



THE MEMPHIS DEPOT TENNESSEE

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 318



318 1
DEFENSE LOGISTICS AGENCY
MEMPHIS DEPOT CARETAKER
2163 AIRWAYS BOULEVARD
MEMPHIS, TENNESSEE 38114-5210

File: 190.300.9
C.G.

318



IN REPLY
REFER TO

DDSP-FE

June 12, 1998

MEMORANDUM FOR RECORD

SUBJECT: Canisters Found at Dunn Field During Groundwater Interim Remedial Action Construction

In December 1997, OHM Corporation performed a geophysical survey along the fenceline in the northwest section of Dunn Field. An expanded survey was performed again in January 1998 to determine if there were any disturbed or anomalous soils in the area where a proposed 2,550-foot trench was to be built. As a precaution, anomalies were to be sampled before OHM began work on the trench. The area where the trench was to be located was also sampled every hundred feet.

Two areas were found where there appeared to be a disturbance in the shallow soils. These two areas were excavated with a backhoe and soil was collected for sampling. A Corps of Engineers Unexploded Ordnance/Chemical Warfare Material technician was onsite during these excavations. Four samples were collected from one area (SB-006 through SB-009) and three were collected from the other area (SB-013 through SB-15).

Concrete, metal and other debris were found in the excavation area at SB-006 through SB-008 and nothing was found in SB-009. Small metal canisters were found mixed in with the soil in the excavation at SB-013 through SB-015. The small metal containers that were still in good condition, with little to no rust, were green in color, one and a half inches in diameter and about three inches long. On some containers the marking "expiration Sep 1956" was visible. The canisters that were intact contained four small glass vials. A white milky or crystalline substance was observed in some of the glass vials. Some were corked. A majority of the metal canisters and glass vials were very weathered and most were caked with dirt.

The Corps of Engineers technician evaluated the canisters and reported that the canisters did not resemble any chemical warfare agents. He was not able to identify what the canisters were.

All the soil along the proposed trench from SB-013 through SB-015 - an area approximately 200 feet long, four feet deep, and two feet wide - was excavated and placed onto a bermed plastic sheet for further examination. After consulting with the waste disposal facility and the Tennessee Department of Environment and Conservation, numerous metal canisters and the enclosed glass vials were crushed in the soil on the plastic sheet and the composite sample was sent for analysis. The analysis performed was

for the following chemicals (GP Environmental Services, Inc. in Gaithersburg, Maryland performed an analysis for chemical warfare material degradation compounds and explosives and Analytical Services, Inc. in Norcross, Georgia performed the remaining analysis):

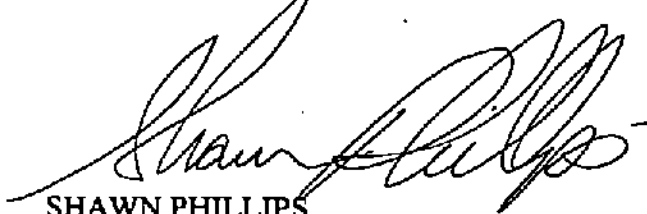
- Chemical Warfare Material Degradation Compounds
- Explosives
- Organics (Target Compound List)
- Inorganics (Target Analyte List)
- Poly Chlorinated Biphenyl's (PCB's)
- Chlorinated Pesticides and Herbicides
- Cyanide
- Full Toxic Characteristic Leachate Procedure (TCLP) Organics and Inorganics
- Reactivity
- Corrosivity
- Ignitability

A copy of this analysis is provided in OHM Technical Memorandum #4 dated February 26, 1998. Upon the receipt of these sampling results and a subsequent field visit by the Tennessee Department of Environment and Conservation, approval was provided to dispose of the soil with the canisters included at an approved disposal facility. A copy of the disposal approval is also provided.

At the BRAC (Base Realignment and Closure) Cleanup Team meeting in March 1998, several different parties from the Corps of Engineers were asked to determine what the canisters were. An announcement concerning the discovery of the vials and the sampling results was made at the March Restoration Advisory Board (RAB) Meeting.

In April 1998, the Corps of Engineer staff from the Huntsville Engineering Support Center was successful in determining what the canisters were. A presentation on their findings is planned for the June 1998 RAB meeting.

Any further questions concerning this issue should be forwarded to the Community Relations office of the Memphis Depot Caretaker Environment Division at 544-0613.



SHAWN PHILLIPS
BRAC Environmental Coordinator (Acting)

Enclosures

GP Work Order # 9802105

SAMPLE ANALYSIS REPORT

Prepared For:

OHM CORPORATION
200 HORIZON CENTER BLVD.
TRENTON, NJ 08691-1904

DDMT, MEMPHIS, TN

Prepared By:

GP Environmental Services, Inc.
202 Perry Parkway
Gaithersburg, MD 20877

February 25, 1998



for Marty Sadoughi, Laboratory Director

Project: DDMT, MEMPHIS, TN

GP ENVIRONMENTAL SERVICES
ANALYTICAL RESULTS

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Project: DDMT, MEMPHIS, TN

OHM CORPORATION
200 HORIZON CENTER BLVD.
TRENTON, NJ 08691-1904
Attn: CHRISTINE HILL

GP ENVIRONMENTAL SERVICES
202 Perry Parkway
Gaithersburg, MD 20877

Attn: Client Services
Phone: (301) 926-6802

Certified by: 

SAMPLE IDENTIFICATION

<u>GP ID</u>	<u>Client ID</u>
9802105-D1A	DDMT-DF-GV
9802105-D1B	
9802105-D1C	
9802105-D1D	
9802105-D1E	

Project: ODMT, MEMPHIS, TN

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

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GP ID: 9802105-01D
Client ID: ODMT-DF-GV
Collected: 02/16/98
Dilution: 1Matrix: SOIL
Method: SW846 8270
Units: ug/KgAnalyst: MN
Analyzed: 02/23/98
Prepared: 02/20/98

SEMIVOLATILE TARGET COMPOUNDS

Parameter	Result	Det. Lin.	Qualifier
1,2,4-Trichlorobenzene	BQL	430	
1,2-Dichlorobenzene	BQL	430	
1,3-Dichlorobenzene	BQL	430	
1,4-Dichlorobenzene	BQL	430	
2,2'-oxybis-(1-chloropropene)	BQL	430	
2,4,5-Trichlorophenol	BQL	2100	
2,4,6-Trichlorophenol	BQL	430	
2,4-Dichlorophenol	BQL	430	
2,4-Dimethylphenol	BQL	430	
2,4-Dinitrophenol	BQL	2100	
2,4-Dinitrotoluene	BQL	430	
2,6-Dinitrotoluene	BQL	430	
2-Chloronaphthalene	BQL	430	
2-Chlorophenol	BQL	430	
2-Methylnaphthalene	BQL	430	
2-Methylphenol	BQL	430	
2-Nitroaniline	BQL	2100	
2-Nitrophenol	BQL	430	
3,3'-Dichlorobenzidine	BQL	850	
3-Nitroaniline	BQL	2100	
4,6-Dinitro-2-methylphenol	BQL	2100	
4-Bromophenyl-phenylether	BQL	430	
4-Chloro-3-methylphenol	BQL	430	
4-Chloroaniline	BQL	430	
4-Chlorophenyl phenyl ether	BQL	430	
4-Methylphenol	BQL	430	
4-Nitroaniline	BQL	2100	
4-Nitrophenol	BQL	2100	
Acenaphthene	BQL	430	
Acenaphthylene	BQL	430	
Acetophenone	BQL	430	
Anthracene	BQL	430	
Benzo[a]anthracene	BQL	430	

Project: DDNT, MEMPHIS, TN

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

Page 3

GP ID: 9802105-01D
Client ID: DDNT-DF-GV
Collected: 02/16/98
Dilution: 1Matrix: SOIL
Method: SW846 8270
Units: ug/KgAnalyst: MW
Analyzed: 02/23/98
Prepared: 02/20/98

SEMIVOLATILE TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
Benzo[a]pyrene	BQL	430	
Benzo[b]fluoranthene	BQL	430	
Benzo[g,h,i]perylene	BQL	430	
Benzo[k]fluoranthene	BQL	430	
bis(2-Chloroethoxy) methane	BQL	430	
bis(2-Chloroethyl) ether	BQL	430	
bis(2-Ethylhexyl)phthalate	47.0	430	J
Butyl benzyl phthalate	BQL	430	
Carbazole	BQL	430	
Chrysene	BQL	430	
di-n-Butylphthalate	BQL	430	
di-n-Octylphthalate	BQL	430	
Dibenzofuran	BQL	430	
Dibenz[a,h]anthracene	BQL	430	
Diethylphthalate	BQL	430	
Dimethyl phthalate	BQL	430	
Fluoranthene	BQL	430	
Fluorene	BQL	430	
Hexachlorobenzene	BQL	430	
Hexachlorobutadiene	BQL	430	
Hexachlorocyclopentadiene	BQL	430	
Hexachloroethane	BQL	430	
Indeno[1,2,3-cd]pyrene	BQL	430	
Isophorone	BQL	430	
Malononitrile	BQL	430	
N-Nitroso-di-n-propylamine	BQL	430	
N-nitrosodiphenylamine	BQL	430	
Naphthalene	BQL	430	
Nitrobenzene	BQL	430	
Pentachlorophenol	BQL	2100	
Phenanthrene	BQL	430	
Phenol	BQL	430	
Pyrene	BQL	430	

Project: DDMT, MEMPHIS, TN

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

Page 4

GP ID: 9802105-018
Client ID: DDMT-QF-GV
Collected: 02/16/98
Dilution: 1Matrix: SOIL
Method: LL03 GC-FPD
Units: ug/KgAnalyst: ABC
Analyzed: 02/22/98
Prepared: 02/18/98

GC TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
Dimethyldisulfide	BQL	100	
1,4-Oxathiane	BQL	200	
1,4-Dithiane	BQL	100	
p-Chlorophenylmethanethiol	BQL	200	
Benzothiazole	BQL	200	
p-Chlorophenylmethanethiol	BQL	200	
p-Chlorophenylmethanesulfone	BQL	200	

Project: DDMT, MEMPHIS, TN

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

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GP ID: 9802105-018
Client ID: DDMT-DF-GV
Collected: 02/16/98
Dilution: 1Matrix: SOIL
Method: 119 GC-FPD
Units: ug/KgAnalyst: ABC
Analyzed: 02/25/98
Prepared: 02/18/98

GC TARGET COMPOUNDS

Parameter	Result	Det. tm.	Qualifier
Diisopropylmethylphosphonate	BQL	6.4	
Dimethylmethylphosphonate	BQL	77.0	

Project: DDMT, MEMPHIS, TN

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

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GP ID: 9802105-01
Client ID: DDMT-DF-GVMatrix: SOIL
Collected: 02/16/98

Parameter	Method	Result	Det. Lim.	Units	Dil.	Prepared	Analyzed By
Thiodiglycol	LW18	BQL	500	ug/Kg	1	02/19/98	02/19/98 CN

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Project: DDMT, MEMPHIS, TN

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

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GP ID: 9802105-018
Client ID: DDMT-DF-GV
Collected: 02/16/98
Dilution: 1Matrix: SOIL
Method: LT03
Units: mg/KgAnalyst: VHM
Analyzed: 02/20/98
Prepared: 02/18/98

LIQUID CHROMATOGRAPHY TARGET COMPOUNDS

Parameter	Result	Det. Lim.	Qualifier
isopropylmethylphosphonic acid	BQL	1.60	
methyl phosphonic acid	BQL	1.60	

Project: DDMT, MEMPHIS, TN

GP ENVIRONMENTAL SERVICES³¹⁸ 11
ORGANIC ANALYSIS RESULTS

Page 8

GP ID: 9802105-01C
Client ID: DDMT-DF-GV
Collected: 02/16/98
Dilution: 1

Matrix: SOIL
Method: SW-846 8330
Units: ug/Kg

Analyst: LF
Analyzed: 02/24/98
Prepared: 02/19/98

LIQUID CHROMATOGRAPHY TARGET COMPOUNDS

Parameter	Result	Det. Lim.	Qualifier
1,3,5-Trinitrobenzene	BQL	250	
1,3-Dinitrobenzene	BQL	250	
2,4,6-Trinitrotoluene	BQL	250	
2,4-Dinitrotoluene	BQL	250	
2,6-Dinitrotoluene	BQL	250	
2-Amino-4,6-dinitrotoluene	BQL	250	
2-Nitrotoluene	BQL	500	
3-Nitrotoluene	BQL	500	
4-Amino-2,6-dinitrotoluene	BQL	250	
4-Nitrotoluene	BQL	500	
HMX	BQL	500	
Nitrobenzene	BQL	250	
RDX	BQL	500	
Tetryl	BQL	500	

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Project: DDMT, MEMPHIS, TN

GP ENVIRONMENTAL SERVICES
WET CHEMISTRY ANALYSIS RESULTS

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GP ID: 9802105-01
Client ID: DDMT-DF-GYMatrix: SOIL
Collected: 02/16/98

Parameter	Method	Result	Det. Lin.	Units	Dil.	Prepared	Analyzed By
Percent Solids	NCAWW 160.3	77.9		%			02/20/98 JH



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STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
MEMPHIS ENVIRONMENTAL FIELD OFFICE
SUITE E-645, PERIMETER PARK
2510 MT. MORIAH ROAD
MEMPHIS, TENNESSEE 38115-1520

March 12, 1998

Defense Distribution Depot
Attn: Mr. John Rhyne
2163 Airways Boulevard
Memphis, TN 38114

RE: Soil Cuttings Excavated Soils Canisters Vials and Debris 98020C

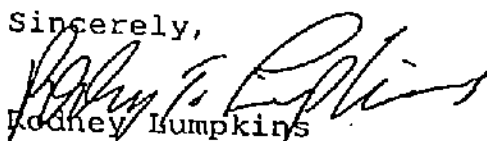
Dear Mr. Rhyne

This office has received a Special Waste Approval Request from Defense Distribution Depot Memphis. It was submitted according to Tennessee Rule Chapter 1200-1-7-.01(4). Considering a review of the submitted data, the Division has determined that the request to dispose of up to 250 tons (one time only) of Soil Cuttings canisters Vials and related Debris from excavation for installation of ground water recovery system is suitable for disposal at the Browning-Ferris Industries North Shelby (SNL791060224) or South Shelby (SNL791060135) Landfill.

Note that the facility operator may refuse to accept any special waste, even if it has been approved in writing by the Division.

If you have any questions, please contact me at (901) 368-7951.

Sincerely,


Rodney Rumpkins
Division of Solid Waste Management
Memphis Environmental Assistance Center

RL/sp8020c/rl

c: DSWM Nashville(SNL 79-106-0135)



OHM Remediation
Services Corp.
A Subsidiary of CH2M Corporation

TECHNICAL MEMORANDUM

5445 Triangle Parkway, Suite 400, Norcross, Georgia

OHM Project No. 20022

To: John W. Rollyson, P.E., Area Engineer
USACE/Tennessee Area Office

From: Stephen Offner, P.G., OHM/Norcross

PC: Dana Conkin, USACE/Tennessee Area Office
Glenn L. Kaden, Defense Depot/Memphis
John Lore, OHM/Miami
Angelo Liberatore, OHM/Norcross

Re: Technical Memorandum No. 04
Preliminary Analytical Results of Glass Vials for Characterization
Dunn Field, Defense Depot, Memphis, Tennessee
Contract No. DACA45-96-D-0014
Delivery Order No. 0007

Date: February 26, 1998

On February 16, 1998, representatives of OHM Remediation Services Corp. (OHM) collected a sample of crushed glass vial (designated DDMT-DF-GV) from the northwest portion of Dunn Field for analytical characterization. Numerous glass vials (and contents) were crushed into soil collected from the area where the metal canisters and glass vials were found buried. Samples of the soil with the crushed vials and associated contents were then collected into the applicable sample containers. This sampling event was conducted in level B personnel protection.

The samples were analyzed for: CWM degradation compounds (Methods LL03, LW18, LT03 and TT9); explosives (Method 8330); TCL organics (Methods 8260 and 8270); TAL inorganics (Methods 6010, 7060, 7471, 7740 and 7841); chlorinated pesticides and herbicides (Methods 8081 and 8151); PCBs (Method 8082); total cyanide (Method 9010); full TCLP organic and inorganic list; and reactivity, corrosivity, and ignitability. The samples were analyzed by Analytical Services, Inc., in Norcross, GA, and GP Environmental Services, Inc., in GP Environmental, Inc., in Gaithersburg, MD.

Based on the preliminary analytical data, the excavated soil with metal canisters/glass vials can be disposed at a RCRA subtitle D landfill as non-hazardous waste. No chemical warfare agent compounds, explosive residuals, pesticides, herbicides, or PCBs were detected in the sample. Trace total metals and organics were detected; however, the concentrations of the detected compounds were below USEPA Region 3 risk based concentrations for residential scenario. A summary of the analytical results are included in *Attachment A* and the laboratory analytical reports are included in *Attachment B*.

Summary of Analytical Results for Soil/Glass Vials Disposal Characterization
Dunn Field, Defense Depot
Memphis, Tennessee

Soil Boring No./Field No.	DDMT-DF-GV	Region 3
Laboratory ID No.	91005-1	RBCs
Date Sample Collected	24-Feb-99	(Residential)
LABORATORY ANALYSES		
Trace Analytes (EPA Metals)		
Aluminum (EPA 6010)	10 mg/kg	6000
Arsenic (EPA 7060)	3 mg/kg	7.5
Barium (EPA 8010)	1 mg/kg	120
Calcium (EPA 6010)	5 mg/kg	1800
Chromium (EPA 6010)	1 mg/kg	5.6
Cobalt (EPA 6010)	4 mg/kg	4.3
Copper (EPA 6010)	2 mg/kg	22
Cyanide (EPA 9010)	0.2 mg/kg	0.2
Iron (EPA 6010)	10 mg/kg	16000
Lead (EPA 6010)	5 mg/kg	150
Magnesium (EPA 6010)	5 mg/kg	1600
Manganese (EPA 6010)	4 mg/kg	500
Nickel (EPA 6010)	2 mg/kg	13
Potassium (EPA 6010)	20 mg/kg	380
Sodium (EPA 6010)	5 mg/kg	540
Vanadium (EPA 6010)	2 mg/kg	13
Zinc (EPA 6010)	2 mg/kg	82
Target Compounds List - Volatile Organics		
Total Xylenes (EPA 8260)	0.002 mg/kg	0.008
Target Compounds List - Semi-Volatile Organics		
Bis(2-Ethylhexyl)phthalate (EPA 8270)	0.43 mg/kg	0.047
Chlorinated Paraffins		
All Parameters (EPA 8081)	mg/kg	BDL
PCBs		
All Parameters (EPA 8082)	0.033 mg/kg	BDL
Chlorinated Herbicides		
All Parameters (EPA 8082)	mg/kg	BDL
Chemical Warfare Agent Degradation Analytes		
Dimethyldisulfide (Method LL03)	0.1 mg/kg	BDL
1,4-Dioxane (Method LL03)	0.2 mg/kg	BDL
1,4-Dichlorane (Method LL03)	0.1 mg/kg	BDL
p-Chlorophenylmethylsulfide (Method LL03)	0.2 mg/kg	BDL
p-Chlorophenylmethylsulfonide (Method LL03)	0.2 mg/kg	BDL
p-Chlorophenylmethylsulfone (Method LL03)	0.2 mg/kg	BDL
Benzothiazole (Method LL03)	0.2 mg/kg	BDL
Thiodiglycol (Method LW18)	0.5 mg/kg	BDL
Isopropylmethylphosphonic acid (Method LT03)	1.6 mg/kg	BDL
Methyl phosphonic acid (Method LT03)	1.6 mg/kg	BDL
Diisopropylmethylphosphonate (Method TT8)	0.0064 mg/kg	BDL
Explosive Residues		
1,3,5-Trinitrobenzene (EPA 8330)	0.25 mg/kg	BDL
1,3-Dinitrobenzene (EPA 8330)	0.25 mg/kg	BDL
2,4,6-Trinitrotoluene (EPA 8330)	0.25 mg/kg	BDL
2,4-Dinitrotoluene (EPA 8330)	0.25 mg/kg	BDL
2,6-Dinitrotoluene (EPA 8330)	0.25 mg/kg	BDL
3-Amino-4,6-dinitrotoluene (EPA 8330)	0.25 mg/kg	BDL
2-Nitrotoluene (EPA 8330)	0.6 mg/kg	BDL
3-Nitrotoluene (EPA 8330)	0.6 mg/kg	BDL
4-Amino-2,6-dinitrotoluene (EPA 8330)	0.25 mg/kg	BDL
4-Nitrotoluene (EPA 8330)	0.6 mg/kg	BDL
HMX (EPA 8330)	0.5 mg/kg	BDL
Nitrobenzene (EPA 8330)	0.25 mg/kg	BDL
ROX (EPA 8330)	0.6 mg/kg	BDL
Tetryl (EPA 8330)	0.6 mg/kg	BDL

mg/L = milligrams per liter
 mg/kg = milligrams per kilogram
 NS = no standard

BDL = below detection limit
 RBC = risk based concentrations, residential scenario

Summary of Analytical Results for Soil/Glass Vials Disposal Characterization
Dunn Field, Defense Depot
Memphis, Tennessee

Soil Boring No./Field No.		DDMT-DF-GV		40 CFR 261
Laboratory ID No.		01030-1		Regulatory
Date Sample Collected		24-Feb-98		
LABORATORY ANALYSES				
Ignitability (EPA 1010)	D001	"F"	>212	<140
pH (EPA 8045)	D002	and units	7.22	NS
Reactive Cyanide (EPA 7.3.3.2)	D003	mg/kg	<1	250*
Reactive Sulfide (EPA 7.3.4.2)	D003	mg/kg	<5	500*
TCLP (NOM VOL) KYLE EXTRACTOR (EPA 1311)				
Arsenic (EPA 8010)	D004	mg/L	<2.5	5.00
Barium (EPA 8010)	D005	mg/L	1.2	100.00
Cadmium (EPA 8010)	D006	mg/L	<0.01	1.00
Chlordane (EPA 8081)	D020	mg/L	<0.01	0.03
Chromium (EPA 8010)	D007	mg/L	<0.01	5.00
Cresol, total (EPA 8270)	D026	mg/L	<0.05	200.00
2,4-D (EPA 8151)	D016	mg/L	<0.05	10.00
1,4-Dichlorobenzene (EPA 8270)	D027	mg/L	<0.05	7.50
2,4-Dinitrotoluene (EPA 8270)	D030	mg/L	<0.05	0.13
Endrin (EPA 8081)	D012	mg/L	<0.001	0.02
Heptachlor (EPA 8081)	D031	mg/L	<0.001	0.008
Heptachlor Epoxide (EPA 8081)	D031	mg/L	<0.001	0.008
Hexachlorobenzene (EPA 8270)	D032	mg/L	<0.05	0.13
Hexachlorobutadiene (EPA 8270)	D033	mg/L	<0.05	0.50
Hexachloroethane (EPA 8270)	D034	mg/L	<0.05	3.00
Lead (EPA 8010)	D008	mg/L	0.4	6.00
Lindane (EPA 8061)	D013	mg/L	<0.01	0.40
Mercury (EPA 7470)	D009	mg/L	<0.005	0.20
Methoxychlor (EPA 8081)	D014	mg/L	<0.5	10.00
Nitrobenzene (EPA 8270)	D036	mg/L	<0.05	2.00
Pentachlorophenol (EPA 8270)	D037	mg/L	<0.05	100.00
Selenium (EPA 8010)	D010	mg/L	<0.5	1.00
Silver (EPA 8010)	D011	mg/L	<0.01	5.00
Toxaphene (EPA 8081)	D015	mg/L	<0.05	0.50
2,4,5-Trichlorophenol (EPA 8270)	D041	mg/L	<0.05	400.00
2,4,6-Trichlorophenol (EPA 8270)	D042	mg/L	<0.05	2.00
2,4,5-TP Silvex (EPA 8151)	D017	mg/L	<0.1	1.00
Pyridine (EPA 8270)	D038	mg/L	<0.05	5.00
TCLP ZERO HEADSPACE EXTRACTION (EPA 1311)				
Benzene (EPA 8260)	D018	mg/L	<0.02	0.50
Carbon Tetrachloride (EPA 8260)	D019	mg/L	<0.02	0.50
Chlorobenzene (EPA 8260)	D021	mg/L	<0.02	100.00
Chloroform (EPA 8260)	D022	mg/L	<0.02	5.00
1,2-Dichloroethane (EPA 8260)	D028	mg/L	<0.02	0.50
1,1-Dichloroethene (EPA 8260)	D029	mg/L	<0.02	0.10
Methyl Ethyl Ketone (EPA 8260)	D035	mg/L	<0.5	200.00
Tetrachloroethane (EPA 8260)	D039	mg/L	0.02	0.70
Trichloroethene (EPA 8260)	D040	mg/L	<0.02	0.50
Vinyl Chloride (EPA 8260)	D043	mg/L	<0.02	0.20

mg/L = milligrams per liter

mg/kg = milligrams per kilogram

HW = hazardous waste

NS = no standard due to sample being solid matrix

Regulatory levels as defined in 40 CFR Part 261.21, 261.22, 261.23 & 261.24

TCLP = toxicity characteristic leaching procedure

SB = soil boring

bs = below land surface

* = as defined in SW-846 7.3.3.2 and 7.3.4.2

ASI**ANALYTICAL SERVICES, INC.****ENVIRONMENTAL MONITORING & LABORATORY ANALYSIS**110 TECHNOLOGY PARKWAY • NORCROSS, GA 30092
(770) 734-4200 • FAX (770) 734-4201**LABORATORY REPORT**OHM Remediation Services Corp.
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

February 27, 1998

P.O. No. 1041997

Attention: Ms. Elena Rodriguez

Report No. 91936-1**Sample Description**Soil, DDMT\Dunn Field Memphis TN, Project #20022, DDMT-DF-GV, 02/16/98,
14:00, received 02/17/98**RESULTS**

	<u>Result</u>	<u>Detection Limit</u>
Total Cyanide (CN) (mg/kg) (EPA 9010).....	0.2	0.2
Ignitability (°F) (EPA 1010).....	>212	70
pH (laboratory) (EPA 9045).....	7.22	-
Reactive Cyanide (mg/kg) (EPA 7.3.3.2).....	BDL	1
Reactive Sulfide (mg/kg) (EPA 7.3.4.2).....	BDL	5

Target Analyte List - Metals

<u>Metals</u>	<u>(mg/kg)</u>	<u>(mg/kg)</u>
Total Aluminum (Al) (EPA 6010).....	6000	10
Total Antimony (Sb) (EPA 6010).....	BDL	5.0
Total Arsenic (As) (EPA 7060).....	7.5	3.0
Total Barium (Ba) (EPA 6010).....	120	1.0
Total Beryllium (Be) (EPA 6010).....	BDL	1.0
Total Cadmium (Cd) (EPA 6010).....	BDL	1.0
Total Calcium (Ca) (EPA 6010).....	1800	5.0
Total Chromium (Cr) (EPA 6010).....	5.5	1.0
Total Cobalt (Co) (EPA 6010).....	4.3	4.0
Total Copper (Cu) (EPA 6010).....	22	2.0
Total Iron (Fe) (EPA 6010).....	19000	10

BDL - Below Detection Limit

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RESULTS

<u>Metals</u>	<u>Result</u> <u>(mg/kg)</u>	<u>Detection</u> <u>Limit</u> <u>(mg/kg)</u>
Total Lead (Pb) (EPA 6010)	150	5.0
Total Magnesium (Mg) (EPA 6010)	1600	5.0
Total Manganese (Mn) (EPA 6010)	500	4.0
Total Mercury (Hg) (EPA 7471)	BDL	0.25
Total Nickel (Ni) (EPA 6010)	13	2.0
Total Potassium (K) (EPA 6010)	390	20
Total Selenium (Se) (EPA 7740)	BDL	4.0
Total Silver (Ag) (EPA 6010)	BDL	1.0
Total Sodium (Na) (EPA 6010)	540	5.0
Total Thallium (Tl) (EPA 7841)	BDL	5.0
Total Vanadium (V) (EPA 6010)	15	2.0
Total Zinc (Zn) (EPA 6010)	62	2.0
<u>Volatile Organics (EPA 8260)</u>	<u>(ug/kg)</u>	<u>(ug/kg)</u>
Acetone	BDL	100
Acrolein	BDL	50
Acrylonitrile	BDL	50
Benzene	BDL	5
Bromobenzene	BDL	10
Bromochloromethane	BDL	10
Bromodichloromethane	BDL	5
Bromoform	BDL	5
Bromomethane	BDL	10
2-Butanone	BDL	100
n-Butylbenzene	BDL	10
sec-Butylbenzene	BDL	10
tert-Butylbenzene	BDL	10
Carbon disulfide	BDL	5
Carbon tetrachloride	BDL	5
Chlorobenzene	BDL	10
Chloroethane	BDL	5
Chloroform	BDL	5
Chloromethane	BDL	10
2-Chlorotoluene	BDL	10
4-Chlorotoluene	BDL	10
2-Chloroethylvinyl ether	BDL	10
Dibromochloromethane	BDL	5

BDL - Below Detection Limit

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RESULTS

<u>Volatile Organics (EPA 8260)</u>	<u>Result</u> <u>(ug/kg)</u>	<u>Detection</u> <u>Limit</u> <u>(ug/kg)</u>
1,2-Dibromo-3-chloropropane.....	BDL	10
1,2-Dibromoethane.....	BDL	10
Dibromomethane.....	BDL	10
1,2-Dichlorobenzene.....	BDL	10
1,3-Dichlorobenzene.....	BDL	10
1,4-Dichlorobenzene.....	BDL	10
Dichlorodifluoromethane.....	BDL	10
1,1-Dichloroethane.....	BDL	5
1,2-Dichloroethane.....	BDL	5
1,1-Dichloroethene.....	BDL	5
cis-1,2-Dichloroethene.....	BDL	5
trans-1,2-Dichloroethene.....	BDL	5
1,2-Dichloropropane.....	BDL	5
1,3-Dichloropropane.....	BDL	5
2,2-Dichloropropane.....	BDL	5
1,1-Dichloropropene.....	BDL	5
cis-1,3-Dichloropropene.....	BDL	5
trans-1,3-Dichloropropene.....	BDL	5
Ethylbenzene.....	BDL	5
Hexachlorobutadiene.....	BDL	10
2-Hexanone.....	BDL	50
Isopropylbenzene.....	BDL	10
p-Isopropyltoluene.....	BDL	10
Methylene chloride.....	BDL	10
4-Methyl-2-pentanone.....	BDL	50
Naphthalene.....	BDL	10
n-Propylbenzene.....	BDL	10
Styrene.....	BDL	5
1,1,1,2-Tetrachloroethane.....	BDL	5
1,1,2,2-Tetrachloroethane.....	BDL	5
Tetrachloroethene.....	BDL	5
Toluene.....	BDL	5
1,2,3-Trichlorobenzene.....	BDL	10
1,2,4-Trichlorobenzene.....	BDL	10
1,1,1-Trichloroethane.....	BDL	5
1,1,2-Trichloroethane.....	BDL	5
Trichloroethene.....	BDL	5
Trichlorofluoromethane.....	BDL	10

BDL - Below Detection Limit

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RESULTS

<u>Volatile Organics (EPA 8260)</u>	<u>Result</u> <u>(ug/kg)</u>	<u>Detection</u> <u>Limit</u> <u>(ug/kg)</u>
1,2,3-Trichloropropane.....	BDL	10
1,2,4-Trimethylbenzene.....	BDL	10
1,3,5-Trimethylbenzene.....	BDL	10
Vinyl acetate.....	BDL	10
Vinyl chloride.....	BDL	10
m+p-Xylene.....	8	5
o-Xylene.....	BDL	5
Xylenes (total).....	8	5
<u>Pesticides (EPA 8081)</u>	<u>(ug/kg)</u>	<u>(ug/kg)</u>
Aldrin.....	BDL	3.3
BHC-alpha.....	BDL	3.3
BHC-beta.....	BDL	3.3
BHC-delta.....	BDL	3.3
BHC-gamma (Lindane).....	BDL	3.3
Chlordane.....	BDL	17
4,4'-DDD.....	BDL	6.6
4,4'-DDE.....	BDL	6.6
4,4'-DDT.....	BDL	6.6
Dieldrin.....	BDL	3.3
Endosulfan I.....	BDL	17
Endosulfan II.....	BDL	17
Endosulfan sulfate.....	BDL	17
Endrin.....	BDL	6.6
Endrin aldehyde.....	BDL	6.6
Heptachlor.....	BDL	3.3
Heptachlor epoxide.....	BDL	3.3
Methoxychlor.....	BDL	9.9
Toxaphene.....	BDL	66

BDL - Below Detection Limit

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<u>PCB's (EPA 8082)</u>	<u>Result</u> <u>(ug/kg)</u>	<u>Detection</u> <u>Limit</u> <u>(ug/kg)</u>
PCB 1016.....	BDL	33
PCB 1221.....	BDL	33
PCB 1232.....	BDL	33
PCB 1242.....	BDL	33
PCB 1248.....	BDL	33
PCB 1254.....	BDL	33
PCB 1260.....	BDL	33

<u>Chlorinated Herbicides (EPA 8151)</u>	<u>(ug/kg)</u>	<u>(ug/kg)</u>
2,4-D.....	BDL	170
2,4-DB.....	BDL	17
2,4,5-T.....	BDL	1.30
2,4,5-TP (Silvex).....	BDL	330
Dalapon.....	BDL	83
Dicamba.....	BDL	26
Dichloroprop.....	BDL	17
Dinoseb.....	BDL	130
MCPA.....	BDL	1700
MCPP.....	BDL	2300

Toxicity Characteristic Leaching Procedure TCLP Non-volatile Extraction (EPA 1311)

<u>EPA HW</u> <u>Number</u>	<u>Parameter</u>	<u>Result</u> <u>(mg/l)</u>	<u>Detection</u> <u>Limit</u> <u>(mg/l)</u>	<u>Regulatory</u> <u>Limit</u> <u>(mg/l)</u>
D004	Arsenic (As).....	BDL	2.5	5.0
D005	Barium (Ba).....	1.2	0.1	100.0
D006	Cadmium (Cd).....	BDL	0.01	1.0
D020	Chlordane.....	BDL	0.01	0.03
D007	Chromium (Cr).....	BDL	0.01	5.0
D026	Total Cresol.....	BDL	0.05	200.0
D016	2,4-D.....	BDL	0.05	10.0
D022	1,4-Dichlorobenzene	BDL	0.05	7.5

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RESULTS

Toxicity Characteristic Leaching Procedure TCLP Non-volatile Extraction (EPA 1311)

EPA HW Number	Parameter	Result (mg/l)	Detection Limit (mg/l)	Regulatory Limit (mg/l)
D032	Hexachlorobenzene.....	BDL	0.05	0.13
D033	Hexachlorobutadiene.....	BDL	0.05	0.5
D034	Hexachloroethane.....	BDL	0.05	3.0
D008	Lead (Pb).....	0.8	0.1	5.0
D013	Lindane.....	BDL	0.01	0.4
D009	Mercury (Hg).....	BDL	0.005	0.2
D014	Methoxychlor.....	BDL	0.5	10.0
D036	Nitrobenzene.....	BDL	0.05	2.0
D037	Pentachlorophenol.....	BDL	0.05	100.0
D010	Selenium (Se).....	BDL	0.5	1.0
D011	Silver (Ag).....	BDL	0.01	5.0
D015	Toxaphene.....	BDL	0.05	0.5
D041	2,4,5-Trichlorophenol.....	BDL	0.05	400.0
D042	2,4,6-Trichlorophenol.....	BDL	0.05	2.0
D017	2,4,5-TP Silvex.....	BDL	0.1	1.0
D038	Pyridine.....	BDL	0.05	5.0

Toxicity Characteristic Leaching Procedure TCLP Zero Headspace Extraction (EPA 1311)

EPA HW Number	Parameter	Result (mg/l)	Detection Limit (mg/l)	Regulatory Limit (mg/l)
D018	Benzene.....	BDL	0.02	0.5
D019	Carbon tetrachloride.....	BDL	0.02	0.5
D021	Chlorobenzene.....	BDL	0.02	100.0
D022	Chloroform.....	BDL	0.02	6.0
D028	1,2-Dichloroethane.....	BDL	0.02	0.5
D029	1,1-Dichloroethene.....	BDL	0.02	0.7
D035	Methyl ethyl ketone.....	BDL	0.5	200.0
D039	Tetrachloroethene.....	0.02	0.02	0.7
D040	Trichloroethene.....	BDL	0.02	0.5
D043	Vinyl chloride.....	BDL	0.02	0.2

BDL - Below Detection Limit

cc: Mr. John Lore
Mr. Steve Offner

Respectfully submitted,

Shari Harper
Project Manager

Kristina C. P. [Signature]
Quality Assurance

ASI**ANALYTICAL SERVICES, INC.**

ENVIRONMENTAL MONITORING & LABORATORY ANALYSIS

110 TECHNOLOGY PARKWAY • NORCROSS, GA 30092
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5445 Triangle Parkway
Suite 400
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February 27, 1998

P.O. No. 1041997

Attention: Ms. Elena Rodriguez

Report No. 91936-2Sample DescriptionWater, DDMT\Dunn Field Memphis TN, Project #20022, Trip Blank, received
02/17/98RESULTS

<u>Volatile Organics (EPA 8260)</u>	<u>Result</u> <u>(ug/l)</u>	<u>Detection</u> <u>Limit</u> <u>(ug/l)</u>
Acetone.....	BDL	100
Acrolein.....	BDL	50
Acrylonitrile.....	BDL	50
Benzene.....	BDL	2
Bromobenzene.....	BDL	10
Bromochloromethane.....	BDL	10
Bromodichloromethane.....	BDL	10
Bromoform.....	BDL	10
Bromomethane.....	BDL	10
2-Butanone.....	BDL	100
n-Butylbenzene.....	BDL	10
sec-Butylbenzene.....	BDL	10
tert-Butylbenzene.....	BDL	10
Carbon disulfide.....	BDL	10
Carbon tetrachloride.....	BDL	2
Chlorobenzene.....	BDL	10
Chloroethane.....	BDL	5
Chloroform.....	BDL	2
Chloromethane.....	BDL	10
2-Chlorotoluene.....	BDL	10
4-Chlorotoluene.....	BDL	10
2-Chloroethylvinyl ether.....	BDL	10

BDL - Below Detection Limit

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RESULTS

<u>Volatile Organics (EPA 8260)</u>	<u>Result</u> <u>(ug/l)</u>	<u>Detection</u> <u>Limit</u> <u>(ug/l)</u>
Dibromochloromethane.....	BDL	10
1,2-Dibromo-3-chloropropane.....	BDL	10
1,2-Dibromoethane.....	BDL	10
Dibromomethane.....	BDL	10
1,2-Dichlorobenzene.....	BDL	10
1,3-Dichlorobenzene.....	BDL	10
1,4-Dichlorobenzene.....	BDL	10
Dichlorodifluoromethane.....	BDL	10
1,1-Dichloroethane.....	BDL	2
1,2-Dichloroethane.....	BDL	2
1,1-Dichloroethene.....	BDL	2
cis-1,2-Dichloroethene.....	BDL	2
trans-1,2-Dichloroethene.....	BDL	2
1,2-Dichloropropane.....	BDL	2
1,3-Dichloropropane.....	BDL	2
2,2-Dichloropropane.....	BDL	2
1,1-Dichloropropene.....	BDL	2
cis-1,3-Dichloropropene.....	BDL	2
trans-1,3-Dichloropropene.....	BDL	2
Ethylbenzene.....	BDL	2
Hexachlorobutadiene.....	BDL	10
2-Hexanone.....	BDL	10
Isopropylbenzene.....	BDL	10
p-Isopropyltoluene.....	BDL	10
Methylene chloride.....	BDL	5
4-Methyl-2-pentanone.....	BDL	10
Naphthalene.....	BDL	10
n-Propylbenzene.....	BDL	10
Styrene.....	BDL	5
1,1,1,2-Tetrachloroethane.....	BDL	2
1,1,2,2-Tetrachloroethane.....	BDL	2
Tetrachloroethene.....	BDL	2
Toluene.....	BDL	2
1,2,3-Trichlorobenzene.....	BDL	10
1,2,4-Trichlorobenzene.....	BDL	10
1,1,1-Trichloroethane.....	BDL	2
1,1,2-Trichloroethane.....	BDL	2
Trichloroethene.....	BDL	2

BDL - Below Detection Limit

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RESULTS

<u>Volatile Organics (EPA 8260)</u>	<u>Result</u> <u>(ug/l)</u>	<u>Detection</u> <u>Limit</u> <u>(ug/l)</u>
Trichlorofluoromethane.....	BDL	10
1,2,3-Trichloropropane.....	BDL	10
1,2,4-Trimethylbenzene.....	BDL	10
1,3,5-Trimethylbenzene.....	BDL	10
Vinyl acetate.....	BDL	10
Vinyl chloride.....	BDL	10
m+p-Xylene.....	BDL	5
o-Xylene.....	BDL	5
Xylenes (total).....	BDL	5

BDL - Below Detection Limit

cc: Mr. John Lore
Mr. Steve Offner

Respectfully submitted,

Shari Harper
Project Manager

Christina P. Pyleth
Quality Assurance

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE

FINAL PAGE

ADMINISTRATIVE RECORD

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