromium	A(28.1)	0 to 4	**27.1**	26	**19**
	A(28.1)	4 to 7	**20.3**	26	**19**
	A(28.1)	7 to 10	**20.7**	26	**19**
	B(28.1)	0 to 4	**20.4**	26	**19**
	B(28.1)	4 to 7	**20.6**	26	**19**
	B(28.1)	7 to 10	**19.5**	26	**19**
Cobalt	A(28.1)	0 to 4	16.8	20	NA
	A(28.1)	4 to 7	15.2	20	NA
	A(28.1)	7 to 10	14	20	NA
	B(28.1)	0 to 4	15	20	NA
	B(28.1)	4 to 7	15.3	20	NA
	B(28.1)	7 to 10	11.4	20	NA
Copper	A(28.1)	0 to 4	**41.1**	33	NA
	A(28.1)	4 to 7	30.7	33	NA
	A(28.1)	7 to 10	28.8	33	NA
	B(28.1)	0 to 4	30.9	33	NA
	B(28.1)	4 to 7	32.5	33	NA
	B(28.1)	7 to 10	24.8	33	NA
Di-n-butylphthalate	A(28.1)	0 to 4	0.051 J	NA	120
	A(28.1)	4 to 7	0.058 J	NA	120
	B(28.1)	4 to 7	0.051 J	NA	120
	B(28.1)	7 to 10	0.058 J	NA	120
Iron	A(28.1)	0 to 4	**46900**	**38000**	NA
	A(28.1)	4 to 7	**34000**	38000	NA

Table 28-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 28
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	A(28.1)	7 to 10	30800	38000	NA
	B(28.1)	0 to 4	34700	38000	NA
	B(28.1)	4 to 7	35000	38000	NA
	B(28.1)	7 to 10	25500	38000	NA
Lead	A(28.1)	0 to 4	**25.7**	**24**	**1.5**
	A(28.1)	4 to 7	**17.7**	24	**1.5**
	A(28.1)	7 to 10	**15.1**	24	**1.5**
	B(28.1)	0 to 4	**19.7**	24	**1.5**
	B(28.1)	4 to 7	**20.2**	24	**1.5**
	B(28.1)	7 to 10	**12.4**	24	**1.5**
Magnesium	A(28.1)	0 to 4	**5730**	**4900**	NA
	A(28.1)	4 to 7	4330	4900	NA
	A(28.1)	7 to 10	4050	4900	NA
	B(28.1)	0 to 4	4760	4900	NA
	B(28.1)	4 to 7	**5160**	**4900**	NA
	B(28.1)	7 to 10	**15500**	**4900**	NA
Manganese	A(28.1)	0 to 4	1230	1500	NA
	A(28.1)	4 to 7	951	1500	NA
	A(28.1)	7 to 10	954	1500	NA
	B(28.1)	0 to 4	969	1500	NA
	B(28.1)	4 to 7	1010	1500	NA
	B(28.1)	7 to 10	875	1500	NA
Methylene chloride	A(28.1)	0 to 4	0.004 J	NA	.01
	A(28.1)	4 to 7	0.002 J	NA	.01
	A(28.1)	7 to 10	0.001 J	NA	.01
	B(28.1)	4 to 7	0.002 J	NA	.01
Nickel	A(28.1)	0 to 4	**44.8**	**37**	**21**
	A(28.1)	4 to 7	**33.9**	37	**21**
	A(28.1)	7 to 10	**32.7**	37	**21**
	B(28.1)	0 to 4	**41**	**37**	**21**
	B(28.1)	4 to 7	**36.3**	37	**21**
	B(28.1)	7 to 10	**29.5**	37	**21**
Potassium	A(28.1)	0 to 4	**2130**	**1800**	NA
	A(28.1)	4 to 7	1520	1800	NA
	A(28.1)	7 to 10	1350	1800	NA
	B(28.1)	0 to 4	**1910**	**1800**	NA
	B(28.1)	4 to 7	**2390**	**1800**	NA
	B(28.1)	7 to 10	1710	1800	NA
Sodium	B(28.1)	4 to 7	353	NA	NA
	B(28.1)	7 to 10	331	NA	NA
Vanadium	A(28.1)	0 to 4	**57.6**	**51**	NA
	A(28.1)	4 to 7	43.7	51	NA
	A(28.1)	7 to 10	44.5	51	NA
	B(28.1)	0 to 4	40.3	51	NA
	B(28.1)	4 to 7	42.2	51	NA
	B(28.1)	7 to 10	38.7	51	NA

Table 28-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 28
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Zinc	A(28.1)	0 to 4	**123**	**110**	42000
	A(28.1)	4 to 7	103	110	42000
	A(28.1)	7 to 10	79.3	110	42000
	B(28.1)	0 to 4	100	110	42000
	B(28.1)	4 to 7	108	110	42000
	B(28.1)	7 to 10	63.1	110	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical* Memorandum, CH2M HILL September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 29 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

2567 Fairlane Drive

Montgomery, Alabama 36116

136410.BR.ZZ

Parcel 29 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Facility Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
29	X27, X30	29.2	3,14	4	N/A	N/A

Site Description

Parcel 29 is a 7,771 ft^2 parcel in the northwest corner of the Main Installation, in OU-4, as shown on Drawing 1. Parcel 29 consists of open storage areas X27, X30 and the adjacent railroad tracks.

Soil sampling was conducted at Label 29.2, which consists of open storage areas X27 and X30. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), the open storage areas have the potential for hazardous materials to have been released. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

In addition, this parcel is associated with a 1.25-gallon hydraulic fluid spill in the street that was reported on September 12, 1995. The spill reportedly spread north, out Gate 15 and across Dunn Avenue (Defense Logistics Agency, DDMT 1995 Spill Response Checklist as cited in Woodward-Clyde, November 1996). The precise location of the spill is currently unknown. Application of absorbent was sufficient to contain the spill, and no further remedial action was deemed necessary. Therefore the current sampling activities are not in response to this remediated spill.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 29.2. Sample A(29.2) was located west of Building 925 in open storage area X27. Sample B(29.2) was located north of Sample A(29.2) across a drainage ditch in open storage area X30 (See Drawing 1, BRAC Soil Sample Locations).

A pick-hoe and sharpshooter shovel were used to remove the gravel and rock surface. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample A(29.2) was collected from beneath the highly compacted gravel surface to less than 8 inches below ground surface (bgs). Sample B(29.2) was collected from beneath the gravel surface to less than 6 inches bgs.

Both samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides, PCBs, metals, SVOCs, and VOCs analyses. All samples received at CH2M HILL's laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, subsurface soil samples were collected, using a 2-foot, stainless-steel, split-spoon sampler. Samples were collected from intervals of 0 to 4 ft, 4 to 7 ft, and 7 to 10 ft. VOC soil samples were collected directly from the continuous sampler using stainless-steel spoons. The remaining soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Soil Boring, SB-9, is at the same location where surface soil sample A(29.2) was collected. Soil Boring, SB-5, is at the same location where surface soil sample B(29.2) was collected.

Three samples were collected from each of the two soil borings (SB-9 and SB-5). The six samples were sent to CH2M HILL's laboratory for metals, pesticides, PCBs, VOCs, and SVOCs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 29-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 29-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Table 29-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 29
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Acetone	A(29.2)	0 to .5	0.019	NA	780	20000	8	NA
Aluminum	A(29.2)	0 to .5	3670	24000	7800	100000	NA	NA
	A(29.2)	0 to .5	4420	24000	7800	100000	NA	NA
	B(29.2)	0 to .5	9240	24000	7800	100000	NA	NA
Arsenic	A(29.2)	0 to .5	3.2	22	.43	3.8	15	10
	A(29.2)	0 to .5	3.7	22	.43	3.8	15	10
	B(29.2)	0 to .5	12.8	22	.43	3.8	15	10
Barium	B(29.2)	0 to .5	.142	250	550	14000	32	500
Benzo(a)anthracene	B(29.2)	0 to .5	0.037 J	0.71	.88	7.8	.7	NA
Benzo(a)pyrene	B(29.2)	0 to .5	0.057 J	0.96	.088	.78	4	NA
Benzo(b)fluoranthene	B(29.2)	0 to .5	0.09 J	0.9	.88	7.8	4	NA
Benzo(g,h,i)perylene	B(29.2)	0 to .5	0.051 J	0.82	230	6100	1400	NA
Benzo(k)fluoranthene	B(29.2)	0 to .5	0.072 J	0.78	8.8	78	4	NA
bis(2-Ethylhexyl)phthalate	A(29.2)	0 to .5	0.049 J	NA	46	410	11	NA
	B(29.2)	0 to .5	0.083 J	NA	46	410	11	NA
Butylbenzylphthalate	A(29.2)	0 to .5	0.7	NA	1600	41000	68	NA
Calcium	A(29.2)	0 to .5	529	5800	NA	NA	NA	NA
	B(29.2)	0 to .5	6590	5800	NA	NA	NA	NA
Chlordane	B(29.2)	0 to .5	0.011	0.029	.49	4.4	2	NA
Chloromethane	A(29.2)	0 to .5	0.001 J	NA	49	440	.0066	NA
Chromium	A(29.2)	0 to .5	13.1	27	39	1000	19	1
	A(29.2)	0 to .5	13.2	27	39	1000	19	1
	B(29.2)	0 to .5	54.7	27	39	1000	19	1
Chrysene	B(29.2)	0 to .5	0.071 J	0.94	88	780	1	NA
Cobalt	B(29.2)	0 to .5	8.7	18	470	12000	NA	20
Copper	A(29.2)	0 to .5	4	33	310	8200	NA	100
	A(29.2)	0 to .5	4.8	33	310	8200	NA	100
	B(29.2)	0 to .5	25.3	33	310	8200	NA	100
DDT	B(29.2)	0 to .5	0.043	0.074	1.9	17	1	NA
Di-n-butylphthalate	A(29.2)	0 to .5	0.075 J	NA	780	20000	120	NA
	A(29.2)	0 to .5	0.13 J	NA	780	20000	120	NA
Di-n-octylphthalate	A(29.2)	0 to .5	0.12 J	NA	160	4100	1000000	NA

Table 29-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 29
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Dieldrin	B(29.2)	0 to .5	**0.13**	0.53	.04	.36	**.001**	NA
Fluoranthene	B(29.2)	0 to .5	0.11 J	1.6	310	8200	980	NA
gamma-Chlordane	B(29.2)	0 to .5	0.017	0.026	0.49	4.4	2	NA
Iron	A(29.2)	0 to .5	**8750**	37000	**2300**	61000	NA	NA
	A(29.2)	0 to .5	**8980**	37000	**2300**	61000	NA	NA
	B(29.2)	0 to .5	**20800**	37000	**2300**	61000	NA	NA
Lead	A(29.2)	0 to .5	**29.7**	43	200	1000	1.5	50
	A(29.2)	0 to .5	**35.5**	43	200	1000	1.5	50
	B(29.2)	0 to .5	**223**	**43**	**200**	1000	1.5	50
Magnesium	B(29.2)	0 to .5	2110	4600	NA	NA	NA	NA
Manganese	A(29.2)	0 to .5	64.6	1300	180	4700	NA	NA
	A(29.2)	0 to .5	113	1300	180	4700	NA	NA
	B(29.2)	0 to .5	**601**	1300	180	4700	NA	NA
Methylene chloride	A(29.2)	0 to .5	0.002 J	NA	85	760	.01	NA
	A(29.2)	0 to .5	0.003 J	NA	85	760	.01	NA
	B(29.2)	0 to .5	**0.032**	NA	85	760	**.01**	NA
Nickel	A(29.2)	0 to .5	5	33	160	4100	21	30
	B(29.2)	0 to .5	15.5	33	160	4100	21	30
Pentachlorophenol	B(29.2)	0 to .5	0.096 J	NA	5.3	48	.2	NA
Phenanthrene	B(29.2)	0 to .5	0.042 J	0.61	2300	61000	4300	NA
Potassium	B(29.2)	0 to .5	**911**	2000	NA	NA	NA	NA
Pyrene	B(29.2)	0 to .5	**0.11 J**	1.5	230	6100	1400	NA
Selenium	B(29.2)	0 to .5	**12.5**	**0.81**	39	1000	**3**	**1**
Vanadium	A(29.2)	0 to .5	**12.4**	52	55	1400	NA	**2**
	A(29.2)	0 to .5	**12.9**	52	55	1400	NA	**2**
	B(29.2)	0 to .5	**27.4**	52	55	1400	NA	**2**

Table 29-A
Summary of Detected Compounds In Surface Soil Compared to Screening Levels for Parcel 29
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Zinc	A(29.2)	0 to .5	23.4	130	2300	61000	42000	50
	A(29.2)	0 to .5	24.8	130	2300	61000	42000	50
	B(29.2)	0 to .5	**152**	**130**	2300	61000	42000	50

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Table 29-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 29
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Aluminum	A(29.2)	0 to 4	**22200**	**22000**	NA
	A(29.2)	4 to 7	16400	22000	NA
	A(29.2)	7 to 10	14800	22000	NA
	B(29.2)	0 to 4	18300	22000	NA
	B(29.2)	4 to 7	15600	22000	NA
	B(29.2)	7 to 10	14400	22000	NA
Arsenic	A(29.2)	0 to 4	**19.1**	17	15
	A(29.2)	4 to 7	**14.8**	17	15
	A(29.2)	7 to 10	9.8	17	15
	B(29.2)	0 to 4	**16.1**	17	15
	B(29.2)	4 to 7	**13.4**	17	15
	B(29.2)	7 to 10	10	17	15
Barium	A(29.2)	0 to 4	**258**	300	**32**
	A(29.2)	4 to 7	**219**	300	**32**
	A(29.2)	7 to 10	**143**	300	**32**
	B(29.2)	0 to 4	**191**	300	**32**
	B(29.2)	4 to 7	**188**	300	**32**
	B(29.2)	7 to 10	**131**	300	**32**
Beryllium	A(29.2)	0 to 4	0.98	1.2	180
bis(2-Ethylhexyl)phthalate	B(29.2)	7 to 10	0.085 J	NA	11
Bromomethane	A(29.2)	0 to 4	0.002 J	NA	.1
Calcium	A(29.2)	0 to 4	1730	2400	NA
	A(29.2)	4 to 7	**2730**	**2400**	NA
	A(29.2)	7 to 10	**3430**	**2400**	NA
	B(29.2)	0 to 4	1760	2400	NA
	B(29.2)	4 to 7	**2840**	**2400**	NA
	B(29.2)	7 to 10	**3430**	**2400**	NA
Chloromethane	A(29.2)	0 to 4	0.002 J	NA	.0066
Chromium	A(29.2)	0 to 4	**22.8**	26	19
	A(29.2)	4 to 7	**20.5**	26	19
	A(29.2)	7 to 10	19	26	19
	B(29.2)	0 to 4	**21.6**	26	19
	B(29.2)	4 to 7	**18.5**	26	19
	B(29.2)	7 to 10	**18.1**	26	19
Cobalt	A(29.2)	0 to 4	**16.4**	20	NA
	A(29.2)	4 to 7	**14.8**	20	NA
	A(29.2)	7 to 10	**13.4**	20	NA
	B(29.2)	0 to 4	**13.6**	20	NA
	B(29.2)	4 to 7	**13.4**	20	NA
	B(29.2)	7 to 10	**12.1**	20	NA
Copper	A(29.2)	0 to 4	**32.9**	33	NA
	A(29.2)	4 to 7	**30.4**	33	NA
	A(29.2)	7 to 10	**26.7**	33	NA
	B(29.2)	0 to 4	**30.9**	33	NA
	B(29.2)	4 to 7	**27.5**	33	NA
	B(29.2)	7 to 10	**25.6**	33	NA
Di-n-butylphthalate	A(29.2)	0 to 4	0.041 J	NA	120
	A(29.2)	4 to 7	0.046 J	NA	120
	A(29.2)	7 to 10	0.058 J	NA	120
	B(29.2)	0 to 4	0.045 J	NA	120
	B(29.2)	4 to 7	0.062 J	NA	120
Iron	A(29.2)	0 to 4	**38700**	**38000**	NA
	A(29.2)	4 to 7	**34400**	**38000**	NA

Table 29-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 29
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	A(29.2)	7 to 10	28800	38000	NA
	B(29.2)	0 to 4	35800	38000	NA
	B(29.2)	4 to 7	31500	38000	NA
	B(29.2)	7 to 10	28600	38000	NA
	A(29.2)	0 to 4	21.8	24	1.5
	A(29.2)	4 to 7	17.6	24	1.5
	A(29.2)	7 to 10	19.7	24	1.5
	B(29.2)	0 to 4	19.9	24	1.5
	B(29.2)	4 to 7	17.5	24	1.5
	B(29.2)	7 to 10	12.9	24	1.5
Magnesium	A(29.2)	0 to 4	4660	4900	NA
	A(29.2)	4 to 7	4250	4900	NA
	A(29.2)	7 to 10	4060	4900	NA
	B(29.2)	0 to 4	4380	4900	NA
	B(29.2)	4 to 7	3970	4900	NA
	B(29.2)	7 to 10	3900	4900	NA
Manganese	A(29.2)	0 to 4	1150	1500	NA
	A(29.2)	4 to 7	930	1500	NA
	A(29.2)	7 to 10	997	1500	NA
	B(29.2)	0 to 4	903	1500	NA
	B(29.2)	4 to 7	895	1500	NA
	B(29.2)	7 to 10	807	1500	NA
Methylene chloride	A(29.2)	0 to 4	0.002 J	NA	.01
	A(29.2)	4 to 7	0.002 J	NA	.01
	B(29.2)	0 to 4	0.002 J	NA	.01
Nickel	A(29.2)	0 to 4	37	37	21
	A(29.2)	4 to 7	34.1	37	21
	A(29.2)	7 to 10	31.5	37	21
	B(29.2)	0 to 4	34.4	37	21
	B(29.2)	4 to 7	32.2	37	21
	B(29.2)	7 to 10	31.1	37	21
Potassium	A(29.2)	0 to 4	2260	1800	NA
	A(29.2)	4 to 7	1740	1800	NA
	A(29.2)	7 to 10	1570	1800	NA
	B(29.2)	0 to 4	1970	1800	NA
	B(29.2)	4 to 7	1780	1800	NA
	B(29.2)	7 to 10	1210	1800	NA
Vanadium	A(29.2)	0 to 4	48.3	51	NA
	A(29.2)	4 to 7	44.4	51	NA
	A(29.2)	7 to 10	42.5	51	NA
	B(29.2)	0 to 4	46	51	NA
	B(29.2)	4 to 7	40.6	51	NA
	B(29.2)	7 to 10	40.4	51	NA
Zinc	A(29.2)	0 to 4	109	110	42000
	A(29.2)	4 to 7	101	110	42000
	A(29.2)	7 to 10	69.8	110	42000

Table 29-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 29
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	B(29.2)	0 to 4	106	110	42000
	B(29.2)	4 to 7	92.4	110	42000
	B(29.2)	7 to 10	75.6	110	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program* Technical Memorandum, CH2M HILL September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 31 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

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Montgomery, Alabama 36116

136410.BR.ZZ

Parcel 31 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Facility Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
31	X17, X19, X20, X21	31.1	7,12	4	N/A	N/A

Site Description

Parcel 31 is a 7,176 ft^2 parcel in the northwest portion of the Main Installation, in OU-4, as shown on Drawing 1. Parcel 31 consists of open storage areas X17, X19, X20, X21, and the adjacent railroad tracks.

Soil sampling was conducted at Label 31.1, which consists of open storage area X17. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), the open storage areas have the potential for hazardous materials to have been released. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 31.1. Sample A(31.1) was located west of Building 835 in open storage area X17 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of gravel from the sample site. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample A(31.1) was collected from beneath the highly compacted gravel surface to less than 6 inches below ground surface (bgs).

The sample was sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides, PCBs, metals, SVOCs, and VOCs analyses. All samples received at CH2M HILL's laboratory were analyzed in accordance with procedures outlined in the *Generic*

Quality Assurance Project Plan (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling and Analyses Procedure

Samples collected from the Label 31.1 soil boring were collected for both CH2M HILL and Corps of Engineers (COE) laboratory analysis. Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, subsurface soil samples were collected, using a 2-foot, stainless-steel, split-spoon sampler. Samples were collected from intervals of 0 to 4 ft, 4 to 7 ft, and 7 to 10 ft at the same sample location where the surface soil sample A(31.1) was collected. VOC soil samples were collected directly from the continuous sampler using stainless-steel spoons. The remaining soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

A total of six samples were collected from the soil boring (SB-10). Three samples were sent to CH2M HILL's laboratory for metals, pesticides, PCBs, VOCs, and SVOCs analyses. Three quality assurance split samples were sent to COE's Atlanta, Georgia laboratory for pesticides and PCBs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 31-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 31-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Parcel 31-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 31
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Acetone	A(31.1)	0 to .5	0.007 J	NA	780	20000	8	NA
Aluminum	A(31.1)	0 to .5	7150	24000	7800	100000	NA	NA
Barium	A(31.1)	0 to .5	**32.5**	250	550	14000	**32**	500
bis(2-Ethylhexyl)phthalate	A(31.1)	0 to .5	0.09 J	NA	**46**	410	11	NA
Calcium	A(31.1)	0 to .5	**32400**	**5800**	NA	NA	NA	NA
Chromium	A(31.1)	0 to .5	**15.4**	27	39	1000	19	**1**
Cobalt	A(31.1)	0 to .5	2.2	18	470	12000	NA	20
Copper	A(31.1)	0 to .5	4.8	33	310	8200	NA	100
DDT	A(31.1)	0 to .5	0.0092	0.074	1.9	17	1	NA
Iron	A(31.1)	0 to .5	**12300**	37000	**2300**	61000	NA	NA
Lead	A(31.1)	0 to .5	**22.4**	43	200	1000	**1.5**	50
Magnesium	A(31.1)	0 to .5	984	4600	NA	NA	NA	NA
Manganese	A(31.1)	0 to .5	106	1300	180	4700	NA	NA
Methylene chloride	A(31.1)	0 to .5	0.002 J	NA	85	760	.01	NA
Nickel	A(31.1)	0 to .5	7.3	33	160	4100	21	30
Potassium	A(31.1)	0 to .5	293	2000	NA	NA	NA	NA
Toluene	A(31.1)	0 to .5	0.002 J	0.002	1600	41000	5	NA
Vanadium	A(31.1)	0 to .5	**19.8**	52	55	1400	NA	2
Zinc	A(31.1)	0 to .5	25.2	130	2300	61000	42000	50

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Table 31-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 31
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Aluminum	A(31.1)	0 to 4	**28200**	**22000**	NA
	A(31.1)	4 to 7	20300	22000	NA
	A(31.1)	7 to 10	15900	22000	NA
Arsenic	A(31.1)	0 to 4	**22.5**	**17**	**15**
	A(31.1)	4 to 7	**18.7**	**17**	**15**
	A(31.1)	7 to 10	14.7	17	15
Barium	A(31.1)	0 to 4	**208**	300	**32**
	A(31.1)	4 to 7	**286**	300	**32**
	A(31.1)	7 to 10	**212**	300	**32**
bis(2-Ethylhexyl)phthalate	A(31.1)	0 to 4	0.076 J	NA	11
Calcium	A(31.1)	0 to 4	1560	2400	NA
	A(31.1)	4 to 7	1750	2400	NA
	A(31.1)	7 to 10	**2850**	**2400**	NA
Chromium	A(31.1)	0 to 4	**25.5**	26	**19**
	A(31.1)	4 to 7	**19.9**	26	**19**
	A(31.1)	7 to 10	18.8	26	19
Cobalt	A(31.1)	0 to 4	**21.3**	**20**	NA
	A(31.1)	4 to 7	16.6	20	NA
	A(31.1)	7 to 10	13.7	20	NA
Copper	A(31.1)	0 to 4	**41.2**	**33**	NA
	A(31.1)	4 to 7	**33.8**	**33**	NA
	A(31.1)	7 to 10	29.4	33	NA
Di-n-butylphthalate	A(31.1)	4 to 7	0.043 J	NA	120
Iron	A(31.1)	0 to 4	**44300**	**38000**	NA
	A(31.1)	4 to 7	37500	38000	NA
	A(31.1)	7 to 10	32900	38000	NA
Lead	A(31.1)	0 to 4	**29.6**	**24**	**1.5**
	A(31.1)	4 to 7	**21.7**	24	**1.5**
	A(31.1)	7 to 10	**17.9**	24	**1.5**
Magnesium	A(31.1)	0 to 4	**5420**	**4900**	NA
	A(31.1)	4 to 7	4530	4900	NA
	A(31.1)	7 to 10	4120	4900	NA
Manganese	A(31.1)	0 to 4	1470	1500	NA
	A(31.1)	4 to 7	**1590**	**1500**	NA
	A(31.1)	7 to 10	923	1500	NA
Methylene chloride	A(31.1)	0 to 4	0.003 J	NA	.01
Nickel	A(31.1)	0 to 4	**38.6**	**37**	**21**
	A(31.1)	4 to 7	**38.6**	**37**	**21**
	A(31.1)	7 to 10	**33.5**	37	**21**
Potassium	A(31.1)	0 to 4	**2350**	**1800**	NA
	A(31.1)	4 to 7	**2050**	**1800**	NA
	A(31.1)	7 to 10	1580	1800	NA
Sodium	A(31.1)	0 to 4	538	NA	NA
Vanadium	A(31.1)	0 to 4	**57.1**	**51**	NA
	A(31.1)	4 to 7	44.6	51	NA
	A(31.1)	7 to 10	41.3	51	NA

Table 31-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 31
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Zinc	A(31.1)	0 to 4	**136**	**110**	42000
	A(31.1)	4 to 7	**129**	**110**	42000
	A(31.1)	7 to 10	**112**	**110**	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical* Memorandum, CH2M HILL September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 32 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

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136410.BR.ZZ

Parcel 32 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building and Facility Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
32	835, 865, X02, X13, X15	32.1	8,16	4	N/A	N/A

Site Description

Parcel 32 is a 3,148 ft^2 parcel in the northwest portion of the Main Installation, in OU-4, as shown on Drawing 1. Parcel 32 consists of Buildings 835, 865, open storage areas X02, X13, X15, and the adjacent railroad tracks.

Soil sampling was conducted at Label 32.1, which consists of open storage areas X13 and X15. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), the open storage areas have the potential for hazardous materials to have been released. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, two samples were collected for Label 32.1. Sample A(32.1) was located north of Building 835 and west of the railroad tracks in open storage area X15. Sample B(32.1) was located north of Building 835 and east of the railroad tracks in open storage area X13 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of gravel from the sample sites. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Both samples were collected from beneath the highly compacted gravel surface to less than 6 inches below ground surface (bgs).

Both samples were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides, PCBs, metals, SVOCs, and VOCs analyses. All samples received at CH2M HILL's laboratory were analyzed in accordance with procedures outlined in the *Generic*

Quality Assurance Project Plan (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, subsurface soil samples were collected, using a 2-foot, stainless-steel, split-spoon sampler. Samples were collected from intervals of 0 to 4 ft, 4 to 7 ft, and 7 to 10 ft. VOC soil samples were collected directly from the continuous sampler using stainless-steel spoons. The remaining soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Soil Boring, SB-11, is at the same location where surface soil sample B(32.1) was collected. Soil Boring, SB-12, is at the same location where surface soil sample A(32.1) was collected.

Three samples were collected from each of the two soil borings (SB-11 and SB-12). The samples were sent to CH2M HILL's laboratory for metals, pesticides, PCBs, VOCs, and SVOCs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 32-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 32-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Table 32-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 32

BRAC Sampling Program

Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Acetone	A(32.1)	0 to .5	0.005 J	NA	780	20000	8	NA
Aluminum	A(32.1)	0 to .5	3940	24000	7800	100000	NA	NA
	B(32.1)	0 to .5	7720	24000	7800	100000	NA	NA
Arsenic	B(32.1)	0 to .5	**14.8**	22	**.43**	**3.8**	15	**10**
Barium	A(32.1)	0 to .5	9.3	250	550	14000	32	500
	B(32.1)	0 to .5	22.2	250	550	14000	32	500
bis(2-Ethylhexyl)phthalate	A(32.1)	0 to .5	0.048 J	NA	46	410	11	NA
Calcium	A(32.1)	0 to .5	347	5800	NA	NA	NA	NA
	B(32.1)	0 to .5	**22400**	**5800**	NA	NA	NA	NA
Chromium	A(32.1)	0 to .5	**6.3**	27	39	1000	19	**1**
	B(32.1)	0 to .5	**22.7**	27	39	1000	**19**	**1**
Cobalt	B(32.1)	0 to .5	2.2	18	470	12000	NA	20
Copper	A(32.1)	0 to .5	7.3	33	310	8200	NA	100
	B(32.1)	0 to .5	7.5	33	310	8200	NA	100
DDT	B(32.1)	0 to .5	0.044	0.074	**1.9**	17	1	NA
Iron	A(32.1)	0 to .5	**6400**	37000	**2300**	61000	NA	NA
	B(32.1)	0 to .5	**16000**	37000	**2300**	61000	NA	NA
Lead	B(32.1)	0 to .5	**13.5**	43	200	1000	**1.5**	50
Magnesium	A(32.1)	0 to .5	126	4600	NA	NA	NA	NA
	B(32.1)	0 to .5	719	4600	NA	NA	NA	NA
Manganese	A(32.1)	0 to .5	43.6	1300	180	4700	NA	NA
	B(32.1)	0 to .5	93.7	1300	180	4700	NA	NA
Methylene chloride	A(32.1)	0 to .5	0.005 J	NA	85	760	.01	NA
	B(32.1)	0 to .5	0.007 J	NA	85	760	.01	NA
Nickel	A(32.1)	0 to .5	3.8	33	160	4100	21	30
	B(32.1)	0 to .5	15.3	33	160	4100	21	30
Potassium	B(32.1)	0 to .5	246	2000	NA	NA	NA	NA
Vanadium	A(32.1)	0 to .5	**9.2**	52	55	1400	NA	**2**
	B(32.1)	0 to .5	**26.5**	52	55	1400	NA	**2**

Table 32-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 32
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Zinc	A(32.1)	0 to .5	9.5	130	2300	61000	42000	50
	B(32.1)	0 to .5	16.5	130	2300	61000	42000	50

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exeeceded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Table 32-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 32
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Aluminum	A(32.1)	0 to 4	14200	22000	NA
	A(32.1)	4 to 7	13500	22000	NA
	A(32.1)	7 to 10	12900	22000	NA
	B(32.1)	0 to 4	20300	22000	NA
	B(32.1)	4 to 7	15300	22000	NA
	B(32.1)	7 to 10	13100	22000	NA
Arsenic	A(32.1)	0 to 4	15.1	17	15
	A(32.1)	4 to 7	13.7	17	15
	A(32.1)	7 to 10	8.2	17	15
	B(32.1)	0 to 4	17.1	17	15
	B(32.1)	4 to 7	14.6	17	15
	B(32.1)	7 to 10	11.6	17	15
Barium	A(32.1)	0 to 4	235	300	32
	A(32.1)	4 to 7	139	300	32
	A(32.1)	7 to 10	106	300	32
	B(32.1)	0 to 4	278	300	32
	B(32.1)	4 to 7	228	300	32
	B(32.1)	7 to 10	147	300	32
bis(2-Ethylhexyl)phthalat	A(32.1)	0 to 4	0.072 J	NA	11
	A(32.1)	4 to 7	0.2 J	NA	11
	A(32.1)	7 to 10	0.05 J	NA	11
	B(32.1)	0 to 4	0.058 J	NA	11
	B(32.1)	4 to 7	0.041 J	NA	11
	B(32.1)	7 to 10	0.16 J	NA	11
Butylbenzylphthalate	A(32.1)	4 to 7	0.43	NA	68
Calcium	A(32.1)	0 to 4	2880	2400	NA
	A(32.1)	4 to 7	3760	2400	NA
	A(32.1)	7 to 10	3230	2400	NA
	B(32.1)	0 to 4	1810	2400	NA
	B(32.1)	4 to 7	2820	2400	NA
	B(32.1)	7 to 10	3410	2400	NA
Chromium	A(32.1)	0 to 4	17.8	26	19
	A(32.1)	4 to 7	19.2	26	19
	A(32.1)	7 to 10	17.3	26	19
	B(32.1)	0 to 4	20.4	26	19
	B(32.1)	4 to 7	17.7	26	19
	B(32.1)	7 to 10	17.4	26	19
Cobalt	A(32.1)	0 to 4	14.3	20	NA
	A(32.1)	4 to 7	13.9	20	NA
	A(32.1)	7 to 10	12.1	20	NA
	B(32.1)	0 to 4	14.4	20	NA
	B(32.1)	4 to 7	13.3	20	NA
	B(32.1)	7 to 10	13.6	20	NA
Copper	A(32.1)	0 to 4	32.4	33	NA
	A(32.1)	4 to 7	28.2	33	NA
	A(32.1)	7 to 10	20.7	33	NA
	B(32.1)	0 to 4	30.8	33	NA
	B(32.1)	4 to 7	28.6	33	NA
	B(32.1)	7 to 10	27.8	33	NA

Table 32-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 32
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Di-n-butylphthalate	A(32.1)	4 to 7	0.09 J	NA	120
	B(32.1)	0 to 4	0.041 J	NA	120
	B(32.1)	4 to 7	0.044 J	NA	120
	B(32.1)	7 to 10	0.044 J	NA	120
Iron	A(32.1)	0 to 4	32800	38000	NA
	A(32.1)	4 to 7	32000	38000	NA
	A(32.1)	7 to 10	22700	38000	NA
	B(32.1)	0 to 4	35100	38000	NA
	B(32.1)	4 to 7	31700	38000	NA
	B(32.1)	7 to 10	29600	38000	NA
Lead	A(32.1)	0 to 4	**20**	24	**1.5**
	A(32.1)	4 to 7	**16.9**	24	**1.5**
	A(32.1)	7 to 10	**12.4**	24	**1.5**
	B(32.1)	0 to 4	**20.8**	24	**1.5**
	B(32.1)	4 to 7	**17.2**	24	**1.5**
	B(32.1)	7 to 10	**15.4**	24	**1.5**
Magnesium	A(32.1)	0 to 4	4250	4900	NA
	A(32.1)	4 to 7	4300	4900	NA
	A(32.1)	7 to 10	3910	4900	NA
	B(32.1)	0 to 4	4490	4900	NA
	B(32.1)	4 to 7	4040	4900	NA
	B(32.1)	7 to 10	3900	4900	NA
Manganese	A(32.1)	0 to 4	953	1500	NA
	A(32.1)	4 to 7	1010	1500	NA
	A(32.1)	7 to 10	863	1500	NA
	B(32.1)	0 to 4	1100	1500	NA
	B(32.1)	4 to 7	828	1500	NA
	B(32.1)	7 to 10	1060	1500	NA
Methylene chloride	A(32.1)	4 to 7	0.003 J	NA	.01
	A(32.1)	7 to 10	0.002 J	NA	.01
	B(32.1)	0 to 4	0.004 J	NA	.01
	B(32.1)	4 to 7	0.003 J	NA	.01
	B(32.1)	7 to 10	0.002 J	NA	.01
Nickel	A(32.1)	0 to 4	**35.6**	37	**21**
	A(32.1)	4 to 7	**34.9**	37	**21**
	A(32.1)	7 to 10	**25.7**	37	**21**
	B(32.1)	0 to 4	**35.3**	37	**21**
	B(32.1)	4 to 7	**33.2**	37	**21**
	B(32.1)	7 to 10	**32.8**	37	**21**
Potassium	A(32.1)	0 to 4	**2440**	**1800**	NA
	A(32.1)	4 to 7	1440	1800	NA
	A(32.1)	7 to 10	1300	1800	NA
	B(32.1)	0 to 4	**1940**	1800	NA
	B(32.1)	4 to 7	1500	1800	NA
	B(32.1)	7 to 10	1420	1800	NA
Vanadium	A(32.1)	0 to 4	39	51	NA
	A(32.1)	4 to 7	41.6	51	NA
	A(32.1)	7 to 10	36.3	51	NA
	B(32.1)	0 to 4	44.1	51	NA

Table 32-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 32
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	B(32.1)	4 to 7	39.9	51	NA
	B(32.1)	7 to 10	35.8	51	NA
Zinc	A(32.1)	0 to 4	99.4	110	42000
	A(32.1)	4 to 7	86	110	42000
	A(32.1)	7 to 10	60.2	110	42000
	B(32.1)	0 to 4	104	110	42000
	B(32.1)	4 to 7	93.2	110	42000
	B(32.1)	7 to 10	72	110	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 33 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

2567 Fairlane Drive

Montgomery, Alabama 36116

136410.BR.ZZ

Parcel 33 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building or Facility Numbers	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
33	720, 737, 753, 754, 755, 756, 765, 860, 863 X05, X06, X07, X08, X10, X11, X12	33.9	14,11	4	N/A	N/A

Site Description

Parcel 33 is a 12,034 ft^2 parcel in the northwest portion of the Main Installation, in OU-4, as shown on Drawing 1. Parcel 33 consists of Buildings 720, 737, 753, 754, 755, 756, 765, 860, 863, open storage areas X05, X06, X07, X08, X10, X11, X12, and the adjacent railroad tracks.

Soil sampling was conducted at Label 33.9. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. Label 33.9 consists of open storage areas X05, X06, X10, X11, and X12. According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), storage areas X05, X06, X07, X08, X10, X11, and X12 formerly contained drums with flammable contents. Building 737 is currently used for storing and mixing pesticides. Building 720 was used for dispensing fuel and cleaners. The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

In addition, this parcel is associated with a 12,000-gallon diesel AST that is located at Building 720 (Facilities Engineering Division, DDMT 1993; CH2M Hill 1995 Screening Sites Field Sampling Plan for Defense Distribution Depot Memphis as cited in Woodward-Clyde, November 1996). This parcel is also associated with a 1,000-gallon diesel fuel tank that was located outside of Building 756, but was removed in July 1994 (The Pickering Firm, Inc., 1993 Storage Tank Survey as cited in Woodward-Clyde, November 1996). There have been no documented releases associated with these tanks. No evidence was found of disposal, or migration of hazardous substances or petroleum products from an adjacent property. The current sampling activities are not associated with these tanks.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, five samples and one Corps of Engineers (COE) quality assurance split sample were collected for Label 33.9. Sample A(33.9) was located west of

Building 650 and north of the DDMT flagpole in open storage area X05. Sample B(33.9) was located west of Building 649 across 6th Street in open storage area X06. Samples C(33.9) and the split sample were located west of the railroad tracks and northwest of Power Pole G449 in open storage area X10. Sample D(33.9) was located northwest of Building 860 in open storage area X11. Sample E(33.9) was located east of both Building 835 and the railroad tracks in open storage area X12 (See Drawing 1, BRAC Soil Sample Locations).

A sharpshooter shovel was used to remove an approximately 1-foot by 0.5-foot rectangular top layer of sod at sample location A(33.9). A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Sample A(33.9) was collected from beneath the grass to less than 6 inches below ground surface (bgs).

A pick-hoe and sharpshooter shovel were used to remove the gravel and rock surface at sample locations B(33.9), C(33.9), D(33.9), and E(33.9). A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Samples B(33.9), C(33.9), and D(33.9) were collected from beneath the gravel surface to less than 6 inches bgs. Sample E(33.9) was collected from beneath the gravel surface to less than 10 inches bgs.

Samples A(33.9), B(33.9), C(33.9), D(33.9), and E(33.9) were sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides, PCBs, metals, SVOCs, and VOCs analyses. The quality assurance split sample was sent to COE's Atlanta, Georgia laboratory for pesticides, PCBs, metals, SVOCs, and VOCs analyses. All samples received at CH2M HILL's laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Subsurface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, subsurface soil samples were collected, using a 2-foot, stainless-steel, split-spoon sampler. Samples were collected from intervals of 0 to 4 ft, 4 to 7 ft, and 7 to 10 ft. VOC soil samples were collected directly from the continuous sampler using stainless-steel spoons. The remaining soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Soil Boring, SB-13, is at the same location where surface soil sample A(33.9) was collected.
Soil Boring, SB-14, is at the same location where surface soil sample B(33.9) was collected.
Soil Boring, SB-18, is at the same location where surface soil sample C(33.9) was collected.
Soil Boring, SB-19, is at the same location where surface soil sample D(33.9) was collected.
Soil Boring, SB-20, is at the same location where surface soil sample E(33.9) was collected.

Three samples were collected from each of the five soil borings (SB-13, SB-14, SB-18, SB-19, and SB-20). The fifteen samples were sent to CH2M HILL's laboratory for metals, pesticides, PCBs, VOCs, and SVOCs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 33-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 33-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples.

Table 33-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Acetone	A(33.9)	0 to .5	0.004 J	NA	780	20000	8	NA
	A(33.9)	0 to .5	0.004 J	NA	780	20000	8	NA
	B(33.9)	0 to .5	0.006 J	NA	780	20000	8	NA
	C(33.9)	0 to .5	0.005 J	NA	780	20000	8	NA
	D(33.9)	0 to .5	0.005 J	NA	780	20000	8	NA
	E(33.9)	0 to .8	0.004 J	NA	780	20000	8	NA
Aluminum	A(33.9)	0 to .5	**22500**	24000	**7800**	100000	NA	NA
	B(33.9)	0 to .5	7460	24000	7800	100000	NA	NA
	C(33.9)	0 to .5	**22800**	24000	7800	100000	NA	NA
	D(33.9)	0 to .5	4480	24000	7800	100000	NA	NA
	E(33.9)	0 to .8	**10000**	24000	**7800**	100000	NA	NA
Anthracene	D(33.9)	0 to .5	0.057 J	0.096	2300	61000	4300	NA
Antimony	E(33.9)	0 to .8	**9.6**	**7**	**3.1**	82	NA	**5**
Arsenic	A(33.9)	0 to .5	**63.1**	**22**	**.43**	**3.8**	**15**	**10**
	B(33.9)	0 to .5	**8.5**	**22**	**.43**	**3.8**	15	10
	C(33.9)	0 to .5	**9**	22	**.43**	**3.8**	15	10
	E(33.9)	0 to .8	**4.4**	22	**.43**	**3.8**	15	10
Barium	A(33.9)	0 to .5	**189**	250	550	14000	**32**	**500**
	B(33.9)	0 to .5	**50.2**	250	550	14000	**32**	500
	C(33.9)	0 to .5	**258**	**250**	550	14000	**32**	500
	D(33.9)	0 to .5	26.1	250	550	14000	32	500
	E(33.9)	0 to .8	**72.5**	250	550	14000	32	500
Benzo(a)anthracene	A(33.9)	0 to .5	**1.2 J**	**0.71**	**.88**	**7.8**	**.7**	NA
	D(33.9)	0 to .5	0.14 J	0.71	.88	7.8	.7	NA
Benzo(a)pyrene	A(33.9)	0 to .5	**1.4 J**	**0.96**	**.088**	**.78**	4	NA
	B(33.9)	0 to .5	0.04 J	0.96	.088	.78	4	NA
	D(33.9)	0 to .5	**0.11 J**	0.96	**.088**	.78	4	NA
Benzo(b)fluoranthene	A(33.9)	0 to .5	**1.5 J**	**0.9**	**.88**	7.8	4	NA
	B(33.9)	0 to .5	0.052 J	0.9	.88	7.8	4	NA
	D(33.9)	0 to .5	0.11 J	0.9	.88	7.8	4	NA
Benzo(k)fluoranthene	A(33.9)	0 to .5	**1.4 J**	**0.78**	8.8	**78**	4	NA
	B(33.9)	0 to .5	0.042 J	0.78	8.8	78	4	NA
	D(33.9)	0 to .5	**0.12 J**	0.78	8.8	78	4	NA

Table 33-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
bis(2-Ethylhexyl)phthalate	A(33.9)	0 to .5	0.47 J	NA	46	410	11	NA
	C(33.9)	0 to .5	0.062 J	NA	46	410	11	NA
	D(33.9)	0 to .5	0.08 J	NA	46	410	11	NA
Calcium	A(33.9)	0 to .5	3710	5800	NA	NA	NA	NA
	B(33.9)	0 to .5	22900	5800	NA	NA	NA	NA
	C(33.9)	0 to .5	2110	5800	NA	NA	NA	NA
	D(33.9)	0 to .5	4450	5800	NA	NA	NA	NA
	E(33.9)	0 to .8	38200	5800	NA	NA	NA	NA
Carbazole	A(33.9)	0 to .5	0.21 J	0.067	32	290	.5	NA
	D(33.9)	0 to .5	0.035 J	0.067	32	290	.5	NA
Chromium	A(33.9)	0 to .5	24.4	27	39	1000	19	1
	B(33.9)	0 to .5	12.7	27	39	1000	19	1
	C(33.9)	0 to .5	24.9	27	39	1000	19	1
	D(33.9)	0 to .5	19.3	27	39	1000	19	1
	E(33.9)	0 to .8	41.5	27	39	1000	19	1
Chrysene	A(33.9)	0 to .5	1.7 J	0.94	88	780	1	NA
	B(33.9)	0 to .5	0.045 J	0.94	88	780	1	NA
	D(33.9)	0 to .5	0.16 J	0.94	88	780	1	NA
Cobalt	A(33.9)	0 to .5	14.8	18	470	12000	NA	20
	B(33.9)	0 to .5	3.3	18	470	12000	NA	20
	C(33.9)	0 to .5	9.4	18	470	12000	NA	20
	D(33.9)	0 to .5	4.8	18	470	12000	NA	20
	E(33.9)	0 to .8	4.3	18	470	12000	NA	20
Copper	A(33.9)	0 to .5	31.2	33	310	8200	NA	100
	B(33.9)	0 to .5	17.2	33	310	8200	NA	100
	C(33.9)	0 to .5	38.5	33	310	8200	NA	100
	D(33.9)	0 to .5	8.7	33	310	8200	NA	100
	E(33.9)	0 to .8	28.2	33	310	8200	NA	100
DDE	D(33.9)	0 to .5	0.012	0.16	1.9	17	0.5	NA
DDT	D(33.9)	0 to .5	0.045	0.074	1.9	17	1	NA
	E(33.9)	0 to .8	0.024 J	0.074	1.9	17	1	NA
Di-n-butylphthalate	A(33.9)	0 to .5	0.23 J	NA	780	20000	120	NA
	B(33.9)	0 to .5	0.2 J	NA	780	20000	120	NA

Table 33-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
	C(33.9)	0 to .5	0.22 J	NA	780	20000	120	NA
	D(33.9)	0 to .5	0.25 J	NA	780	20000	120	NA
	E(33.9)	0 to .8	0.26 J	NA	780	20000	120	NA
Fluoranthene	A(33.9)	0 to .5	2.4	1.6	310	8200	980	NA
	B(33.9)	0 to .5	0.049 J	1.6	310	8200	980	NA
	D(33.9)	0 to .5	0.24 J	1.6	310	8200	980	NA
Iron	A(33.9)	0 to .5	32600	37000	2300	61000	NA	NA
	B(33.9)	0 to .5	11800	37000	2300	61000	NA	NA
	C(33.9)	0 to .5	31900	37000	2300	61000	NA	NA
	D(33.9)	0 to .5	11300	37000	2300	61000	NA	NA
	E(33.9)	0 to .8	21100	37000	2300	61000	NA	NA
Lead	A(33.9)	0 to .5	47.4	43	200	1000	1.5	50
	B(33.9)	0 to .5	19.9	43	200	1000	1.5	50
	C(33.9)	0 to .5	22.1	43	200	1000	1.5	50
	D(33.9)	0 to .5	45.9	43	200	1000	1.5	50
	E(33.9)	0 to .8	145	43	200	1000	1.5	50
Magnesium	A(33.9)	0 to .5	3680	4600	NA	NA	NA	NA
	B(33.9)	0 to .5	2990	4600	NA	NA	NA	NA
	C(33.9)	0 to .5	3940	4600	NA	NA	NA	NA
	D(33.9)	0 to .5	383	4600	NA	NA	NA	NA
	E(33.9)	0 to .8	1450	4600	NA	NA	NA	NA
Manganese	A(33.9)	0 to .5	948	1300	180	4700	NA	NA
	B(33.9)	0 to .5	106	1300	180	4700	NA	NA
	C(33.9)	0 to .5	297	1300	180	4700	NA	NA
	D(33.9)	0 to .5	125	1300	180	4700	NA	NA
	E(33.9)	0 to .8	111	1300	180	4700	NA	NA
Methylene chloride	A(33.9)	0 to .5	0.008 J	NA	85	760	.01	NA
	A(33.9)	0 to .5	0.008 J	NA	85	760	.01	NA
	B(33.9)	0 to .5	0.002 J	NA	85	760	.01	NA
	C(33.9)	0 to .5	0.001 J	NA	85	760	.01	NA
Nickel	A(33.9)	0 to .5	30.5	33	160	4100	21	30
	B(33.9)	0 to .5	7.4	33	160	4100	21	30
	C(33.9)	0 to .5	28.8	33	160	4100	21	30

Table 33-A

Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
	D(33.9)	0 to .5	6.1	33	160	4100	21	30
	E(33.9)	0 to .8	9.6	33	160	4100	21	30
Phenanthrene	A(33.9)	0 to .5	1.4 J	0.61	2300	61000	4300	NA
	D(33.9)	0 to .5	0.27 J	0.61	2300	61000	4300	NA
Potassium	A(33.9)	0 to .5	**3000**	**2000**	NA	NA	NA	NA
	C(33.9)	0 to .5	**2130**	**2000**	NA	NA	NA	NA
Pyrene	A(33.9)	0 to .5	**2.3**	**1.5**	230	6100	1400	NA
	B(33.9)	0 to .5	0.051 J	1.5	230	6100	1400	NA
	D(33.9)	0 to .5	0.24 J	1.5	230	6100	1400	NA
Selenium	C(33.9)	0 to .5	**22.4**	**0.81**	39	1000	**3**	**1**
	D(33.9)	0 to .5	**10**	**0.81**	39	1000	**3**	**1**
	E(33.9)	0 to .8	**15.3**	**0.81**	39	1000	**3**	**1**
Vanadium	A(33.9)	0 to .5	**51.7**	52	55	1400	NA	**2**
	B(33.9)	0 to .5	**22.2**	52	55	1400	NA	**2**
	C(33.9)	0 to .5	**47.6**	52	55	1400	NA	**2**
	D(33.9)	0 to .5	**16.4**	52	55	1400	NA	**2**
	E(33.9)	0 to .8	**30.9**	52	55	1400	NA	**2**
Zinc	A(33.9)	0 to .5	**104**	130	2300	61000	42000	**50**
	B(33.9)	0 to .5	**33.2**	130	2300	61000	42000	**50**
	C(33.9)	0 to .5	**295**	130	2300	61000	42000	**50**
	D(33.9)	0 to .5	**52.5**	130	2300	61000	42000	**50**
	E(33.9)	0 to .8	**118**	130	2300	61000	42000	**50**

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL September 1996.
3. Risk Based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Table 33-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
2-Butanone	A(33.9)	4 to 7	0.011 J	0.002	NA
Acetone	A(33.9)	4 to 7	0.048	NA	8
	B(33.9)	7 to 10	0.011 J	NA	8
Aluminum	A(33.9)	0 to 4	32500	22000	NA
	A(33.9)	4 to 7	19600	22000	NA
	A(33.9)	7 to 10	20800	22000	NA
	B(33.9)	0 to 4	27300	22000	NA
	B(33.9)	4 to 7	25700	22000	NA
	B(33.9)	7 to 10	17700	22000	NA
	C(33.9)	0 to 4	18200	22000	NA
	C(33.9)	4 to 7	24400	22000	NA
	C(33.9)	7 to 10	26500	22000	NA
	D(33.9)	0 to 4	21300	22000	NA
	D(33.9)	4 to 7	21600	22000	NA
	D(33.9)	7 to 10	26000	22000	NA
	E(33.9)	0 to 4	25000	22000	NA
	E(33.9)	4 to 7	16500	22000	NA
	E(33.9)	7 to 10	36300	22000	NA
Arsenic	A(33.9)	0 to 4	20.2	17	15
	A(33.9)	4 to 7	16.3	17	15
	A(33.9)	7 to 10	17.3	17	15
	B(33.9)	0 to 4	19.6	17	15
	B(33.9)	4 to 7	22.5	17	15
	B(33.9)	7 to 10	16.7	17	15
	C(33.9)	0 to 4	15.9	17	15
	C(33.9)	4 to 7	21.8	17	15
	C(33.9)	7 to 10	20.6	17	15
	D(33.9)	0 to 4	18.1	17	15
	D(33.9)	4 to 7	16.8	17	15
	D(33.9)	7 to 10	22.3	17	15
	E(33.9)	0 to 4	16.9	17	15
	E(33.9)	4 to 7	15.7	17	15
	E(33.9)	7 to 10	25.3	17	15
Barium	A(33.9)	0 to 4	249	300	32
	A(33.9)	4 to 7	304	300	32
	A(33.9)	7 to 10	221	300	32
	B(33.9)	0 to 4	229	300	32
	B(33.9)	4 to 7	280	300	32
	B(33.9)	7 to 10	258	300	32
	C(33.9)	0 to 4	238	300	32
	C(33.9)	4 to 7	275	300	32
	C(33.9)	7 to 10	234	300	32
	D(33.9)	0 to 4	313	300	32
	D(33.9)	4 to 7	237	300	32
	D(33.9)	7 to 10	212	300	32
	E(33.9)	0 to 4	270	300	32
	E(33.9)	4 to 7	172	300	32
	E(33.9)	7 to 10	236	300	32
Beryllium	A(33.9)	0 to 4	1	1.2	180
	B(33.9)	4 to 7	1.1	1.2	180

Table 33-B
Summary of Detected Compounds In Subsurface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	E(33.9)	7 to 10	1.1	1.2	180
bis(2-Ethylhexyl)phthalate	A(33.9)	0 to 4	0.18 J	NA	11
	A(33.9)	7 to 10	0.16 J	NA	11
	B(33.9)	0 to 4	0.063 J	NA	11
	B(33.9)	4 to 7	0.069 J	NA	11
	B(33.9)	7 to 10	0.049 J	NA	11
	D(33.9)	0 to 4	0.12 J	NA	11
	D(33.9)	4 to 7	0.072 J	NA	11
	D(33.9)	7 to 10	0.05 J	NA	11
	E(33.9)	0 to 4	0.069 J	NA	11
	E(33.9)	7 to 10	0.072 J	NA	11
Calcium	A(33.9)	0 to 4	2230	2400	NA
	A(33.9)	4 to 7	3830	2400	NA
	A(33.9)	7 to 10	2040	2400	NA
	B(33.9)	0 to 4	2540	2400	NA
	B(33.9)	4 to 7	1880	2400	NA
	B(33.9)	7 to 10	1760	2400	NA
	C(33.9)	0 to 4	2080	2400	NA
	C(33.9)	4 to 7	2620	2400	NA
	C(33.9)	7 to 10	2050	2400	NA
	D(33.9)	0 to 4	2410	2400	NA
	D(33.9)	4 to 7	3290	2400	NA
	D(33.9)	7 to 10	1380	2400	NA
	E(33.9)	0 to 4	3530	2400	NA
	E(33.9)	4 to 7	1470	2400	NA
	E(33.9)	7 to 10	1660	2400	NA
Chloromethane	D(33.9)	0 to 4	0.001 J	NA	.0066
Chromium	A(33.9)	0 to 4	27.4	26	19
	A(33.9)	4 to 7	21	26	19
	A(33.9)	7 to 10	22	26	19
	B(33.9)	0 to 4	27.2	26	19
	B(33.9)	4 to 7	24.6	26	19
	B(33.9)	7 to 10	22.6	26	19
	C(33.9)	0 to 4	19.8	26	19
	C(33.9)	4 to 7	26	26	19
	C(33.9)	7 to 10	27.6	26	19
	D(33.9)	0 to 4	21.3	26	19
	D(33.9)	4 to 7	26.2	26	19
	D(33.9)	7 to 10	25	26	19
	E(33.9)	0 to 4	29.1	26	19
	E(33.9)	4 to 7	20.8	26	19
	E(33.9)	7 to 10	32.4	26	19
Cobalt	A(33.9)	0 to 4	15.5	20	NA
	A(33.9)	4 to 7	14.5	20	NA
	A(33.9)	7 to 10	12.5	20	NA
	B(33.9)	0 to 4	18.4	20	NA
	B(33.9)	4 to 7	17.9	20	NA
	B(33.9)	7 to 10	14.1	20	NA
	C(33.9)	0 to 4	19.1	20	NA
	C(33.9)	4 to 7	19.2	20	NA

Table 33-B
Summary of Detected Compounds In Subsurface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	C(33.9)	7 to 10	9.9	20	NA
	D(33.9)	0 to 4	16.8	20	NA
	D(33.9)	4 to 7	15.5	20	NA
	D(33.9)	7 to 10	19.2	20	NA
	E(33.9)	0 to 4	19.1	20	NA
	E(33.9)	4 to 7	27.3	20	NA
	E(33.9)	7 to 10	18	20	NA
Copper	A(33.9)	0 to 4	37.2	33	NA
	A(33.9)	4 to 7	31.2	33	NA
	A(33.9)	7 to 10	30	33	NA
	B(33.9)	0 to 4	38.1	33	NA
	B(33.9)	4 to 7	39.3	33	NA
	B(33.9)	7 to 10	31.8	33	NA
	C(33.9)	0 to 4	32.5	33	NA
	C(33.9)	4 to 7	39.7	33	NA
	C(33.9)	7 to 10	35.7	33	NA
	D(33.9)	0 to 4	33.7	33	NA
	D(33.9)	4 to 7	30.9	33	NA
	D(33.9)	7 to 10	38.1	33	NA
	E(33.9)	0 to 4	36.1	33	NA
	E(33.9)	4 to 7	30.1	33	NA
	E(33.9)	7 to 10	41.7	33	NA
Di-n-butylphthalate	A(33.9)	0 to 4	0.057 J	NA	120
	A(33.9)	4 to 7	0.044 J	NA	120
	A(33.9)	7 to 10	0.058 J	NA	120
	B(33.9)	0 to 4	0.27 J	NA	120
	B(33.9)	4 to 7	0.26 J	NA	120
	B(33.9)	7 to 10	0.24 J	NA	120
	C(33.9)	0 to 4	0.041 J	NA	120
	C(33.9)	4 to 7	0.052 J	NA	120
	C(33.9)	7 to 10	0.048 J	NA	120
	D(33.9)	0 to 4	0.22 J	NA	120
	D(33.9)	4 to 7	0.25 J	NA	120
	D(33.9)	7 to 10	0.27 J	NA	120
	E(33.9)	0 to 4	0.3 J	NA	120
	E(33.9)	4 to 7	0.14 J	NA	120
	E(33.9)	7 to 10	0.22 J	NA	120
	E(33.9)	4 to 7	0.18 J	NA	1200
Iron	A(33.9)	0 to 4	42600	38000	NA
	A(33.9)	4 to 7	34600	38000	NA
	A(33.9)	7 to 10	35500	38000	NA
	B(33.9)	0 to 4	42300	38000	NA
	B(33.9)	4 to 7	40900	38000	NA
	B(33.9)	7 to 10	35200	38000	NA
	C(33.9)	0 to 4	34700	38000	NA
	C(33.9)	4 to 7	45300	38000	NA
	C(33.9)	7 to 10	40500	38000	NA
	D(33.9)	0 to 4	37000	38000	NA
	D(33.9)	4 to 7	36300	38000	NA
	D(33.9)	7 to 10	41600	38000	NA

Table 33-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	E(33.9)	0 to 4	**40800**	**38000**	NA
	E(33.9)	4 to 7	27600	38000	NA
	E(33.9)	7 to 10	**46500**	**38000**	NA
Lead	A(33.9)	0 to 4	**28.1**	**24**	**1.5**
	A(33.9)	4 to 7	**37.1**	**24**	**1.5**
	A(33.9)	7 to 10	**20.4**	24	**1.5**
	B(33.9)	0 to 4	**26.2**	**24**	**1.5**
	B(33.9)	4 to 7	**25.1**	**24**	**1.5**
	B(33.9)	7 to 10	**19.8**	24	**1.5**
	C(33.9)	0 to 4	**21.6**	24	**1.5**
	C(33.9)	4 to 7	**26.8**	**24**	**1.5**
	C(33.9)	7 to 10	**43.6**	**24**	**1.5**
	D(33.9)	0 to 4	**22.8**	**24**	**1.5**
	D(33.9)	4 to 7	**21.1**	24	**1.5**
	D(33.9)	7 to 10	**26.5**	**24**	**1.5**
	E(33.9)	0 to 4	**22.1**	24	**1.5**
	E(33.9)	4 to 7	**25**	**24**	**1.5**
	E(33.9)	7 to 10	**26.9**	**24**	**1.5**
Magnesium	A(33.9)	0 to 4	**5000**	**4900**	NA
	A(33.9)	4 to 7	4160	4900	NA
	A(33.9)	7 to 10	4360	4900	NA
	B(33.9)	0 to 4	**5070**	**4900**	NA
	B(33.9)	4 to 7	**5070**	**4900**	NA
	B(33.9)	7 to 10	4210	4900	NA
	C(33.9)	0 to 4	3630	4900	NA
	C(33.9)	4 to 7	**5670**	**4900**	NA
	C(33.9)	7 to 10	4570	4900	NA
	D(33.9)	0 to 4	4610	4900	NA
	D(33.9)	4 to 7	4500	4900	NA
	D(33.9)	7 to 10	4430	4900	NA
	E(33.9)	0 to 4	**5460**	**4900**	NA
	E(33.9)	4 to 7	3380	4900	NA
	E(33.9)	7 to 10	**5470**	**4900**	NA
Manganese	A(33.9)	0 to 4	1220	1500	NA
	A(33.9)	4 to 7	1440	1500	NA
	A(33.9)	7 to 10	928	1500	NA
	B(33.9)	0 to 4	1290	1500	NA
	B(33.9)	4 to 7	**2160**	**1500**	NA
	B(33.9)	7 to 10	1010	1500	NA
	C(33.9)	0 to 4	1020	1500	NA
	C(33.9)	4 to 7	1510	1500	NA
	C(33.9)	7 to 10	576	1500	NA
	D(33.9)	0 to 4	**1560**	**1500**	NA
	D(33.9)	4 to 7	1170	1500	NA
	D(33.9)	7 to 10	**1650**	**1500**	NA
	E(33.9)	0 to 4	**1320**	1500	NA
	E(33.9)	4 to 7	859	1500	NA
	E(33.9)	7 to 10	**1740**	**1500**	NA
Methylene chloride	A(33.9)	4 to 7	0.002 J	NA	.01
	A(33.9)	7 to 10	0.003 J	NA	.01

Table 33-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	B(33.9)	4 to 7	0.001 J	NA	.01
	B(33.9)	7 to 10	0.002 J	NA	.01
	D(33.9)	7 to 10	0.001 J	NA	.01
	E(33.9)	0 to 4	0.003 J	NA	.01
	E(33.9)	4 to 7	0.002 J	NA	.01
	E(33.9)	7 to 10	0.003 J	NA	.01
Nickel	A(33.9)	0 to 4	36.9	37	21
	A(33.9)	4 to 7	34.6	37	21
	A(33.9)	7 to 10	33.7	37	21
	B(33.9)	0 to 4	39.1	37	21
	B(33.9)	4 to 7	43.7	37	21
	B(33.9)	7 to 10	35.1	37	21
	C(33.9)	0 to 4	30.3	37	21
	C(33.9)	4 to 7	45	37	21
	C(33.9)	7 to 10	31.7	37	21
	D(33.9)	0 to 4	35.8	37	21
	D(33.9)	4 to 7	34.7	37	21
	D(33.9)	7 to 10	34.9	37	21
	E(33.9)	0 to 4	42	37	21
	E(33.9)	4 to 7	27.3	37	21
	E(33.9)	7 to 10	41.8	37	21
Potassium	A(33.9)	0 to 4	2560	1800	NA
	A(33.9)	4 to 7	2110	1800	NA
	A(33.9)	7 to 10	1620	1800	NA
	B(33.9)	0 to 4	4940	1800	NA
	B(33.9)	4 to 7	4640	1800	NA
	B(33.9)	7 to 10	3050	1800	NA
	C(33.9)	0 to 4	1700	1800	NA
	C(33.9)	4 to 7	2570	1800	NA
	C(33.9)	7 to 10	1720	1800	NA
	D(33.9)	0 to 4	3760	1800	NA
	D(33.9)	4 to 7	3740	1800	NA
	D(33.9)	7 to 10	3620	1800	NA
	E(33.9)	0 to 4	4660	1800	NA
	E(33.9)	4 to 7	2670	1800	NA
	E(33.9)	7 to 10	5120	1800	NA
Sodium	C(33.9)	7 to 10	250	NA	NA
Vanadium	A(33.9)	0 to 4	58.9	51	NA
	A(33.9)	4 to 7	43.9	51	NA
	A(33.9)	7 to 10	45.8	51	NA
	B(33.9)	0 to 4	56.8	51	NA
	B(33.9)	4 to 7	53	51	NA
	B(33.9)	7 to 10	41.3	51	NA
	C(33.9)	0 to 4	44.5	51	NA
	C(33.9)	4 to 7	56	51	NA
	C(33.9)	7 to 10	52.8	51	NA
	D(33.9)	0 to 4	45.7	51	NA
	D(33.9)	4 to 7	52.6	51	NA
	D(33.9)	7 to 10	53.3	51	NA
	E(33.9)	0 to 4	60.4	51	NA

Table 33-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 33
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
	E(33.9)	4 to 7	43.1	51	NA
	E(33.9)	7 to 10	74.1	51	NA
Zinc	A(33.9)	0 to 4	128	110	42000
	A(33.9)	4 to 7	125	110	42000
	A(33.9)	7 to 10	104	110	42000
	B(33.9)	0 to 4	128	110	42000
	B(33.9)	4 to 7	133	110	42000
	B(33.9)	7 to 10	116	110	42000
	C(33.9)	0 to 4	125	110	42000
	C(33.9)	4 to 7	189	110	42000
	C(33.9)	7 to 10	127	110	42000
	D(33.9)	0 to 4	108	110	42000
	D(33.9)	4 to 7	108	110	42000
	D(33.9)	7 to 10	142	110	42000
	E(33.9)	0 to 4	108	110	42000
	E(33.9)	4 to 7	90	110	42000
	E(33.9)	7 to 10	134	110	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 34 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

2567 Fairlane Drive

Montgomery, Alabama 36116

136410.BR.ZZ

Parcel 34 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Number	Label	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
34	360	34.2	24,7	3	N/A	N/A

Site Description

Parcel 34 is a 2,098 ft^2 parcel in the southeast part of the Main Installation, in OU-3, as shown on Drawing 1. Parcel 34 consists of Building 360 and the adjacent railroad tracks.

Soil sampling was conducted at Label 34.2, which consists of Building 360. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. The surface soil surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. Sampling was performed to provide information on the presence of pesticides and PCBs in surface soil. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol (PCP). The railroad tracks, also known as Screening Sites 70/71, are to be sampled during the Screening Sites field effort. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

Surface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sample was collected for Label 34.2. Sample A(34.2) was located towards the southwest corner of Building 360 (See Drawing 1, BRAC Soil Sample Locations).

A stainless-steel trowel was used to remove the top layer of sod and collect the soil sample directly into the sample jars. Sample A(34.2) was collected from beneath the grass to less than 6 inches below ground surface (bgs).

The sample was sent to CH2M HILL's Analytical Services in Montgomery, Alabama for pesticides and PCBs analyses. All samples received at CH2M HILL's laboratory were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

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Subsurface Soil Sampling Procedure

No subsurface soil samples were collected at this site during this sampling event.

Results

Surface soil sampling locations with values above detection limits are shown in Table 34, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold.

Table 34
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 34
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Chlordane	A(34.2)	0 to .5	**0.14**	**0.029**	0.49	4.4	2	NA
gamma-Chlordane	A(34.2)	0 to .5	**0.15**	**0.026**	0.49	4.4	2	NA

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

Parcel 35 Report

BRAC Sampling Program

for

Defense Depot Memphis, Tennessee

April 1997

Prepared for

U.S. Army Engineering and Support Center, Huntsville

Prepared by

CH2M HILL

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136410.BR.ZZ

Parcel 35 Report
BRAC Sampling Program
Defense Depot Memphis, Tennessee

The chart below presents location and status information for this parcel.

Parcel	Building Numbers	Labels	CERFA Map Location	RI/FS OU	Site No.	CERCLA Status
35	1084, 1086, 1087, 1088, 1090, 1091	35.2 and 35.3	3,4 and 3,5	2	N/A	N/A

Site Description

Parcel 35 is a 1,823 ft^2 parcel in the southwest corner of the Main Installation, in OU-2, as shown on Drawing 1. Parcel 35 consists of Buildings 1084, 1086, 1087, 1088, 1090, and 1091.

Soil sampling was conducted at Labels 35.2 and 35.3. Label is a term used in the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996) to describe a group of facilities, or an area of concern such as a spill location, that was sampled during the BRAC field sampling effort. A label is a subarea of a parcel, and a label may contain one or several sample locations. Label 35.2 is associated with Building 1084 and former Building 1085. Label 35.3 is associated with Building 1086. For this phase of the program, only surface and subsurface soil samples are collected and analyzed.

According to the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), former Building 1085 was the site of an old concrete grease rack and storage area for petroleum, oil, and lubricants (POL). An underground storage tank (UST) associated with the grease rack was removed in 1988. Building 1084 was once used for storage of DDT and other pesticides (CH2M HILL 1995 Technical Memorandum, Summary of Information Inventory, Defense Distribution Depot, Memphis, Tennessee, Early Removal Task as cited in Woodward-Clyde, November 1996).

Building 1086 was used to store hazardous materials from 1959 through 1984. The building is currently a spray paint booth. Upon visual inspection, a sump was found within Building 1086.

Surface Soil Sampling and Analyses Procedure

The descriptions below present the labels sampled within this parcel. All samples received at CH2M HILL's Analytical Service in Montgomery, Alabama were analyzed in accordance with procedures outlined in the *Generic Quality Assurance Project Plan* (CH2M HILL, August 1995) for the RI/FS currently being conducted at DDMT.

Label 35.2 - Building 1084 and Former Building 1085

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, three samples were collected for Label 35.2. Sample A(35.2) was located east of Building 1086. Sample B(35.2) was located north of Sample A(35.2). Sample C(35.2) was located southeast of Building 1084 (See Drawing 1, BRAC Soil Sample Locations).

A pick-hoe and sharpshooter shovel were used to remove the gravel and rock surface. A stainless-steel trowel was used to collect the soil sample directly into the sample jars. Both Samples A(35.2) and B(35.2) were collected from beneath the gravel surface to less than 6 inches below ground surface (bgs).

Samples A(35.2) and B(35.2) were sent to CH2M HILL's laboratory for pesticides, PCBs, metals, SVOCs, and TPH method 418.1 analyses.

Label 35.3 - Sump in Building 1086

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, one sump sediment sample was collected for Label 35.3. Sample A(35.3) was collected from the sump inside Building 1086 (See Drawing 1, BRAC Soil Sample Locations).

A clean stainless-steel spoon was taped onto a pole in order to collect the sediment sample from the sump directly into the sample jar. The sediment sample was collected from a depth of 2.5 ft of liquid to less than 3 ft bgs.

Sample A(35.3) was sent to CH2M HILL's laboratory for metals, SVOCs, and TPH method 418.1 analyses.

Subsurface Soil Sampling and Analyses Procedure

Based on the recommendations of the *Environmental Baseline Survey Report* (Woodward-Clyde, November 1996), Tennessee Department of Environment and Conservation, and Environmental Protection Agency, subsurface soil samples were collected, using a 2-foot, stainless-steel, split-spoon sampler. Samples were collected from intervals of 0 to 4 ft, 4 to 7 ft, and 7 to 10 ft. VOC soil samples were collected directly from the continuous sampler using stainless-steel spoons. The remaining soil was placed into a stainless-steel bowl, mixed thoroughly with stainless-steel spoons, and then placed into the appropriate sample jars.

Soil Boring, SB-15, is at the same location where surface soil sample C(35.2) was collected.

Three samples were collected from the soil boring (SB-15). The three samples were sent to CH2M HILL's laboratory for metals, pesticides, PCBs, VOCs, and SVOCs analyses.

Results

Surface soil sampling locations with values above detection limits are shown in Table 35-A, which also contains the five types of comparison criteria. If a value from a sampling location exceeds one of the comparison criteria, that value and the comparison criterion are shown in bold. The same information is presented in Table 35-B for subsurface soil sampling locations, except there are only two types of comparison criteria appropriate for subsurface soil samples. The sump sediment sampling location with values above detection limits is shown in Table 35-C. Detected compounds from sump samples have no appropriate screening criteria to use for comparison.

Table 35-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 35
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
Aluminum	A(35.2)	0 to .5	2830	24000	7800	100000	NA	NA
	A(35.2)	0 to .5	2840	24000	7800	100000	NA	NA
	B(35.2)	0 to .5	8650	24000	7800	100000	NA	NA
	C(35.2)	0 to .5	13500	24000	7800	100000	NA	NA
Arsenic	A(35.2)	0 to .5	7.2	22	.43	3.8	15	10
	A(35.2)	0 to .5	8.3	22	.43	3.8	15	10
	B(35.2)	0 to .5	6.6	22	.43	3.8	15	10
	C(35.2)	0 to .5	71.6	22	.43	3.8	15	10
Barium	A(35.2)	0 to .5	31.5	250	550	14000	32	500
	A(35.2)	0 to .5	33.5	250	550	14000	32	500
	B(35.2)	0 to .5	478	250	550	14000	32	500
	C(35.2)	0 to .5	115	250	550	14000	32	500
Benzo(a)anthracene	A(35.2)	0 to .5	0.039 J	0.71	.88	7.8	.7	NA
Benzo(a)pyrene	C(35.2)	0 to .5	0.039 J	0.96	.088	.78	4	NA
Benzo(b)fluoranthene	B(35.2)	0 to .5	0.042 J	0.9	.88	7.8	4	NA
	C(35.2)	0 to .5	0.045 J	0.9	.88	7.8	4	NA
Benzo(g,h,i)perylene	A(35.2)	0 to .5	0.037 J	0.62	230	6100	1400	NA
Benzo(k)fluoranthene	C(35.2)	0 to .5	0.043 J	0.78	8.8	78	4	NA
bis(2-Ethylhexyl)phthalate	C(35.2)	0 to .5	0.092 J	NA	46	410	11	NA
Cadmium	A(35.2)	0 to .5	0.95	1.4	3.9	100	6	3
	A(35.2)	0 to .5	1.1	1.4	3.9	100	6	3
	B(35.2)	0 to .5	4.9	1.4	3.9	100	6	3
	C(35.2)	0 to .5	1.8	1.4	3.9	100	6	3
Calcium	A(35.2)	0 to .5	5700	5800	NA	NA	NA	NA
	A(35.2)	0 to .5	6940	5800	NA	NA	NA	NA
	B(35.2)	0 to .5	5470	5800	NA	NA	NA	NA
	C(35.2)	0 to .5	50200	5800	NA	NA	NA	NA
Chromium	A(35.2)	0 to .5	27	27	39	1000	19	1
	A(35.2)	0 to .5	27.3	27	39	1000	19	1
	B(35.2)	0 to .5	98	27	39	1000	19	1
	C(35.2)	0 to .5	122	27	39	1000	19	1
Chrysene	A(35.2)	0 to .5	0.046 J	0.94	88	780	1	NA
	C(35.2)	0 to .5	0.043 J	0.94	88	780	1	NA
Cobalt	B(35.2)	0 to .5	5.3	18	470	12000	NA	20
	C(35.2)	0 to .5	5.6	18	470	12000	NA	20
Copper	A(35.2)	0 to .5	45.9	33	310	8200	NA	100
	A(35.2)	0 to .5	55.8	33	310	8200	NA	100

Table 35-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 35
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
	B(35.2)	0 to .5	95.2	33	310	8200	NA	100
	C(35.2)	0 to .5	63.3	33	310	8200	NA	100
DDE	A(35.2)	0 to .5	0.045	0.16	1.9	17	0.5	NA
	A(35.2)	0 to .5	0.052	0.16	1.9	17	0.5	NA
	C(35.2)	0 to .5	0.066	0.16	1.9	17	0.5	NA
DDT	A(35.2)	0 to .5	0.074	0.074	1.9	17	1	NA
	A(35.2)	0 to .5	0.084	0.074	1.9	17	1	NA
	C(35.2)	0 to .5	0.15	0.074	1.9	17	1	NA
Di-n-butylphthalate	A(35.2)	0 to .5	0.17 J	NA	780	20000	120	NA
	A(35.2)	0 to .5	0.25 J	NA	780	20000	120	NA
	B(35.2)	0 to .5	0.13 J	NA	780	20000	120	NA
	C(35.2)	0 to .5	0.17 J	NA	780	20000	120	NA
Dieldrin	A(35.2)	0 to .5	0.079	0.53	.04	.36	.001	NA
	A(35.2)	0 to .5	0.086	0.53	.04	.36	.001	NA
	B(35.2)	0 to .5	0.025	0.53	.04	.36	.001	NA
Fluoranthene	A(35.2)	0 to .5	0.076 J	1.6	310	8200	980	NA
	C(35.2)	0 to .5	0.044 J	1.6	310	8200	980	NA
Iron	A(35.2)	0 to .5	7630	37000	2300	61000	NA	NA
	A(35.2)	0 to .5	7730	37000	2300	61000	NA	NA
	B(35.2)	0 to .5	20200	37000	2300	61000	NA	NA
	C(35.2)	0 to .5	24500	37000	2300	61000	NA	NA
Lead	A(35.2)	0 to .5	144	43	200	1000	1.5	50
	A(35.2)	0 to .5	201	43	200	1000	1.5	50
	B(35.2)	0 to .5	744	43	200	1000	1.5	50
	C(35.2)	0 to .5	550	43	200	1000	1.5	50
Magnesium	A(35.2)	0 to .5	1420	4600	NA	NA	NA	NA
	A(35.2)	0 to .5	3910	4600	NA	NA	NA	NA
	B(35.2)	0 to .5	1350	4600	NA	NA	NA	NA
	C(35.2)	0 to .5	2400	4600	NA	NA	NA	NA
Manganese	A(35.2)	0 to .5	81.8	1300	180	4700	NA	NA
	A(35.2)	0 to .5	86	1300	180	4700	NA	NA
	B(35.2)	0 to .5	228	1300	180	4700	NA	NA
	C(35.2)	0 to .5	534	1300	180	4700	NA	NA
Mercury	B(35.2)	0 to .5	0.28	0.43	2.3	61	3	.3
Nickel	B(35.2)	0 to .5	13.6	33	160	4100	21	30
	C(35.2)	0 to .5	21.3	33	160	4100	21	30
Petroleum Hydrocarbons[6]	A(35.2)	0 to .5	26.3	NA	NA	100	NA	NA

Table 35-A
Summary of Detected Compounds in Surface Soil Compared to Screening Levels for Parcel 35
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Risk-Based Concentrations Soil Ingestion[3] (mg/kg)		Groundwater Protection[4] (mg/kg)	Terrestrial/ Ecological[5] (mg/kg)
					Residential	Industrial		
	A(35.2)	0 to .5	35.8	NA	NA	100	NA	NA
	B(35.2)	0 to .5	274	NA	NA	100	NA	NA
	C(35.2)	0 to .5	54	NA	NA	100	NA	NA
Phenanthrene	A(35.2)	0 to .5	0.053 J	0.61	2300	61000	4300	NA
	B(35.2)	0 to .5	0.043 J	0.61	2300	61000	4300	NA
Potassium	B(35.2)	0 to .5	754	2000	NA	NA	NA	NA
	C(35.2)	0 to .5	1090	2000	NA	NA	NA	NA
Pyrene	A(35.2)	0 to .5	0.076 J	1.5	230	6100	1400	NA
	C(35.2)	0 to .5	0.048 J	1.5	230	6100	1400	NA
Sodium	B(35.2)	0 to .5	342	NA	NA	NA	NA	NA
	C(35.2)	0 to .5	399	NA	NA	NA	NA	NA
Vanadium	A(35.2)	0 to .5	10.8	52	55	1400	NA	2
	A(35.2)	0 to .5	11.1	52	55	1400	NA	2
	B(35.2)	0 to .5	27.1	52	55	1400	NA	2
	C(35.2)	0 to .5	25.2	52	55	1400	NA	2
Zinc	A(35.2)	0 to .5	212	130	2300	61000	42000	50
	A(35.2)	0 to .5	263	130	2300	61000	42000	50
	B(35.2)	0 to .5	311	130	2300	61000	42000	50
	C(35.2)	0 to .5	463	130	2300	61000	42000	50

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical Memorandum*, CH2M HILL, September 1996.
3. Risk-based Concentrations are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
4. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.
5. Terrestrial Ecological Values are from *Toxicological Benchmark for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants*, Suter II, Will, and Evans, 1993.
6. For petroleum hydrocarbon comparisons, the most conservative value of 100 ppm, from Soil Clean-Up Levels for Petroleum Contaminated Sites (provided by TDEC), was used.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - Indicates screening level values are not available for comparison.
J - Indicates estimated value above the method detection limit but below the reporting limit.

Table 35-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 35
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Aluminum	C(35.2)	0 to 4	20300	22000	NA
	C(35.2)	4 to 7	22000	22000	NA
	C(35.2)	7 to 10	38100	22000	NA
Arsenic	C(35.2)	0 to 4	7.6	17	15
	C(35.2)	4 to 7	7.1	17	15
	C(35.2)	7 to 10	17.5	17	15
Barium	C(35.2)	0 to 4	144	300	32
	C(35.2)	4 to 7	168	300	32
	C(35.2)	7 to 10	156	300	32
Beryllium	C(35.2)	0 to 4	1.1	1.2	180
	C(35.2)	4 to 7	1.1	1.2	180
	C(35.2)	7 to 10	1.5	1.2	180
Calcium	C(35.2)	0 to 4	3040	2400	NA
	C(35.2)	4 to 7	3060	2400	NA
	C(35.2)	7 to 10	2670	2400	NA
Chromium	C(35.2)	0 to 4	33.9	26	19
	C(35.2)	4 to 7	33.4	26	19
	C(35.2)	7 to 10	54.5	26	19
Cobalt	C(35.2)	0 to 4	13.2	20	NA
	C(35.2)	4 to 7	11.8	20	NA
	C(35.2)	7 to 10	13.6	20	NA
Copper	C(35.2)	0 to 4	23.2	33	NA
	C(35.2)	4 to 7	19	33	NA
	C(35.2)	7 to 10	28.6	33	NA
Iron	C(35.2)	0 to 4	28600	38000	NA
	C(35.2)	4 to 7	28100	38000	NA
	C(35.2)	7 to 10	43400	38000	NA
Lead	C(35.2)	0 to 4	13.9	24	1.5
	C(35.2)	4 to 7	15.4	24	1.5
	C(35.2)	7 to 10	23.8	24	1.5
Magnesium	C(35.2)	0 to 4	3860	4900	NA
	C(35.2)	4 to 7	3620	4900	NA
	C(35.2)	7 to 10	2350	4900	NA
Manganese	C(35.2)	0 to 4	959	1500	NA
	C(35.2)	4 to 7	719	1500	NA
	C(35.2)	7 to 10	559	1500	NA
Methylene chloride	C(35.2)	0 to 4	0.002 J	NA	.01
	C(35.2)	4 to 7	0.002 J	NA	.01
	C(35.2)	7 to 10	0.004 J	NA	.01
Nickel	C(35.2)	0 to 4	29.9	37	21
	C(35.2)	4 to 7	24.5	37	21
	C(35.2)	7 to 10	27.4	37	21
Potassium	C(35.2)	0 to 4	1400	1800	NA
	C(35.2)	4 to 7	1240	1800	NA
	C(35.2)	7 to 10	2390	1800	NA
Vanadium	C(35.2)	0 to 4	59.5	51	NA
	C(35.2)	4 to 7	57.6	51	NA
	C(35.2)	7 to 10	63.8	51	NA

Table 35-B
Summary of Detected Compounds in Subsurface Soil Compared to Screening Levels for Parcel 35
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value (mg/kg)	Background Value[2] (mg/kg)	Groundwater Protection Values[3] (mg/kg)
Zinc	C(35.2)	0 to 4	73.2	110	42000
	C(35.2)	4 to 7	58.7	110	42000
	C(35.2)	7 to 10	66.9	110	42000

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Background Values are from Table 5-1 of the *Draft Background Sampling Program Technical* Memorandum, CH2M HILL, September 1996.
3. Groundwater Protection Values are from the *EPA Region III Risk-Based Concentrations Table*, R.L. Smith, April 30, 1996.

Bold text indicates detections that exceeded a screening level value and the associated screening level value that was exceeded.
NA - indicates screening level values are not available for comparison.
J - indicates estimated value above the method detection limit but below the reporting limit.

Table 35-C
Summary of Detected Compounds in Sump Samples for Parcel 35
BRAC Sampling Program
Defense Depot Memphis, Tennessee

Parameter[1]	Station ID	Depth (ft)	Detected Value[2] (mg/kg)
Acenaphthene	A(35.3)	0 to .5	0.39 J
Aluminum	A(35.3)	0 to .5	7090
Anthracene	A(35.3)	0 to .5	0.51 J
Antimony	A(35.3)	0 to .5	56.7
Arsenic	A(35.3)	0 to .5	11.7
Barium	A(35.3)	0 to .5	2240
Benzo(a)anthracene	A(35.3)	0 to .5	1.2 J
Benzo(a)pyrene	A(35.3)	0 to .5	0.84 J
Benzo(b)fluoranthene	A(35.3)	0 to .5	1.4 J
Benzo(k)fluoranthene	A(35.3)	0 to .5	1.1 J
Cadmium	A(35.3)	0 to .5	168
Calcium	A(35.3)	0 to .5	31800
Carbazole	A(35.3)	0 to .5	0.4 J
Chromium	A(35.3)	0 to .5	3400
Chrysene	A(35.3)	0 to .5	1.6 J
Cobalt	A(35.3)	0 to .5	88.7
Copper	A(35.3)	0 to .5	305
Fluoranthene	A(35.3)	0 to .5	2.4 J
Iron	A(35.3)	0 to .5	49300
Lead	A(35.3)	0 to .5	7640
Magnesium	A(35.3)	0 to .5	3180
Manganese	A(35.3)	0 to .5	448
Naphthalene	A(35.3)	0 to .5	5.5
Nickel	A(35.3)	0 to .5	59.5
Phenanthrene	A(35.3)	0 to .5	3.1
Pyrene	A(35.3)	0 to .5	2.2 J
Sodium	A(35.3)	0 to .5	2660
Zinc	A(35.3)	0 to .5	5100

Notes:
1. The parameter listing includes only the parameters detected within each parcel and not all the parameters analyzed.
2. Detected compounds from sump samples have no appropriate screening criteria to use for comparison.

J - Indicates estimated value above the method detection limit but below the reporting limit.

Acronyms

bgs	below ground surface
BRAC	Base Realignment and Closure
COE	Corps of Engineers
DDMT	Defense Depot Memphis Tennessee
mg/kg	milligrams per kilogram
PCB	Polychlorinated biphenyl
PCP	pentachlorophenol
RI/FS	Remedial Investigation/Feasibility Study
SVOCs	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

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