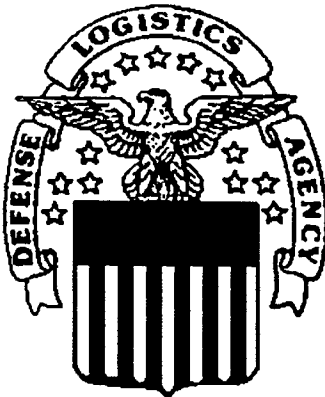




THE MEMPHIS DEPOT TENNESSEE

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 379

Post Removal Report

Contaminated Soil Remediation
Family Housing Area
Memphis Depot, Tennessee

Volume II of II

USACE Contract No. DACA45-96-D-0014
Delivery Order No. 0010

U.S. Army Corps of Engineers
Mobile District
Tennessee Area Office
Arnold AFB, Tennessee 37389-9102

March 1999 • Project No. 920560



**OHM Remediation
Services Corp.**

A Member of The IT Group

**COMPOSITE CONFIRMATION SAMPLE COLLECTED
FOLLOWING FIELD SCREENING
(CLEAN GRIDS IN AREA C – 0"-6")
*Date Collected 08/20/98***

**RA-C-009 (Composite of Grids C6, C7 & C15)
RA-C-EQ-003-CS (Equip. Blank)**



August 31, 1998

Ms. Elena Rodriguez
OHM Remediation Services
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Ref: Analytical Testing
ETC Order # 9808641
Project Description DDMT

Project # 20560 Defense Depot - Memphis, TN

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

A handwritten signature in dark ink, appearing to read 'N. Pera'.

Nathan A. Pera, IV
Chief Executive Officer

rt
Attachment

OHM_DDMT

Chemical Analytical Data
Review/Evaluation/Validation

SOUTHERN REGION

Report Type: ☐ Preliminary ☒ Final Date Received: 7/10/78 Project Number: 2-56-
 Project Name: DDMT Analysis/Method: 4031-8082 6000/7000
 Laboratory: ETC Lab Project/Case Number: 8270, 9013
 Sample Number(s): RA-C-1007, C-EQ-003-05

Evaluated By: S. P. ... Date Evaluated: 9/10/78
 Data Package Deliverables Requirement: ☐ OHM Minimum ☒ OHM Standard ☐ OHM Maximum
☐ Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs				
Comment:				
Holding Times				
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X			
Comment:				
Surrogate Recoveries	X			
Comment:				
Lab Control Sample Recoveries	X			
Comment: <u>out for DDE. DDT Results flagged J. & accepted</u>				
Lab Control Sample Duplicate or Other Spike Recoveries	X			
Comment:				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X			
Comment:				
Matrix Spike Recoveries	X			
Comment:				
Matrix Spike Duplicate Recoveries	X			
Comment:				
Matrix Spike / Matrix Spike Duplicate RPD	X			
Comment:				
Laboratory Blanks (daily, method, instrument)	X			
Comment:				
Field Blanks (trip, eqpt rinsate, ambient, matrix)	X			
Comment:				

Quality Control Deliverables	Required	Received	Passed	Failed	
Field Duplicates RPD	X				
Comment:					
Second Source Check					
Comment:					
Second Column Confirmation					
Comment:					
Percent Moisture/Solids					
Comment:					
Initial / Continuing Calibrations					
Comment:					
Internal Standard Areas and Retention Times (Organics Only)					
Comment:					
Chromatograms					
Comment:					
Sample Prep Worksheets					
Comment:					
Raw Data Calculations					
Comment:					
Laboratory Duplicates					
Comment:					
Instrument Performance Checks (Organics Only)					
Comment:					
Tentatively Identified Compounds (TICs)					
Comment:					
Completeness	# Samples	# Analyses	Tot # Analyses	Tot # Accept Analyses	% Complete
Completeness = (Tot # Analyses / Tot # Accepted Analyses) x 100	2	5	10	10	100
General Comments:					

Summary: ☐ See attached pages

Results flagged for LCS recoveries

Check Applicable:

- ☐ Lab contacted--Corrective actions in process Date Contacted: _____
☐ Corrective actions received and accepted Date Received/Accepted: _____
☐ The data, as reported by the laboratory, are acceptable.
☒ The data, with qualifiers as described in the "Summary" portion of this report, are acceptable.
☐ The data are unacceptable.
☐ Other _____

5 Pasayape
Evaluator's Signature

9/10/98
Date

Environmental Testing & Consulting, Inc.
Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

ENVIRONMENTAL TESTING & CONSULTING, INC.
 2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ANALYTICAL SUMMARY TABLE

Client Name OHM Remediation Services
 Site ID DDMT
 Memphis, TN

ETC Sample ID	Field ID	Matrix	Method	Method Description
980864101	RA-C-009	SOIL	6010B	Silver
980864101	RA-C-009	SOIL	6010B	Aluminum
980864101	RA-C-009	SOIL	7060A	Arsenic
980864101	RA-C-009	SOIL	8270C	GC/MS PAH
980864101	RA-C-009	SOIL	6010B	Barium
980864101	RA-C-009	SOIL	6010B	Beryllium
980864101	RA-C-009	SOIL	6010B	Calcium
980864101	RA-C-009	SOIL	6010B	Cadmium
980864101	RA-C-009	SOIL	9010A	Cyanide
980864101	RA-C-009	SOIL	6010B	Cobalt
980864101	RA-C-009	SOIL	6010B	Chromium
980864101	RA-C-009	SOIL	6010B	Copper
980864101	RA-C-009	SOIL	6010B	Iron
980864101	RA-C-009	SOIL	7471A	Mercury
980864101	RA-C-009	SOIL	6010B	Potassium
980864101	RA-C-009	SOIL	6010B	Magnesium
980864101	RA-C-009	SOIL	6010B	Manganese
980864101	RA-C-009	SOIL	6010B	Sodium
980864101	RA-C-009	SOIL	6010B	Nickel
980864101	RA-C-009	SOIL	8081A	Organochlorine Pesticides
980864101	RA-C-009	SOIL	7421	Lead
980864101	RA-C-009	SOIL	8082	PCBs
980864101	RA-C-009	SOIL	6010B	Antimony
980864101	RA-C-009	SOIL	7740	Selenium
980864101	RA-C-009	SOIL	7841	Thallium
980864101	RA-C-009	SOIL	6010B	Vanadium
980864101	RA-C-009	SOIL	6010B	Zinc
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Silver
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Aluminum
980864102	RA-C-EQ-003-CS	AQUEOUS	7060A	Arsenic
980864102	RA-C-EQ-003-CS	AQUEOUS	8270C	GC/MS PAH
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Barium
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Beryllium
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Calcium
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Cadmium
980864102	RA-C-EQ-003-CS	AQUEOUS	9010A	Cyanide
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Cobalt
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Chromium
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Copper
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Iron
980864102	RA-C-EQ-003-CS	AQUEOUS	7470A	Mercury
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Potassium
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Magnesium
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Manganese
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Sodium
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Nickel
980864102	RA-C-EQ-003-CS	AQUEOUS	8081A	Organochlorine Pesticides
980864102	RA-C-EQ-003-CS	AQUEOUS	7421	Lead
980864102	RA-C-EQ-003-CS	AQUEOUS	8082	PCBs
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Antimony
980864102	RA-C-EQ-003-CS	AQUEOUS	7740	Selenium
980864102	RA-C-EQ-003-CS	AQUEOUS	7841	Thallium
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Vanadium
980864102	RA-C-EQ-003-CS	AQUEOUS	6010B	Zinc

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

000003



OHM Remediation Services Corp
Subsidiary of OHM Corporation
U.S. Route 224 East Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

LABORATORY COPY

218016

FORM 0019 REV 2-97

OHM LAB COORDINATOR Elena Rodriguez		LAB COORDINATOR'S PHONE 770-734-8060		LAB COORDINATOR'S FAX 770-453-7716		LABORATORY SERVICE ID ETC		LABORATORY CONTACT Nathan Pera		MAIL REPORT (COMPANY NAME) OHM Remediation Services Corp	
PROJECT NAME DDMT		PROJECT LOCATION Memphis TN		PROJECT NUMBER 20560		LABORATORY PHONE 901-327-2750		LABORATORY FAX 901-327-6334		RECIPIENT NAME Elena Rodriguez	
PROJECT CONTACT Steve Offner		PROJECT PHONE NUMBER 901-743-1117		PROJECT FAX 901-743-1048		LABORATORY ADDRESS 2924 Walnut Grove Road		ADDRESS 5445 Triangle Pkwy, #400			
PROJECT ADDRESS 1708 Dunn Ave.		CITY STATE AND ZIP CODE Memphis, TN 38114		CLIENT USACE		CITY STATE AND ZIP CODE Memphis TN 38111		CITY STATE AND ZIP CODE Norcross, GA 30092			
PROJECT MANAGER Steve Offner		PROJECT MANAGER'S PHONE 770-326-2571		PROJECT MANAGER'S FAX 770-453-7716							
Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont	QC Level	T.A.T	Analyses		
1	EA-C-009		8/20/98	1530	4x20x20mm	61mm	3day	✓	✓	✓	✓
2	RA-C-EQ-003-C5		8/20/98	1515	6x11x5mm	3day	✓	✓	✓	✓	✓
3											
4											
5											
6											
7											
8											
9											
10											
SAMPLES COLLECTED BY: Steve Offner / Without Force											
REINQUISHED BY: [Signature] / Delivered in 12/25/98											
COOLER AND AIR BILL NUMBER: [Blank]											
RECEIVED BY: [Signature] / DATE: 8/20/98 TIME: 1515											
SAMPLE'S CONDITION UPON RECEIPT: [Blank]											
COOLER TEMPERATURE UPON RECEIPT: [Blank]											
Distribution: White - Laboratory (To be returned with Analytical Report); Goldendrod - Project File; Yellow - Project Data Manager											

COOLER RECEIPT FORM

Cooler Receipt Form
9808641.CRF p. 1

LIMS #: 9808-641 Number of Coolers: _____
 Date Received: _____
 VDTSR: _____
 PROJECT: DDMT/Memphis, TN

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS

- A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 08/20/98
 by (print): Lynette Bugg (sign): *Lynette Bugg*
1. Did cooler come with a shipping slip (airbill, etc.)? NO
 If YES, enter carrier name & airbill number: _____
- 2a. Were custody seals on outside of cooler? NO
 2b. Were custody seals on sample containers? NO
3. Were custody seals unbroken and intact at the date and time of arrival? NA
4. Did you screen samples for radioactivity using a Geiger Counter? NO
5. Were custody papers sealed in a plastic bag & taped inside to the lid? NO
6. Were custody papers filled out properly (ink, signed, etc.)? YES
7. Did you sign custody papers in the appropriate place? YES
8. Was project identifiable from custody papers? If YES, enter project name at top of this form... YES
9. If required, was enough ice used? cooler temp: <4°C, Type of ice: Crushed YES
10. Have designated person initial here to acknowledge receipt of cooler: LB date: 08/20/98
- B. LOG-IN PHASE: Date samples were logged-in: 08/20/98
 by (print): Lynette Bugg (sign): *Lynette Bugg*
11. Describe type of packing in cooler: Bubble Wrap & Ice
12. Were all bottles sealed in separate plastic bags? YES
13. Did all bottles arrive unbroken and were labels in good condition? YES
14. Were all bottle labels complete (ID, date, time, signature, preserved, etc.)? YES
15. Did all bottle labels agree with custody papers? YES
16. Were correct containers used for the tests indicated? YES
17. Were correct preservatives added to samples? YES
18. Was a sufficient amount of sample sent for tests indicated? YES
19. Were bubbles absent in VOA samples? If NO, list by sample#: NA
20. Was the project manager called and status discussed? If YES, give details on the back of this form.... NO
21. Who was called? _____ By whom? _____ (date) _____

VDTSR - Validated Date/Time of Sample Receipt (Date sample is logged into LIMS system)

000005

379 11

Environmental Testing & Consulting, Inc.

Sample Reports

000006

ENVIRONMENTAL TESTING & CONSULTING, INC.
Memphis, TN
INORGANIC ANALYSIS DATA SHEET
PERCENT SOLIDS

Client Name : OHM Remediation Services
Project Name : DDMT

Date Sample Received : 08/20/98
Contract Laboratory Order Number : 9808-641

<u>Contract Lab</u> <u>Sample No</u>	<u>Field</u> <u>ID</u>	<u>Date</u> <u>Sampled</u>	<u>Result</u> <u>Units : (%)</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u>	<u>By</u>
9808-641-01	RA-C-009	08/20/98	88	08/21/98	160.3	MC


LABORATORY MANAGER

000007

379 13

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID DDMT
Memphis, TN

Date Arrived 08/20/98
ETC Order Number 9808641

ETC Lab ID 9808641-01
Sample ID: RA-C-009

Matrix :SOIL
Sample Date :08/20/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/Kg	1.00	08/24/98	9010A	CY082498

Add
Cyanide


LABORATORY MANAGER

000008

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # **20560**

Date Arrived **08/20/98**
ETC Order Number **9808641**

ETC Lab ID **9808641-02**
Sample ID: RA-C-EQ-003-CS

Matrix : **AQUEOUS**
Sample Date : **08/20/98**

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/L	0.010	08/21/98	9010A	CY082198


LABORATORY MANAGER

000009

379 15

ENVIRONMENTAL TESTING & CONSULTING, INC.
 2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560

Date Arrived 08/20/98
 ETC Order Number 9808641

ETC Lab ID 9808641-01
Sample ID: RA-C-009

Matrix :SOIL
 Sample Date :08/20/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V7-SO-86				JB	3051
Mercury Digestion Batch	V4-SO-27				RM	7471A
Silver	ND	mg/Kg	0.700	14:06	08/25/98	TD 6010B
Aluminum	10,400	mg/Kg	4.00	14:06	08/25/98	TD 6010B
Arsenic	27.7	mg/Kg	0.200	10:53	08/24/98	JF 7060A
Barium	126	mg/Kg	0.200	14:06	08/25/98	TD 6010B
Beryllium	0.479	mg/Kg	0.100	14:06	08/25/98	TD 6010B
Calcium	2,750	mg/Kg	1.00	14:06	08/25/98	TD 6010B
Cadmium	ND	mg/Kg	0.400	14:06	08/25/98	TD 6010B
Cobalt	7.21	mg/Kg	0.700	14:06	08/25/98	TD 6010B
Chromium	14.1	mg/Kg	0.700	14:06	08/25/98	TD 6010B
Copper	19.6	mg/Kg	0.600	14:06	08/25/98	TD 6010B
Iron	18,400	mg/Kg	0.700	14:51	08/25/98	TD 6010B
Mercury	0.065	mg/Kg	0.020	14:12	08/24/98	RM 7471A
Potassium	1,150	mg/Kg	20.0	14:06	08/25/98	TD 6010B
Magnesium	2,080	mg/Kg	3.00	14:06	08/25/98	TD 6010B
Manganese	702	mg/Kg	0.200	14:06	08/25/98	TD 6010B
Sodium	63.2	mg/Kg	20.0	14:06	08/25/98	TD 6010B
Nickel	16.5	mg/Kg	1.50	14:06	08/25/98	TD 6010B
Lead	54.3	mg/Kg	0.100	11:03	08/24/98	TD 7421
Antimony	ND	mg/Kg	3.20	14:06	08/25/98	TD 6010B
Selenium	ND	mg/Kg	0.200	15:51	08/24/98	TD 7740
Thallium	0.238	mg/Kg	0.100	16:31	08/24/98	TD 7841
Vanadium	21.9	mg/Kg	0.800	14:06	08/25/98	TD 6010B
Zinc	87.0	mg/Kg	1.00	14:06	08/25/98	TD 6010B


 LABORATORY MANAGER

J000010

ENVIRONMENTAL TESTING & CONSULTING, INC.
 2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560

Date Arrived 08/20/98
 ETC Order Number 9808641

ETC Lab ID **9808641-02**
Sample ID: RA-C-EQ-003-CS

Matrix :AQUEOUS
 Sample Date :08/20/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V11-AQ-36					JB 3015
Mercury Digestion Batch	V4-AQ-30					RM 7470A
Silver	ND	mg/L	0.009	13:44	08/25/98	TD 6010B
Aluminum	ND	mg/L	0.060	13:44	08/25/98	TD 6010B
Arsenic	ND	mg/L	0.003	10:39	08/24/98	JF 7060A
Barium	ND	mg/L	0.003	13:44	08/25/98	TD 6010B
Beryllium	ND	mg/L	0.002	13:44	08/25/98	TD 6010B
Calcium	0.085	mg/L	0.015	13:44	08/25/98	TD 6010B
Cadmium	ND	mg/L	0.004	13:44	08/25/98	TD 6010B
Cobalt	ND	mg/L	0.009	13:44	08/25/98	TD 6010B
Chromium	ND	mg/L	0.009	13:44	08/25/98	TD 6010B
Copper	ND	mg/L	0.008	13:44	08/25/98	TD 6010B
Iron	0.014	mg/L	0.009	13:44	08/25/98	TD 6010B
Mercury	ND	mg/L	0.0002	15:17	08/21/98	RM 7470A
Potassium	ND	mg/L	0.250	13:44	08/25/98	TD 6010B
Magnesium	ND	mg/L	0.040	13:44	08/25/98	TD 6010B
Manganese	ND	mg/L	0.003	13:44	08/25/98	TD 6010B
Sodium	ND	mg/L	0.050	13:44	08/25/98	TD 6010B
Nickel	ND	mg/L	0.020	13:44	08/25/98	TD 6010B
Lead	ND	mg/L	0.002	09:22	08/24/98	TD 7421
Antimony	ND	mg/L	0.040	13:44	08/25/98	TD 6010B
Selenium	ND	mg/L	0.003	10:39	08/24/98	JF 7740
Thallium	ND	mg/L	0.002	15:15	08/24/98	TD 7841
Vanadium	ND	mg/L	0.010	13:44	08/25/98	TD 6010B
Zinc	ND	mg/L	0.010	13:44	08/25/98	TD 6010B


 LABORATORY MANAGER

000011

ENVIRONMENTAL TESTING & CONSULTING, INC.
 2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

379 17

Client Name **OHM Remediation S rvices**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092
 Site ID **DDMT**
Memphis, TN

Project # 20560
 FID # DACA45-96-D-0014

Date Arrived 08/20/98
 ETC Order Number 9808641

ETC Lab ID **9808641-01**
Sample ID: RA-C-009

Matrix :SOIL
 Sample Date :08/20/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				08/21/98	08/24/98	CB	8270C
QC Batch	P04021	ug/Kg					
Acenaphthene	ND	ug/Kg	67.0				
Acenaphthylene	ND	ug/Kg	67.0				
Anthracene	ND	ug/Kg	67.0				
Benzo(a)anthracene	260	ug/Kg	67.0				
Benzo(b)fluoranthene	397	ug/Kg	67.0				
Benzo(k)fluoranthene	142	ug/Kg	67.0				
Benzo(g,h,i)perylene	214	ug/Kg	67.0				
Benzo(a)pyrene	289	ug/Kg	67.0				
Chrysene	351	ug/Kg	67.0				
Dibenzo(a,h)anthracene	ND	ug/Kg	67.0				
Fluoranthene	541	ug/Kg	67.0				
Fluorene	ND	ug/Kg	67.0				
Indeno(1,2,3-cd)pyrene	249	ug/Kg	67.0				
Naphthalene	ND	ug/Kg	67.0				
Phenanthrene	270	ug/Kg	67.0				
Pyrene	408	ug/Kg	67.0				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	62		39 80				
S2 - 2-Fluorobiphenyl	68		43 84				
S3 - 4-Terphenyl-d14	59		40 121				


 LABORATORY MANAGER

ND - Not Detected

000012

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

379 18
CLIENT SAMPLE NO.

9808-641-1

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-641

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: 1001010

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 08/24/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 57-10-3	HEXADECANOIC ACID	11.62	207	NJ
2. 603-11-2	1,2-BENZENEDICARBOXYLIC ACID	15.72	213	NJ
3.				
4.				
5.				
6.				
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FORM I BNA-GCMS-TIC

000013

379 19

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400

Project # 20560
FID # DACA45-96-D-0014

Site ID **Norcross, GA 30092**

DDMT
Memphis, TN

Date Arrived 08/20/98
ETC Order Number 9808641

ETC Lab ID 9808641-02
Sample ID: RA-C-EQ-003-CS

Matrix :AQUEOUS
Sample Date :08/20/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				08/21/98	08/24/98	CE	8270C
QC Batch	P05030	ug/L					
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
Benzo(g,h,i)perylene	ND	ug/L	2.00				
Benzo(a)pyrene	ND	ug/L	2.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Naphthalene	ND	ug/L	2.00				
Phenanthrene	ND	ug/L	2.00				
Pyrene	ND	ug/L	2.00				

<u>Surrogate Standard</u>	<u>% Recovery</u>	<u>QC Limits</u>	
S1 - Nitrobenzene-d5	52	35	85
S2 - 2-Fluorobiphenyl	59	46	84
S3 - 4-Terphenyl-d14	85	33	113


LABORATORY MANAGER

ND - Not Detected

000014

379 20

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9808-641-2

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-641

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 0601006

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 08/24/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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FORM I BNA-GCMS-TIC

000015

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 21

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID DDMT
Memphis, TN

Date Arrived 08/20/98
ETC Order Number 9808641

ETC Lab ID 9808641-01
Sample ID: RA-C-009

Matrix :SOIL
Sample Date :08/20/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides							8081A
QC Batch	P06012	ug/Kg		08/21/98	08/24/98	RG	
Aldrin	ND	ug/Kg	20.0				
Alpha-BHC	ND	ug/Kg	20.0				
Beta-BHC	ND	ug/Kg	20.0				
Delta-BHC	ND	ug/Kg	20.0				
Gamma-BHC (Lindane)	ND	ug/Kg	20.0				
Alpha-Chlordane	ND	ug/Kg	20.0				
Gamma-Chlordane	ND	ug/Kg	20.0				
Chlordane	ND	ug/Kg	200				
4,4'-DDD	ND	ug/Kg	20.0				
4,4'-DDE	37.3	ug/Kg	20.0				
4,4'-DDT	35.0	ug/Kg	20.0				
Dieldrin	248	ug/Kg	20.0				
Endosulfan I	ND	ug/Kg	20.0				
Endosulfan II	ND	ug/Kg	20.0				
Endosulfan Sulfate	ND	ug/Kg	20.0				
Endrin	ND	ug/Kg	20.0				
Endrin Aldehyde	ND	ug/Kg	20.0				
Endrin Ketone	ND	ug/Kg	20.0				
Heptachlor	ND	ug/Kg	20.0				
Heptachlor Epoxide	ND	ug/Kg	20.0				
Methoxychlor	ND	ug/Kg	20.0				
Toxaphene	ND	ug/Kg	2000				
Surrogate Standard							
			% Recovery	QC Limits			
S1 - Decachlorobiphenyl			73	64	154		
S2 - Tetrachloro-m-xylene			61	39	130		


LABORATORY MANAGER

ND - Not Detected

000016

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
 FID # DACA45-96-D-0014

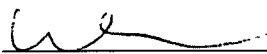
Site ID DDMT
 Memphis, TN

Date Arrived 08/20/98
 ETC Order Number 9808641

ETC Lab ID **9808641-02**
Sample ID: RA-C-EQ-003-CS

Matrix :AQUEOUS
 Sample Date :08/20/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides							
				08/21/98	08/24/98	RG	8081A
QC Batch	P07013	ug/L					
Aldrin	ND	ug/L	0.040				
Alpha-BHC	ND	ug/L	0.040				
Beta-BHC	ND	ug/L	0.040				
Delta-BHC	ND	ug/L	0.040				
Gamma-BHC (Lindane)	ND	ug/L	0.040				
Alpha-Chlordane	ND	ug/L	0.040				
Gamma-Chlordane	ND	ug/L	0.040				
Chlordane	ND	ug/L	0.250				
4,4'-DDD	ND	ug/L	0.040				
4,4'-DDE	ND	ug/L	0.040				
4,4'-DDT	ND	ug/L	0.040				
Dieldrin	ND	ug/L	0.040				
Endosulfan I	ND	ug/L	0.040				
Endosulfan II	ND	ug/L	0.040				
Endosulfan Sulfate	ND	ug/L	0.040				
Endrin	ND	ug/L	0.040				
Endrin Aldehyde	ND	ug/L	0.040				
Endrin Ketone	ND	ug/L	0.040				
Heptachlor	ND	ug/L	0.040				
Heptachlor Epoxide	ND	ug/L	0.040				
Methoxychlor	ND	ug/L	0.040				
Toxaphene	ND	ug/L	3.00				
Surrogate Standard							
		% Recovery	QC Limits				
S1 - Decachlorobiphenyl	51		34 115				
S2 - Tetrachloro-m-xylene	72		31 96				


 LABORATORY MANAGER

ND - Not Detected

000017

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 23

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID
DDMT
Memphis, TN

Date Arrived 08/20/98
ETC Order Number 9808641

ETC Lab ID 9808641-01
Sample ID: RA-C-009

Matrix :SOIL
Sample Date :08/20/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs							8082
QC Batch	P08014	ug/Kg		08/21/98	08/24/98	RG	
PCB-1016	ND	ug/Kg	35.0				
PCB-1221	ND	ug/Kg	35.0				
PCB-1232	ND	ug/Kg	35.0				
PCB-1242	ND	ug/Kg	35.0				
PCB-1248	ND	ug/Kg	35.0				
PCB-1254	ND	ug/Kg	35.0				
PCB-1260	ND	ug/Kg	35.0				
Surrogate Standard	% Recovery		QC Limits				
S1 - Tetrachloro-m-xylene	60		39 130				
S2 - Decachlorobiphenyl	75		64 154				


LABORATORY MANAGER

ND - Not Detected

000018

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 24

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400

Project # 20560
 FID # DACA45-96-D-0014

Site ID **Norcross, GA 30092**
DDMT
Memphis, TN

Date Arrived 08/20/98
 ETC Order Number 9808641

ETC Lab ID 9808641-02
Sample ID: RA-C-EQ-003-CS

Matrix :AQUEOUS
 Sample Date :08/20/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs							8082
QC Batch	P09006	ug/L		08/21/98	08/24/98	RG	
PCB-1016	ND	ug/L	0.500				
PCB-1221	ND	ug/L	0.500				
PCB-1232	ND	ug/L	0.500				
PCB-1242	ND	ug/L	0.500				
PCB-1248	ND	ug/L	0.500				
PCB-1254	ND	ug/L	0.500				
PCB-1260	ND	ug/L	0.500				
Surrogate Standard	% Recovery		QC Limits				
S1 - Tetrachloro-m-xylene	70		31	96			
S2 - Decachlorobiphenyl	52		34	115			


 LABORATORY MANAGER

ND - Not Detected

000019

379 25

Environmental Testing & Consulting, Inc.

**Quality Control Reports
Inorganics**

000020

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
INORGANICS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN
ETC Order # : 9808-641

HOLDING TIMES

Sample Analysis : All samples analyzed within Method Specified
Holding Times.

CALIBRATION

Laboratory Control Sample : All criteria met.

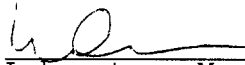
QUALITY CONTROL

Matrix Spike

Spike Recovery : All analytes within QC limits

Method Blank

No Target Analytes detected above Detection Limit.


Laboratory Manager

000021

Environmental Testing & Consulting, Inc.
Inorganic QC Data Summary

Client Name OHM Remediation Services
Project DDMT

ETC Order Number 9808-641
File Name 9808-641.2

Method Blank

Analyte	Date Analyzed	Blank Concentration mg/Kg	QC Batch
Cyanide	08/24/98	<1.00	CY082498

Calibration Verification (CV)

Analyte	Date Analyzed	CV Conc mg/L	CV Conc Found	% Difference
Cyanide	08/24/98	0.200	0.205	3.0

Laboratory Control Sample (LCS)

Analyte	Date Analyzed	LCS Conc mg/Kg	LCS Conc Found	% Recovery
Cyanide	08/24/98	20.0	19.6	98.0

Matrix Spike/Matrix Spike Duplicate

Sample ID	Analyte	Spike mg/Kg	Sample mg/Kg	MS Conc Found	MS % Recovery	QC Limits	RPD
9808-641-01 MS	Cyanide	20.0	<1.00	18.4	92.0	70-130	
9808-641-01 MSD	Cyanide	20.0	<1.00	18.0	90.0	70-130	2.0

Environmental Testing & Consulting, Inc.
Inorganic QC Data Summary

Client Name OHM Remediation Services
Project DDMT

ETC Order Number 9808-641
File Name 9808-641.1

Method Blank

Analyte	Date Analyzed	Blank Concentration mg/L	QC Batch
Cyanide	08/21/98	<0.010	CY082198

Calibration Verification (CV)

Analyte	Date Analyzed	CV Conc mg/L	CV Conc Found	% Difference
Cyanide	08/21/98	0.200	0.206	3.0

Laboratory Control Sample (LCS)

Analyte	Date Analyzed	LCS Conc mg/L	LCS Conc Found	% Recovery
Cyanide	08/21/98	0.200	0.198	99.0

Matrix Spike/Matrix Spike Duplicate

Sample ID	Analyte	Spike mg/L	Sample mg/L	MS Conc Found	MS % Recovery	QC Limits	RPD
9808-641-02 MS	Cyanide	0.200	<0.010	0.194	97.0	68-114	
9808-641-02 MSD	Cyanide	0.200	<0.010	0.191	96.0	68-114	1.0

Environmental Testing & Consulting, Inc.

Quality Control Reports

Metals (ICP/GFAA/CV)

000024

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

379 30

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN
ETC Order # : 9808-641

HOLDING TIMES

QC Batch(s) for this order : ICP/GFAA V7-SO-86
Mercury V4-SO-27

Sample Analysis : All samples digested and analyzed within 180 days of collection.
Mercury Analysis : All samples analyzed within 28 days of collection.

CALIBRATION

Initial Calibration : All criteria met.
Continuing Calibration : All criteria met.

SAMPLE ANALYSIS

Instrumentation : Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer

Dilutions Required : No dilutions required.*

*
Dilutions were performed on several samples to bring the Target Analyte(s) within calibration range (C) or to remove spectral interference (I) as indicated.

Sample ID	Dilution		Sample ID	Dilution	
	Metal	Factor		Metal	Factor
9808-641-01	Arsenic	1:4 (C)	9808-641-01	Lead	1:20 (C)
9808-641-01	Iron	1:5 (C)			

Due to low recoveries and failing Post Digestion Spike, all Selenium and Thallium data was reported based on the Method of Standard Additions.

QUALITY CONTROL

9808-641.MQCBLANK

Method Blank

V7-SO-86BLK - ICP/GFAA Metals
V4-SO-27BLK - Mercury

Calcium identified in V7-SO-86BLK at 2.60 mg/Kg.
Iron identified in V7-SO-86BLK at 1.10 mg/Kg.
Lead identified in V7-SO-86BLK at 0.117 mg/Kg.

9808-641.MQCLCS

Laboratory Control Sample(s)

V7-SO-86LCS - ICP/GFAA Metals
V4-SO-27LCS - Mercury

All criteria met.

000025

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN

ETC Order # : 9808-641

QUALITY CONTROL

9808-641.MQCMSMSD

Matrix Spike / Matrix Spike Dup - ICP Metals

9808-641-01 RPD : All analytes within QC limits.
RA-C-009 Spike Recovery : All analytes within QC limits.*

*
Recoveries for Antimony were flagged as outside QC Limits in the Matrix Spike and Matrix Spike Duplicate. A Post Digestion Spike was performed for verification :

	mg/L	mg/L	%	QA
<u>Analyte</u>	<u>Expected</u>	<u>Found</u>	<u>Recovery</u>	<u>Evaluation</u>
Antimony	0.500	0.497	99	Pass

Recoveries for multiple analytes were flagged as outside QC Limits due to the level of these analytes present in the sample relative to the spike amounts. In addition, concentrations of other analytes were high relative to the spike amounts. Dilution Tests were performed for verification :

<u>Analyte</u>	No <u>Dilution</u>	1:5 <u>Dilution</u>	1:25 <u>Dilution</u>	% <u>Difference</u>	QA <u>Evaluation</u>
Aluminum	10400 mg/Kg	10500 mg/Kg	-----	1	Pass
Calcium	2750	2850	-----	4	Pass
Iron	----	18400	17900	3	Pass
Manganese	702	725	-----	3	Pass
Potassium	1150	1110	-----	3	Pass
Magnesium	2080	2120	-----	2	Pass
Zinc	87.0	89.9	-----	3	Pass

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Graphite Metals

9808-641-01 RPD : All analytes within QC limits.
RA-C-009 Spike Recovery : All analytes within QC limits.*

*
Recoveries for Arsenic and Lead were flagged as outside QC Limits due to the level of this analyte present relative to the spike amount. Dilution Tests were performed for verification :

<u>Analyte</u>	1:4 <u>Dilution</u>	1:20 <u>Dilution</u>	1:100 <u>Dilution</u>	% <u>Difference</u>	QA <u>Evaluation</u>
Arsenic	27.7 mg/Kg	27.4 mg/Kg	-----	1	Pass
Lead	----	54.3	52.6	3	Pass

Recoveries for Selenium and Thallium were flagged as outside QC Limits in the Matrix Spike and Matrix Spike Duplicate. The Post Digestion Spike failed evaluation criteria. All data was reported based on MSA.

Refer to Laboratory Control Sample(s) for system verification.

000026

ENVIRONMENTAL TESTING AND CONSULTING, INC. 379 32
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN
ETC Order # : 9808-641

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Hg
9808-641-01 RPD : All analytes within QC limits.
RA-C-009 Spike Recovery : All analytes within QC limits.
Refer to Laboratory Control Sample(s) for system verification.

Dilution Test - Dilution result must agree within 10% of original
result when sample is diluted by a factor of 5.

Post Digestion Spike - Recovery must be +/-15% of expected value.


Laboratory Manager

000027

SOLID METHOD BLANK
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID ICP/GFAA Metals	V7-SO-86 BLK	QC Batch V7-SO-86
Laboratory ID Mercury	V4-SO-27 BLK	V4-SC-27

Date Sample Prepared	08/21/98	ICP/GFAA Metals
	08/24/98	Mercury

Metals	Concentration mg/Kg	Detection Limit mg/Kg	Date Analyzed	Method
Silver	<0.700	0.700	08/25/98	6010B
Aluminum	<4.00	4.00	08/25/98	6010B
Arsenic	<0.200	0.200	08/24/98	7060A
Barium	<0.200	0.200	08/25/98	6010B
Beryllium	<0.100	0.100	08/25/98	6010B
Calcium	2.60	1.00	08/25/98	6010B
Cadmium	<0.400	0.400	08/25/98	6010B
Cobalt	<0.700	0.700	08/25/98	6010B
Chromium	<0.700	0.700	08/25/98	6010B
Copper	<0.600	0.600	08/25/98	6010B
Iron	1.10	0.700	08/25/98	6010B
Potassium	<20.0	20.0	08/25/98	6010B
Magnesium	<3.00	3.00	08/25/98	6010B
Manganese	<0.200	0.200	08/25/98	6010B
Sodium	<20.0	20.0	08/25/98	6010B
Nickel	<1.50	1.50	08/25/98	6010B
Lead	0.117	0.100	08/24/98	7421
Antimony	<3.20	3.20	08/25/98	6010B
Selenium	<0.200	0.200	08/24/98	7740
Thallium	<0.100	0.100	08/24/98	7841
Vanadium	<0.800	0.800	08/25/98	6010B
Zinc	<1.00	1.00	08/25/98	6010B
Mercury	<0.020	0.020	08/24/98	7471A

Metals Blank

000028
9808-641.mqcBLANK

SOLID LABORATORY CONTROL SAMPLE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory Control ID	ICP/GFAA Metals	<u>V7-SO-86</u>	LCS	QC Batch
	Mercury	<u>V4-SO-27</u>	LCS	<u>V7-SO-86</u>
				<u>V4-SO-27</u>

Date Prepared	ICP/GFAA Metals	<u>08/21/98</u>	
	Mercury	<u>08/24/98</u>	

Metals	Spike Added mg/Kg	Found mg/Kg	% R	#	QC Limits
Silver	20.0	20.2	101	80	120
Aluminum	200	205	103	80	120
Arsenic	5.00	4.28	86	85	115
Barium	200	202	101	80	120
Beryllium	20.0	19.5	98	80	120
Calcium	400	398	100	80	120
Cadmium	20.0	19.9	100	80	120
Cobalt	100	97.6	98	80	120
Chromium	40.0	39.1	98	80	120
Copper	40.0	41.4	104	80	120
Iron	200	201	101	80	120
Potassium	400	402	101	80	120
Magnesium	400	392	98	80	120
Manganese	20.0	20.0	100	80	120
Sodium	400	425	106	80	120
Nickel	100	98.8	99	80	120
Lead	2.00	1.99	100	85	115
Antimony	200	195	98	80	120
Selenium	5.00	4.28	86	85	115
Thallium	2.00	1.83	92	85	115
Vanadium	100	101	101	80	120
Zinc	20.0	19.8	99	80	120
Mercury	0.167	0.155	93	80	120

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

Metals Laboratory Control Sample

000029
9808-641.mqcLCS

SOLID MATRIX SPIKE
METALS

Lab Name Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	9808-641-01	V7-SO-86
Laboratory ID MS Mercury	9808-641-01	V4-SO-27

Date Sample Prepared	08/21/98	ICP/GFAA Metals
	08/24/98	Mercury

Metals	SPIKE Added mg/Kg	SAMPLE Conc mg/Kg	MS Conc mg/Kg	RPD <20% #	MS % Rec #	QC Limits	
Silver	22.3	ND	22.2	1	100	75	125
Aluminum	223	10400	10100	9	-135 *	75	125
Arsenic	5.36	27.7	31.6	6	73	70	130
Barium	223	126	364	1	107	75	125
Beryllium	22.3	0.479	22.6	1	99	75	125
Calcium	446	2750	3300	6	123	75	125
Cadmium	22.3	ND	22.7	1	102	75	125
Cobalt	111	7.21	116	2	98	75	125
Chromium	44.6	14.1	57.7	3	98	75	125
Copper	44.6	19.6	66.3	4	105	75	125
Iron	223	18400	17600	8	-359 *	75	125
Potassium	446	1150	1650	3	112	75	125
Magnesium	446	2080	2500	6	94	75	125
Manganese	22.3	702	693	12	-40 *	75	125
Sodium	446	63.2	540	5	107	75	125
Nickel	111	16.5	127	2	100	75	125
Lead	2.14	54.3	55.9	12	75	70	130
Antimony	223	ND	3.90	0	2 *	75	125
Selenium	5.36	0.231	3.28	16	57 *	70	130
Thallium	2.14	0.205	1.63	4	67 *	70	130
Vanadium	111	21.9	126	2	94	75	125
Zinc	22.3	87.0	114	7	121	75	125
Mercury	0.181	0.065	0.213	0	82	75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

ND - Not Detected

Metals Matrix Spike

000030
9808-641.mqcMSMSD

SOLID MATRIX SPIKE DUPLICATE
METALS

Lab Name Environmental Testing and Consulting, Inc

	QC Batch
Laboratory ID MS ICP/GFAA Metals	9808-641-01 V7-SO-86
Laboratory ID MS Mercury	9808-641-01 V4-SO-27

Date Sample Prepared	08/21/98	ICP/GFAA Metals
	08/24/98	Mercury

Metals	SPIKE Added mg/Kg	SAMPLE Conc mg/Kg	MSD Conc mg/Kg		MSD % Rec	#	QC Limits	
Silver	22.3	ND	22.4		100		75	125
Aluminum	223	10400	11100		314	*	75	125
Arsenic	5.68	27.7	33.4		100		70	130
Barium	223	126	362		106		75	125
Beryllium	22.3	0.479	22.9		101		75	125
Calcium	446	2750	3520		173	*	75	125
Cadmium	22.3	ND	22.5		101		75	125
Cobalt	111	7.21	118		100		75	125
Chromium	44.6	14.1	59.3		101		75	125
Copper	44.6	19.6	69.0		111		75	125
Iron	223	18400	19000		269	*	75	125
Potassium	446	1150	1700		123		75	125
Magnesium	446	2080	2650		128	*	75	125
Manganese	22.3	702	785		372	*	75	125
Sodium	446	63.2	515		101		75	125
Nickel	111	16.5	130		102		75	125
Lead	2.27	54.3	63.0		383	*	70	130
Antimony	223	ND	ND			*	75	125
Selenium	5.68	5.36	3.84		-27	*	70	130
Thallium	2.27	2.14	1.70		-19	*	70	130
Vanadium	111	21.9	129		97		75	125
Zinc	22.3	87.0	122		157	*	75	125
Mercury	0.180	0.065	0.213		82		75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits ND - Not Detected

Metals Matrix Spike Duplicate

000031

9808-641.mqcMSMSD

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN
ETC Order # : 9808-641

HOLDING TIMES

QC Batch(s) for this order : ICP/GFAA V11-AQ-36
Mercury V4-AQ-30

Sample Analysis : All samples digested and analyzed within 180
days of collection.
Mercury Analysis : All samples analyzed within 28 days of
collection.

CALIBRATION

Initial Calibration : All criteria met.
Continuing Calibration : All criteria met.

SAMPLE ANALYSIS

Instrumentation : Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer
Dilutions Required : No dilutions required.

QUALITY CONTROL**9808-641.MQ1BLANK**Method Blank

V11-AQ-36BLK - ICP/GFAA Metals
V4-AQ-30BLK - Mercury

No analytes detected in the Method Blank.

9808-641.MQ1LCSLaboratory Control Sample(s)

V11-AQ-36LCS - ICP/GFAA Metals
V4-AQ-30LCS - Mercury

All criteria met.

9808-641.MQ1MSMSDMatrix Spike / Matrix Spike Dup - ICP Metals

9808-641-02 RPD : All analytes within QC limits.
RA-C-EQ-003-CS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

000032

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - AQUEOUS

379 38

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN
ETC Order # : 9808-641

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Graphite Metals

9808-641-02 RPD : All analytes within QC limits.
RA-C-EQ-003-CS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Hg

9808-641-02 RPD : All analytes within QC limits.
RA-C-EQ-003-CS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Dilution Test - Dilution result must agree within 10% of original
result when sample is diluted by a factor of 5.

Post Digestion Spike - Recovery must be +/-15% of expected value.


Laboratory Manager

000033

WATER METHOD BLANK
METALS

Lab Name	Environmental Testing and Consulting, Inc		
Laboratory ID ICP/GFAA Metals	V11-AQ-36 BLK	QC Batch V11-AQ-36	
Laboratory ID Mercury	V4-AQ-30 BLK	V4-AQ-30	
Date Sample Prepared	08/21/98		ICP/GFAA Metals
	08/21/98		Mercury

Metals	Concentration mg/L	Detection Limit mg/L	Date Analyzed	Method
Silver	<0.009	0.009	08/25/98	6010B
Aluminum	<0.060	0.060	08/25/98	6010B
Arsenic	<0.003	0.003	08/24/98	7060A
Barium	<0.003	0.003	08/25/98	6010B
Beryllium	<0.002	0.002	08/25/98	6010B
Calcium	<0.015	0.015	08/25/98	6010B
Cadmium	<0.005	0.005	08/25/98	6010B
Cobalt	<0.009	0.009	08/25/98	6010B
Chromium	<0.009	0.009	08/25/98	6010B
Copper	<0.008	0.008	08/25/98	6010B
Iron	<0.009	0.009	08/25/98	6010B
Potassium	<0.250	0.250	08/25/98	6010B
Magnesium	<0.040	0.040	08/25/98	6010B
Manganese	<0.003	0.003	08/25/98	6010B
Sodium	<0.050	0.050	08/25/98	6010B
Nickel	<0.020	0.020	08/25/98	6010B
Lead	<0.002	0.002	08/24/98	7421
Antimony	<0.040	0.040	08/25/98	6010B
Selenium	<0.003	0.003	08/24/98	7740
Thallium	<0.002	0.002	08/24/98	7841
Vanadium	<0.010	0.010	08/25/98	6010B
Zinc	<0.010	0.010	08/25/98	6010B
Mercury	<0.0002	0.0002	08/23/98	7470A

Metals Blank

000034

9808-641.mq1BLANK

WATER LABORATORY CONTROL SAMPLE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory Control ID ICP/GFAA Metals V11-AQ-36 LCS QC Batch V11-AQ-36
Mercury V4-AQ-30 LCS V4-AQ-30

Date Prepared ICP/GFAA Metals 08/21/98
Mercury 08/21/98

Metals	Spike Added mg/L	Found mg/L	% R	#	QC Limits
Silver	0.250	0.275	110	80	120
Aluminum	2.50	2.78	111	80	120
Arsenic	0.063	0.059	94	85	115
Barium	2.50	2.73	109	80	120
Beryllium	0.250	0.259	104	80	120
Calcium	5.00	5.32	106	80	120
Cadmium	0.250	0.262	105	80	120
Cobalt	1.25	1.31	105	80	120
Chromium	0.500	0.519	104	80	120
Copper	0.500	0.554	111	80	120
Iron	2.50	2.70	108	80	120
Potassium	5.00	5.36	107	80	120
Magnesium	5.00	5.25	105	80	120
Manganese	0.250	0.269	108	80	120
Sodium	5.00	5.87	117	80	120
Nickel	1.25	1.33	106	80	120
Lead	0.025	0.025	100	85	115
Antimony	2.50	2.60	104	80	120
Selenium	0.063	0.059	94	85	115
Thallium	0.025	0.023	92	85	115
Vanadium	1.25	1.36	109	80	120
Zinc	0.250	0.267	107	80	120
Mercury	0.0050	0.0053	106	80	120

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

Metals Laboratory Control Sample

000035
9808-641.mq1LCS

WATER MATRIX SPIKE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MS ICP/GFAA Metals	9808-641-02	QC Batch V11-AQ-36
Laboratory ID MS Mercury	9808-641-02	V4-AQ-30

Date Sample Prepared	08/21/98	ICP/GFAA Metals
	08/21/98	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MS Conc mg/L	RPD <20% #	MS % Rec #	QC Limits	
Silver	0.250	ND	0.277	0	111	75	125
Aluminum	2.50	ND	2.84	1	114	75	125
Arsenic	0.063	ND	0.062	3	98	85	115
Barium	2.50	ND	2.84	4	114	75	125
Beryllium	0.250	ND	0.264	1	106	75	125
Calcium	5.00	0.085	5.51	1	109	75	125
Cadmium	0.250	ND	0.264	3	106	75	125
Cobalt	1.25	ND	1.33	1	106	75	125
Chromium	0.500	ND	0.536	1	107	75	125
Copper	0.500	ND	0.561	0	112	75	125
Iron	2.50	0.014	2.76	1	110	75	125
Potassium	5.00	ND	5.67	3	113	75	125
Magnesium	5.00	ND	5.37	1	107	75	125
Manganese	0.250	ND	0.273	0	109	75	125
Sodium	5.00	ND	5.83	6	117	75	125
Nickel	1.25	ND	1.35	0	108	75	125
Lead	0.025	ND	0.026	4	104	85	115
Antimony	2.50	ND	2.61	1	104	75	125
Selenium	0.063	ND	0.060	0	95	85	115
Thallium	0.025	ND	0.023	0	92	85	115
Vanadium	1.25	ND	1.40	1	112	75	125
Zinc	0.250	ND	0.278	0	111	75	125
Mercury	0.0050	ND	0.0053	4	106	75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits ND - Not Detected

Metals Matrix Spike

000036

9808-641.mq1MSMSD

WATER MATRIX SPIKE DUPLICATE METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MS ICP/GFAA Metals 9808-641-02 QC Batch V11-AQ-36
Laboratory ID MS Mercury 9808-641-02 V4-AQ-30

Date Sample Prepared 08/21/98 ICP/GFAA Metals
08/21/98 Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MSD Conc mg/L		MSD % Rec	#	QC Limits
Silver	0.250	ND	0.278		111	75	125
Aluminum	2.50	ND	2.82		113	75	125
Arsenic	0.063	ND	0.060		95	85	115
Barium	2.50	ND	2.73		109	75	125
Beryllium	0.250	ND	0.266		106	75	125
Calcium	5.00	0.085	5.56		110	75	125
Cadmium	0.250	ND	0.271		108	75	125
Cobalt	1.25	ND	1.34		107	75	125
Chromium	0.500	ND	0.544		109	75	125
Copper	0.500	ND	0.561		112	75	125
Iron	2.50	0.014	2.74		109	75	125
Potassium	5.00	ND	5.50		110	75	125
Magnesium	5.00	ND	5.42		108	75	125
Manganese	0.250	ND	0.272		109	75	125
Sodium	5.00	ND	5.51		110	75	125
Nickel	1.25	ND	1.35		108	75	125
Lead	0.025	ND	0.025		100	85	115
Antimony	2.50	ND	2.64		106	75	125
Selenium	0.063	ND	0.060		95	85	115
Thallium	0.025	ND	0.023		92	85	115
Vanadium	1.25	ND	1.38		110	75	125
Zinc	0.250	ND	0.278		111	75	125
Mercury	0.0050	ND	0.0051		102	75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits ND - Not Detected

Metals Matrix Spike Duplicate

000037

9808-641.mq1MSMSD

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC/MS Semi-Volatiles

000038

ENVIRONMENTAL TESTING AND CONSULTING, INC. 379 44
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-641
Method (SW-846) : 8270C/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P04021 P04021LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recovery for 2-Fluorobiphenyl was flagged for high
recovery in P04021BS. High recovery indicates reported analyte
may be biased high.

Surrogate recoveries for Nitrobenzene-d5 and 2-Fluorobiphenyl
were flagged as outside QC Limits in sample 9808-588-01
(RA-TS-004A). Recovery for Nitrobenzene-d5 was flagged as outside
QC Limits in sample 9808-588-01MSD. Review of extraction
information and the raw data showed no obvious matrix interference.
Surrogate recoveries for sample within this project were within QC
Limits.

Laboratory Control Sample FORM 3
P04021BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9808-588-01 RPD : All analytes within QC limits.
RA-TS-004A Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P04021LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*
*

Calibration Verification(CV) : Date 08/24/98 0942

Analyte	%Diff(30% Max)	Response
Benzoic Acid	44.2	Low

Benzoic Acid was not a Target Analyte associated with this project.
The data was not affected.

000039

379 45

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN

ETC Order # : 9808-641
Method (SW-846) : 8270C/3550B

CALIBRATION

Calibration Verification(CV) : Date 08/24/98 1632

Analyte	%Diff(30% Max)	Response
2,4-Dinitrotoluene	30.2	High

2,4-Dinitrotoluene was not a Target Analyte associated with this project. The data was not affected.

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.


Laboratory Manager

000040

FORM 2
SOIL BNA-GCMS SURROGATE RECOVERY

379 46

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-641

Level: (low/med) LOW

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	P04021LB	68	65	69	77	81	89			0
02	9808-641-1	0	0	62	68	0	59			0
03	P04021BS	0	0	77	95*	0	90			1
04	9808-588-1	32	37	32*	38*	53	47			2
05	9808-588-1M	74	79	78	80	83	51			0
06	9808-588-1S	79	84	80*	83	85	43			1
07										
08										
09										
10										
11										
12										
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25										
26										
27										
28										
29										
30										

S1 (2FP) = 2-Fluorophenol	QC LIMITS (23- 89)
S2 (PHL) = Phenol-d6	(31- 94)
S3 (NBZ) = Nitrobenzene-d5	(39- 80)
S4 (FBP) = 2-Fluorobiphenyl	(43- 84)
S5 (TBP) = 2,4,6-Tribromophenol	(17- 91)
S6 (TPH) = Terphenyl-d14	(40-121)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

000041

379 47

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO

P04021LB

Lab Name: ETC, INC.

Lab Prep Batch: P04021

SDG No.: 9808-641

Lab File ID: 0701007

Instrument ID: BNA2

Matrix: (soil/water) SOIL

Date Analyzed: 08/24/98

Level: (low/med) LOW

Time Analyzed: 1219

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	9808-641-1		1001010	08/24/98
02	P04021BS		0501005	08/24/98
03	9808-588-1		1501015	08/24/98
04	9808-588-1M		1601016	08/24/98
05	9808-588-1S		1701017	08/25/98
06				
07				
08				
09				
10				
11				
12				
13				
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30				

COMMENTS:

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P04021LB

Lab Name: ETC, INC.

SDG No.: 9808-641

Matrix: (soil/water) SOIL

Lab Prep Batch: P04021

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 0701007

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1 (mL)

Date Analyzed: 08/24/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

83-32-9-----	Acenaphthene	66.7	U
208-96-8-----	Acenaphthylene	66.7	U
120-12-7-----	Anthracene	66.7	U
205-99-2-----	Benzo(b) fluoranthene	66.7	U
56-55-3-----	Benzo(a) Anthracene	66.7	U
207-08-9-----	Benzo(k) fluoranthene	66.7	U
191-24-2-----	Benzo(g,h,i) perylene	66.7	U
50-32-8-----	Benzo(a) pyrene	66.7	U
218-01-9-----	Chrysene	66.7	U
53-70-3-----	Dibenzo(a,h) anthracene	66.7	U
206-44-0-----	Fluoranthene	66.7	U
86-73-7-----	Fluorene	66.7	U
193-39-5-----	Indeno(1,2,3-cd) pyrene	66.7	U
91-57-6-----	2-Methylnaphthalene	66.7	U
91-20-3-----	Naphthalene	66.7	U
85-01-8-----	Phenanthrene	66.7	U
129-00-0-----	Pyrene	66.7	U

FORM I BNA-GCMS

000043

FORM 3
SOIL BNA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P04021

SDG No.: 9808-641

Matrix Spike - Sample No.: P04021BS

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	1670		1360	81	34-126
Acenaphthylene	1670		1550	93	62-123
Anthracene	1670		1340	80	68-124
Benzo(b)fluoranthene	1670		1500	90	67-126
Benzo(a)Anthracene	1670		1530	92	60-133
Benzo(k)fluoranthene	1670		1560	93	75-131
Benzo(g,h,i)perylene	1670		1300	78	53-137
Benzo(a)pyrene	1670		1530	92	68-129
Chrysene	1670		1300	78	67-131
Dibenzo(a,h)anthracene	1670		1240	74	51-138
Fluoranthene	1670		1500	90	71-132
Fluorene	1670		1450	87	65-126
Indeno(1,2,3-cd)pyrene	1670		1250	75	34-170
Naphthalene	1670		1220	73	62-113
Phenanthrene	1670		1390	83	66-128
Pyrene	1670		1510	90	33-155

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 16 outside limits

COMMENTS:

FORM 3
SOIL BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P04021

SDG No.: 9808-641

Matrix Spike - Sample No.: 9808-588-1

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Acenaphthene	3320	0.00	2410	72	34-126
4-Chloro-3-Methylphenol	5320	0.00	4690	88	33-147
2-Chlorophenol	5320	0.00	4950	93	35-138
1,4-Dichlorobenzene	3320	0.00	2520	76	26-121
2,4-Dinitrotoluene	3320	0.00	2460	74	22-139
4-Nitrophenol	1600	0.00	1600	100	12-105
N-Nitrosodinpropylamine	3320	0.00	2640	80	24-141
Pentachlorophenol	5320	0.00	4280	80	6-164
Phenol	5320	0.00	3820	72	22-127
Pyrene	3320	56.8	1670	48	33-155
1,2,4-Trichlorobenzene	3320	0.00	2690	81	30-127

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
Acenaphthene	3300	2540	77	7	20	34-126
4-Chloro-3-Methylphenol	5280	4820	91	3	20	33-147
2-Chlorophenol	5280	4910	93	0	20	35-138
1,4-Dichlorobenzene	3300	2590	78	2	20	26-121
2,4-Dinitrotoluene	3300	2420	73	1	20	22-139
4-Nitrophenol	1590	1410	89	12	20	12-105
N-Nitrosodinpropylamine	3300	2720	82	2	20	24-141
Pentachlorophenol	5280	4110	78	2	20	6-164
Phenol	5280	3510	66	9	20	22-127
Pyrene	3300	1460	42	13	20	33-155
1,2,4-Trichlorobenzene	3300	2790	84	4	20	30-127

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits

COMMENTS:

FORM III BNA-GCMS

000045

379 51

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-641
Method (SW-846) : 8270C/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P05030 P05030LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P05030BS/BD

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*

Due to the limited amount of sample available, no MS/MSD were extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P05030LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*

*

Calibration Verification(CV) : Date 08/24/98 0942

Analyte	%Diff(30% Max)	Response
Benzoic Acid	44.2	Low

Benzoic Acid was not a Target Analyte associated with this project.
The data was not affected.

Calibration Verification(CV) : Date 08/24/98 1632

Analyte	%Diff(30% Max)	Response
2,4-Dinitrotoluene	30.2	High

2,4-Dinitrotoluene was not a Target Analyte associated with this project. The data was not affected.

000046

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-641
Method (SW-846) : 8270C/3510C

CALIBRATION

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times
within QC limits.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.


Laboratory Manager

000047

379 53

FORM 2
WATER BNA-GCMS SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-641

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	P05030LB	0	0	79	78	0	91			0
02	P05030BS	0	0	80	83	0	87			0
03	9808-641-2	0	0	52	59	0	85			0
04	P05030BD	0	0	72	82	0	89			0
05										
06										
07										
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QC LIMITS

S1 (2FP) = 2-Fluorophenol (0- 73)
 S2 (PHL) = Phenol-d6 (0- 48)
 S3 (NBZ) = Nitrobenzene-d5 (35- 85)
 S4 (FBP) = 2-Fluorobiphenyl (46- 84)
 S5 (TBP) = 2,4,6-Tribromophenol (0-100)
 S6 (TPH) = Terphenyl-d14 (33-113)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

000048

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

379 54
CLIENT SAMPLE NO

P05030LB

Lab Name: ETC, INC.

Lab Prep Batch: P05030

Lab File ID: 0301003

Matrix: (soil/water) WATER

Level:(low/med) LOW

SDG No.: 9808-641

Instrument ID: BNA2

Date Analyzed: 08/24/98

Time Analyzed: 1012

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P05030BS		0401004	08/24/98
02	9808-641-2		0601006	08/24/98
03	P05030BD		0601006	08/24/98
04				
05				
06				
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COMMENTS:

379 55

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05030LB

Lab Name: ETC, INC.

SDG No.: 9808-641

Matrix: (soil/water) WATER

Lab Prep Batch: P05030

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 0301003

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1(mL)

Date Analyzed: 08/24/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
83-32-9-----	Acenaphthene	2.0	U
208-96-8-----	Acenaphthylene	2.0	U
120-12-7-----	Anthracene	2.0	U
205-99-2-----	Benzo(b) fluoranthene	2.0	U
56-55-3-----	Benzo(a) Anthracene	2.0	U
207-08-9-----	Benzo(k) fluoranthene	2.0	U
191-24-2-----	Benzo(g,h,i) perylene	2.0	U
50-32-8-----	Benzo(a) pyrene	2.0	U
218-01-9-----	Chrysene	2.0	U
53-70-3-----	Dibenzo(a,h) anthracene	2.0	U
206-44-0-----	Fluoranthene	2.0	U
86-73-7-----	Fluorene	2.0	U
193-39-5-----	Indeno(1,2,3-cd) pyrene	2.0	U
91-57-6-----	2-Methylnaphthalene	2.0	U
91-20-3-----	Naphthalene	2.0	U
85-01-8-----	Phenanthrene	2.0	U
129-00-0-----	Pyrene	2.0	U

FORM I BNA-GCMS

000050

FORM 3
WATER BNA-GCMS LABORATORY CONTROL SAMPLE

379 56

Lab Name: ETC, INC.

Lab Prep Batch: P05030

SDG No.: 9808-641

Matrix Spike - Sample No.: P05030BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Acenaphthene	50.0		35.6	71	37-123
Acenaphthylene	50.0		40.9	82	67-118
Anthracene	50.0		38.3	77	68-124
Benzo(b)fluoranthene	50.0		40.2	80	68-127
Benzo(a)Anthracene	50.0		45.8	92	69-125
Benzo(k)fluoranthene	50.0		47.5	95	73-128
Benzo(g,h,i)perylene	50.0		36.8	74	53-138
Benzo(a)pyrene	50.0		43.9	88	73-125
Chrysene	50.0		38.0	76	70-124
Dibenzo(a,h)anthracene	50.0		35.2	70	57-136
Fluoranthene	50.0		42.1	84	55-135
Fluorene	50.0		39.8	80	66-121
Indeno(1,2,3-cd)pyrene	50.0		45.2	90	57-140
Naphthalene	50.0		28.2	56	55-113
Phenanthrene	50.0		40.6	81	65-126
Pyrene	50.0		41.4	83	40-149

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

FORM 3
WATER BNA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P05030

SDG No.: 9808-641

Matrix Spike - Sample No.: P05030BD

COMPOUND	SPIKE ADDED (ug/L)	BD CONCENTRATION (ug/L)	BD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Acenaphthene	50.0	35.1	70	1	20	37-123
Acenaphthylene	50.0	41.0	82	0	20	67-118
Anthracene	50.0	38.2	76	1	20	68-124
Benzo(b)fluoranthene	50.0	40.8	82	2	20	68-127
Benzo(a)Anthracene	50.0	42.9	86	7	20	69-125
Benzo(k)fluoranthene	50.0	45.1	90	5	20	73-128
Benzo(g,h,i)perylene	50.0	40.9	82	10	20	53-138
Benzo(a)pyrene	50.0	42.3	85	3	20	73-125
Chrysene	50.0	36.1	72	5	20	70-124
Dibenzo(a,h)anthracene	50.0	34.9	70	0	20	57-136
Fluoranthene	50.0	42.9	86	2	20	55-135
Fluorene	50.0	39.8	80	0	20	66-121
Indeno(1,2,3-cd)pyrene	50.0	37.6	75	18	20	57-140
Naphthalene	50.0	29.4	59	5	20	55-113
Phenanthrene	50.0	39.4	79	2	20	65-126
Pyrene	50.0	42.5	85	2	20	40-149

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 16 outside limits

Spike Recovery: 0 out of 32 outside limits

COMMENTS:

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC Pesticides

000053

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN
ETC Order # : 9808-641
Method (SW-846) : 8081A/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P06012 P06012LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*

*
Surrogate recoveries for Decachlorobiphenyl were flagged as outside QC Limits in sample 9808-641-01MS/MSD(RA-C-009). Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits.

Laboratory Control Sample FORM 3
P06012BS

All criteria met.*
*

Recoveries for multiple analytes were flagged for high recovery in P06012BS. Recoveries for analytes 4,4'-DDE and Dieldrin, which were identified in the soils sample associated with this project, were slightly high indicating that the results may be biased high.

Matrix Spike / Matrix Spike Dup FORM 3
9808-641-01 RPD : All analytes within QC limits.*
RA-C-009 Spike Recovery : All analytes within QC limits.*

*
RPD for 4,4'-DDT was flagged as outside QC Limits due to higher recovery in the Matrix Spike. MS/MSD recoveries were within QC Limits.

Recoveries for multiple analytes were flagged outside QC Limits in the Matrix Spike and Matrix Spike Duplicate.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P06012LB

No Target Analytes detected above Practical Quantitation Limit.

000054

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - SOIL

379 60

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN
ETC Order # : 9808-641
Method (SW-846) : 8081A/3550B

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*
Endrin/Breakdown : All criteria met. FORM 7

**

Calibration Verification(CV) : P308241A-20R (Primary)

Analyte	%Diff(15% Max)	Response
Aldrin	17.6	High
alpha-BHC	26.6	High
beta-BHC	20.6	High
delta-BHC	20.6	High
gamma-BHC(Lindane)	21.2	High
alpha-Chlordane	19.6	High
gamma-Chlordane	15.7	High
4,4'-DDE	15.2	High
4,4'-DDT	19.4	High
Endosulfan I	18.0	High
Endrin	24.2	High
Heptachlor	18.4	High
Heptachlor epoxide	16.5	High
Methoxychlor	18.8	High

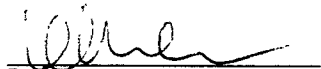
High recoveries for multiple analytes indicates reported levels for these analytes may be biased high. Samples were reported from Sequence P308241B (Confirmation) in which all Calibration Verification checks were within the 15% Limit. The data was not affected.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.*

*

Dilution of 1:100 was performed on sample 9808-641-01 to bring the Target Analyte(s) within calibration range.


Laboratory Manager

000055

379 61

FORM 2
SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-641

Level: (low/med) LOW

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P06012LB	89	94							0
02	P06012BS	105	131							0
03	9808-641-1	61	73							0
04	9808-641-1M	76	48D							1
05	9808-641-1S	78	41D							1
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QC LIMITS

S1 (TMX) = Tetrachloro-m-xylene (39-130)
 S2 (DBC) = Decachlorobiphenyl (64-154)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

000056

FORM 4
PESTICIDE METHOD BLANK SUMMARY

379 62
EPA GC SAMPLE NO.

P06012LB

Lab Name: ETC, INC.

Lab Prep Batch: P06012

Lab File ID: P308241B-10R

Matrix: (soil/water) SOIL

Level: (low/med) LOW

SDG No.: 9808-641

Instrument ID: PEST3B

Date Analyzed: 08/24/98

Time Analyzed: 1901

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P06012BS		P308241B-12R	08/24/98
02	9808-641-1		P308241B-15R	08/24/98
03	9808-641-1M		P308241B-16R	08/24/98
04	9808-641-1S		P308241B-17R	08/24/98
05				
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COMMENTS:

379 63

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P06012LB

Lab Name: ETC, INC.

SDG No.: 9808-641

Matrix: (soil/water) SOIL

Lab Prep Batch: P06012

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P308241B-10R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10(mL)

Date Analyzed: 08/24/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/KG
			Q
309-00-2-----	Aldrin	1.33	U
319-84-6-----	alpha-BHC	1.33	U
319-85-7-----	beta-BHC	1.33	U
319-86-8-----	delta-BHC	1.33	U
58-89-9-----	gamma-BHC	1.33	U
5103-71-9-----	alpha-chlordane	1.33	U
5103-74-2-----	gamma-chlordane	1.33	U
72-54-8-----	4,4'-DDD	1.33	U
72-55-9-----	4,4'-DDE	1.33	U
50-29-3-----	4,4'-DDT	1.33	U
60-57-1-----	Dieldrin	1.33	U
959-98-8-----	Endosulfan I	1.33	U
33213-65-9-----	Endosulfan II	1.33	U
1031-07-8-----	Endosulfan sulfate	1.33	U
72-20-8-----	Endrin	1.33	U
7421-93-4-----	Endrin aldehyde	1.33	U
53494-70-5-----	Endrin ketone	1.33	U
76-44-8-----	Heptachlor	1.33	U
1024-57-3-----	Heptachlor epoxide	1.33	U
72-43-5-----	Methoxychlor	1.33	U
57-74-9-----	Chlordane, Total	8.33	U
8001-35-2-----	Toxaphene	83.33	U

FORM I PESTICIDE

000058

FORM 3
SOIL PESTICIDE LABORATORY CONTROL SAMPLE

379 64

Lab Name: ETC, INC.

Lab Prep Batch: P06012

SDG No.: 9808-641

Matrix Spike - Sample No.: P06012BS

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
Aldrin	33.33		38.93	117*	31-111
alpha-BHC	33.33		37.41	112	22-112
beta-BHC	33.33		40.68	122*	54-120
delta-BHC	33.33		33.77	101*	10- 96
gamma-BHC	33.33		38.01	114*	26-113
alpha-chlordane	33.33		41.18	124*	49-103
gamma-chlordane	33.33		40.91	123*	50-106
4,4'-DDD	33.33		41.14	123*	47-112
4,4'-DDE	33.33		39.24	118*	36-117
4,4'-DDT	33.33		41.10	123	49-124
Dieldrin	33.33		39.69	119*	44-108
Endosulfan I	33.33		40.44	121*	49-103
Endosulfan II	33.33		40.49	121*	53-115
Endosulfan sulfate	33.33		40.31	121*	51-110
Endrin	33.33		41.57	125*	44-118
Endrin aldehyde	33.33		40.60	122	48-128
Endrin ketone	33.33		41.16	123	38-130
Heptachlor	33.33		39.75	119*	47-113
Heptachlor epoxide	33.33		40.17	120*	47-112
Methoxychlor	33.33		43.86	132	39-147

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 15 out of 20 outside limits

COMMENTS:

FORM 3
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P06012

SDG No.: 9808-641

Matrix Spike - Sample No.: 9808-641-1

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	M CONCENTRATION (ug/Kg)	M % REC #	QC. LIMITS REC.
Aldrin	33.11	0.000	54.42	164*	31-111
alpha-BHC	33.11	35.54	58.38	69	22-112
beta-BHC	33.11	0.000	49.16	148*	54-120
delta-BHC	33.11	40.32	61.12	63	10- 96
gamma-BHC	33.11	0.000	55.76	168*	26-113
alpha-chlordane	33.11	40.50	57.42	51	49-103
gamma-chlordane	33.11	0.000	55.67	168*	50-106
4,4'-DDD	33.11	38.14	68.03	90	47-112
4,4'-DDE	33.11	66.66	92.65	78	36-117
4,4'-DDT	33.11	60.00	88.10	85	49-124
Dieldrin	33.11	217.9	259.4	125*	44-108
Endosulfan I	33.11	0.000	55.15	166*	49-103
Endosulfan II	33.11	0.000	54.82	166*	53-115
Endosulfan sulfate	33.11	0.000	56.79	172*	51-110
Endrin	33.11	0.000	53.92	163*	44-118
Endrin aldehyde	33.11	0.000	61.44	186*	48-128
Endrin ketone	33.11	0.000	61.81	187*	38-130
Heptachlor	33.11	0.000	49.57	150*	47-113
Heptachlor epoxide	33.11	0.000	54.20	164*	47-112
Methoxychlor	33.11	0.000	48.58	147	39-147

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS:

FORM 3
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P06012

SDG No.: 9808-641

Matrix Spike - Sample No.: 9808-641-1

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	S CONCENTRATION (ug/Kg)	S % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Aldrin	33.00	56.12	170*	4	20	31-111
alpha-BHC	33.00	59.60	73	6	20	22-112
beta-BHC	33.00	49.95	151*	2	20	54-120
delta-BHC	33.00	62.71	68	8	20	10- 96
gamma-BHC	33.00	58.12	176*	5	20	26-113
alpha-chlordane	33.00	57.97	53	4	20	49-103
gamma-chlordane	33.00	56.11	170*	1	20	50-106
4,4'-DDD	33.00	67.21	88	2	20	47-112
4,4'-DDE	33.00	88.36	66	17	20	36-117
4,4'-DDT	33.00	81.56	65	27*	20	49-124
Dieldrin	33.00	259.6	126*	1	20	44-108
Endosulfan I	33.00	56.08	170*	2	20	49-103
Endosulfan II	33.00	55.11	167*	1	20	53-115
Endosulfan sulfate	33.00	56.44	171*	0	20	51-110
Endrin	33.00	54.86	166*	2	20	44-118
Endrin aldehyde	33.00	61.52	186*	0	20	48-128
Endrin ketone	33.00	58.34	177*	5	20	38-130
Heptachlor	33.00	50.42	153*	2	20	47-113
Heptachlor epoxide	33.00	55.44	168*	2	20	47-112
Methoxychlor	33.00	51.46	156*	6	20	39-147

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 20 outside limits

Spike Recovery: 27 out of 40 outside limits

COMMENTS:

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN

ETC Order # : 9808-641
Method (SW-846) : 8081A/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P07013 P07013LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recoveries for Decachlorobiphenyl were flagged as outside QC Limits in P07013BS/BD associated with this project. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits.

Laboratory Control Sample FORM 3
P07013BS/BD

All criteria met.*

*

Recoveries for multiple analytes were flagged for high recovery in P07013BS/BD.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*

Due to the limited amount of sample available, no MS/MSD were extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P07013LB

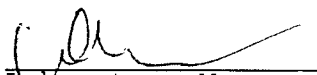
No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7A
Endrin/Breakdown : All criteria met. FORM 7

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000062

FORM 2
WATER PESTICIDE SURROGATE RECOVERY

379 68

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-641

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P07013LB	90	42							0
02	P07013BS	97*	40							1
03	P07013BD	101*	37							1
04	9808-641-2	72	51							
05										
06										
07										
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09										
10										
11										
12										
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S1 (TMX) = Tetrachloro-m-xylene QC LIMITS (31- 96)
S2 (DBC) = Decachlorobiphenyl (34-115)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

000063

FORM 4
PESTICIDE METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

Lab Name: ETC, INC.

P07013LB

Lab Prep Batch: P07013

SDG No.: 9808-641

Lab File ID: P308241A-11R

Instrument ID: PEST3A

Matrix: (soil/water) WATER

Date Analyzed: 08/24/98

Level: (low/med) LOW

Time Analyzed: 1931

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P07013BS		P308241A-13R	08/24/98
02	P07013BD		P308241A-14R	08/24/98
03	9808-641-2		P308241A-19R	08/24/98
04				
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COMMENTS:

379 70

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P07013LB

Lab Name: ETC, INC.

SDG No.: 9808-641

Matrix: (soil/water) WATER

Lab Prep Batch: P07013

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: P308241B-11R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10(mL)

Date Analyzed: 08/24/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

309-00-2-----	Aldrin	0.0400	U
319-84-6-----	alpha-BHC	0.0400	U
319-85-7-----	beta-BHC	0.0400	U
319-86-8-----	delta-BHC	0.0400	U
58-89-9-----	gamma-BHC	0.0400	U
5103-71-9-----	alpha-chlordane	0.0400	U
5103-74-2-----	gamma-chlordane	0.0400	U
72-54-8-----	4,4'-DDD	0.0400	U
72-55-9-----	4,4'-DDE	0.0400	U
50-29-3-----	4,4'-DDT	0.0400	U
60-57-1-----	Dieldrin	0.0400	U
959-98-8-----	Endosulfan I	0.0400	U
33213-65-9-----	Endosulfan II	0.0400	U
1031-07-8-----	Endosulfan sulfate	0.0400	U
72-20-8-----	Endrin	0.0400	U
7421-93-4-----	Endrin aldehyde	0.0400	U
53494-70-5-----	Endrin ketone	0.0400	U
76-44-8-----	Heptachlor	0.0400	U
1024-57-3-----	Heptachlor epoxide	0.0400	U
72-43-5-----	Methoxychlor	0.0400	U
57-74-9-----	Chlordane, Total	0.250	U
8001-35-2-----	Toxaphene	2.50	U

FORM I PESTICIDE

000065

379 71 FORM 3
WATER PESTICIDE LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P07013

SDG No.: 9808-641

Matrix Spike - Sample No.: P07013BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Aldrin	1.00		1.04	104	34-105
alpha-BHC	1.00		1.03	103*	41-102
beta-BHC	1.00		1.19	119	26-151
delta-BHC	1.00		0.658	66	21- 92
gamma-BHC	1.00		1.09	109*	41-102
alpha-chlordane	1.00		1.15	115	48-117
gamma-chlordane	1.00		1.14	114*	50-108
4,4'-DDD	1.00		1.17	117	39-124
4,4'-DDE	1.00		1.10	110	41-111
4,4'-DDT	1.00		1.07	107	39-123
Dieldrin	1.00		1.18	118*	42-111
Endosulfan I	1.00		1.17	117	48-117
Endosulfan II	1.00		1.18	118*	52-114
Endosulfan sulfate	1.00		1.07	107	46-111
Endrin	1.00		1.19	119*	45-117
Endrin aldehyde	1.00		1.12	112	48-125
Endrin ketone	1.00		1.16	116*	51-112
Heptachlor	1.00		1.09	109	43-114
Heptachlor epoxide	1.00		1.18	118*	42-115
Methoxychlor	1.00		1.12	112	39-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

FORM 3
WATER PESTICIDE LABORATORY CONTROL SAMPLE

379 72

Lab Name: ETC, INC.

Lab Prep Batch: P07013

SDG No.: 9808-641

Matrix Spike - Sample No.: P07013BD

COMPOUND	SPIKE ADDED (ug/L)	BD CONCENTRATION (ug/L)	BD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Aldrin	1.00	1.10	110*	6	20	34-105
alpha-BHC	1.00	1.03	103*	0	20	41-102
beta-BHC	1.00	1.20	120	1	20	26-151
delta-BHC	1.00	0.661	66	0	20	21- 92
gamma-BHC	1.00	1.08	108*	1	20	41-102
alpha-chlordane	1.00	1.19	119*	3	20	48-117
gamma-chlordane	1.00	1.19	119*	4	20	50-108
4,4'-DDD	1.00	1.21	121	3	20	39-124
4,4'-DDE	1.00	1.17	117*	6	20	41-111
4,4'-DDT	1.00	1.12	112	4	20	39-123
Dieldrin	1.00	1.20	120*	2	20	42-111
Endosulfan I	1.00	1.20	120*	2	20	48-117
Endosulfan II	1.00	1.19	119*	1	20	52-114
Endosulfan sulfate	1.00	1.07	107	0	20	46-111
Endrin	1.00	1.22	122*	2	20	45-117
Endrin aldehyde	1.00	1.18	118	5	20	48-125
Endrin ketone	1.00	1.16	116*	0	20	51-112
Heptachlor	1.00	1.12	112	3	20	43-114
Heptachlor epoxide	1.00	1.18	118*	0	20	42-115
Methoxychlor	1.00	1.18	118	5	20	39-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 20 outside limits
Spike Recovery: 20 out of 40 outside limits

COMMENTS:

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC PCBs

000068

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PCBs - SOIL

379 74

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN

ETC Order # : 9808-641
Method (SW-846) : 8082/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P08014 P08014LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P08014BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9808-588-01 RPD : All analytes within QC limits.
RA-TS-004A Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P08014LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7A

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000069

379 75

FORM 2
SOIL PCB SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-641

Level: (low/med) LOW

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P08014LB	54	125							0
02	P08014BS	77	132							0
03	9808-641-1	60	75							0
04	9808-588-1	57	66							0
05	9808-588-1M	61	81							0
06	9808-588-1S	69	92							0
07										
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QC LIMITS

S1 (TMX) = Tetrachloro-m-xylene (39-130)

S2 (DBC) = Decachlorobiphenyl (64-154)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

000070

379 76

FORM 4
PCB METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

P08014LB

Lab Name: ETC, INC.

Lab Prep Batch: P08014

Lab File ID: C408231A-05R

Matrix: (soil/water) SOIL

Level: (low/med) LOW

SDG No.: 9808-641

Instrument ID: PEST4A

Date Analyzed: 08/23/98

Time Analyzed: 1349

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P08014BS		C408231A-07R	08/23/98
02	9808-588-1		C408231A-24R	08/24/98
03	9808-641-1		C408231A-25R	08/24/98
04	9808-588-1M		C408231A-30R	08/24/98
05	9808-588-1S		C408231A-31R	08/24/98
06				
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COMMENTS:

000071

FORM 1
PCB ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

379 77

P08014LB

Lab Name: ETC, INC.

SDG No.: 9808-641

Matrix: (soil/water) SOIL

Lab Prep Batch: P08014

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: C408231A-05R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10 (mL)

Date Analyzed: 08/23/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/KG
12674-11-2-----	Aroclor 1016	16.67	U
11104-28-2-----	Aroclor 1221	16.67	U
11141-16-5-----	Aroclor 1232	16.67	U
53469-21-9-----	Aroclor 1242	16.67	U
11097-69-1-----	Aroclor 1254	16.67	U
11096-82-5-----	Aroclor 1260	16.67	U
12672-29-6-----	Aroclor 1248	16.67	U

FORM I PCB

000072

FORM 3
SOIL PCB LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P08014

SDG No.: 9808-641

Matrix Spike - Sample No.: P08014BS

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
Aroclor 1242	333.3		341.9	102	25-125
Aroclor 1260	333.3		349.4	105	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III PCB

000073

379 79

FORM 3

SOIL PCB MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P08014

SDG No.: 9808-641

Matrix Spike - Sample No.: 9808-588-1

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	M CONCENTRATION (ug/Kg)	M % REC #	QC. LIMITS REC.
Aroclor 1242	328.9	0.000	250.9	76	25-125
Aroclor 1260	328.9	0.000	232.5	71	25-125

COMPOUND	SPIKE ADDED (ug/Kg)	S CONCENTRATION (ug/Kg)	S % REC #	% RPD #	QC LIMITS RPD	REC.
Aroclor 1242	327.9	252.1	77	1	20	25-125
Aroclor 1260	327.9	233.2	71	0	20	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS:

FORM III PCB

000074

ENVIRONMENTAL TESTING AND CONSULTING, INC. 379 80
MEMPHIS, TN
CASE NARRATIVE
GC PCBs - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot - Memphis TN

ETC Order # : 9808-641
Method (SW-846) : 8082/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P09006 P09006LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P09006BS/BD

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*
Due to the limited amount of sample available, no MS/MSD were
extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P09006LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7A

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000075

FORM 2
WATER PCB SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-641

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P09006LB	77	68							0
02	P09006BS	78	48							0
03	P09006BD	78	57							0
04	9808-641-2	70	52							0
05										
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QC LIMITS

S1 (TMX) = Tetrachloro-m-xylene (31- 96)
S2 (DBC) = Decachlorobiphenyl (34-115)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 4
PCB METHOD BLANK SUMMARY

379 82
EPA GC SAMPLE NO.

P09006LB

Lab Name: ETC, INC.

Lab Prep Batch: P09006

Lab File ID: C408231A-06R

Matrix: (soil/water) WATER

Level:(low/med) LOW

SDG No.: 9808-641

Instrument ID: PEST4A

Date Analyzed: 08/23/98

Time Analyzed: 1427

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P09006BS		C408231A-08R	08/23/98
02	P09006BD		C408231A-09R	08/23/98
03	9808-641-2		C408231A-26R	08/24/98
04				
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COMMENTS:

379 83

FORM 1
PCB ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P09006LB

Lab Name: ETC, INC.

SDG No.: 9808-641

Matrix: (soil/water) WATER

Lab Prep Batch: P09006

Sample wt/vol: _____ (g/mL) ML

Lab File ID: C408231A-06R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10 (mL)

Date Analyzed: 08/23/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
12674-11-2-----	Aroclor 1016	0.500	U
11104-28-2-----	Aroclor 1221	0.500	U
11141-16-5-----	Aroclor 1232	0.500	U
53469-21-9-----	Aroclor 1242	0.500	U
11097-69-1-----	Aroclor 1254	0.500	U
11096-82-5-----	Aroclor 1260	0.500	U
12672-29-6-----	Aroclor 1248	0.500	U

FORM I PCB

000078

FORM 3
WATER PCB LABORATORY CONTROL SAMPLE

379 84

Lab Name: ETC, INC.

Lab Prep Batch: P09006

SDG No.: 9808-641

Matrix Spike - Sample No.: P09006BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Aroclor 1242	10.00		9.27	93	25-125
Aroclor 1260	10.00		9.22	92	25-125

COMPOUND	SPIKE ADDED (ug/L)	BD CONCENTRATION (ug/L)	BD % REC #	% RPD #	QC LIMITS RPD	LIMITS REC.
Aroclor 1242	10.00	9.41	94	1	20	25-125
Aroclor 1260	10.00	9.52	95	3	20	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 2 outside limits

Spike Recovery: 0 out of 4 outside limits

COMMENTS:

FORM III PCB

000079

**INDIVIDUAL CONFIRMATION GRID SAMPLES PER RESULTS
OF THE COMPOSITE CONFIRMATION SAMPLES COLLECTED
FOLLOWING INITIAL EXCAVATION IN AREA B**

Date Collected 08/24/99

RA-B-CS-B4

RA-B-CS-B5

RA-B-CS-B6

RA-B-CS-B8

RA-B-EQ-003 (Equip. Blank)



August 27, 1998

Ms. Elena Rodriguez
OHM Remediation Services
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Ref: Analytical Testing
ETC Order # 9808720
Project Description DDMT

Project # 20560 Defense Depot - Memphis, TN

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

A handwritten signature in dark ink, appearing to read 'N. Pera'.

Nathan A. Pera, IV
Chief Executive Officer

rt
Attachment

OHM_DDMT

SOUTHERN REGION

379 87
Chemical Analytical Data
Review/Evaluation/Validation

Report Type: ☐ Preliminary ☒ Final Date Received: 9/10/98 Project Number: 20560
 Project Name: DDMT Analysis/Method: 827013, PAH
 Laboratory: ETC Lab Project/Case Number: 9808-720
 Sample Number(s): RA-B-CS-B4, B5, B6, B8, B-EQ-003-C

Evaluated By: S. Parajon Date Evaluated: 9/10/98
 Data Package Deliverables Requirement: ☐ OHM Minimum ☒ OHM Standard ☐ OHM Maximum
☐ Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs	☒	☒	☒	☐
Comment:				
Holding Times			☒	☐
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	☒	☒	☒	☐
Comment:				
Surrogate Recoveries	☒	☒	☒	☐
Comment:				
Lab Control Sample Recoveries	☒	☒	☒	☐
Comment:				
Lab Control Sample Duplicate or Other Spike Recoveries	☒	☐	☐	☐
Comment:				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	☒	☐	☐	☐
Comment:				
Matrix Spike Recoveries	☒	☒	☒	☐
Comment:				
Matrix Spike Duplicate Recoveries	☒	☒	☒	☐
Comment:				
Matrix Spike / Matrix Spike Duplicate RPD	☒	☒	☒	☐
Comment:				
Laboratory Blanks (daily, method, instrument)	☒	☒	☒	☐
Comment:				
Field Blanks (trip, eqpt rinsate, ambient, matrix)	☒	☒	☒	☐
Comment:				

Quality Control Deliverables		Required	Received	Passed	Failed
Field Duplicates RPD		X			
Comment:					
Second Source Check					
Comment:					
Second Column Confirmation					
Comment:					
Percent Moisture/Solids					
Comment:					
Initial / Continuing Calibrations					
Comment:					
Internal Standard Areas and Retention Times (Organics Only)					
Comment:					
Chromatograms					
Comment:					
Sample Prep Worksheets					
Comment:					
Raw Data Calculations					
Comment:					
Laboratory Duplicates					
Comment:					
Instrument Performance Checks (Organics Only)					
Comment:					
Tentatively Identified Compounds (TICs)					
Comment:					
Completeness	# Samples	# Analyses	Tot # Analyses	Tot # Accept Analyses	% Complete
Completeness = (Tot # Analyses / Tot # Accepted Analyses) x 100	5	5	5	5	100
General Comments:					

Summary: [] See attached pages

Check Applicable:

- ☐ Lab contacted--Corrective actions in process Date Contacted: _____
☐ Corrective actions received and accepted Date Received/Accepted: _____
☒ The data, as reported by the laboratory, are acceptable.
☐ The data, with qualifiers as described in the "Summary" portion of this report, are acceptable.
☐ The data are unacceptable.
☐ Other _____

Evaluator's Signature

Date

7/10/98

Environmental Testing & Consulting, Inc.
Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

379 90

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

Client Name OHM Remediation Services
Site ID DDMT
Memphis, TN

<u>ETC Sample ID</u>	<u>Field ID</u>	<u>Matrix</u>	<u>Method</u>	<u>Method Description</u>	<u>QC Batch</u>
980872001	RA-B-CS-B4	SOIL	8270C	GC/MS PAH	P04024
980872002	RA-B-CS-B5	SOIL	8270C	GC/MS PAH	P04024
980872003	RA-B-CS-B6	SOIL	8270C	GC/MS PAH	P04028
980872004	RA-B-CS-B8	SOIL	8270C	GC/MS PAH	P04028
980872005	RA-B-EQ-003-CS	AQUEOUS	8270C	GC/MS PAH	P05031

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

000003



OHM Remediation Services Corp
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

LABORATORY COPY
218017

FORM 0019 REV 2/97

OHM LAB COORDINATOR		LAB COORDINATOR'S PHONE		LAB COORDINATOR'S FAX		LABORATORY SERVICE ID		LABORATORY CONTACT		MAIL REPORT (COMPANY NAME)	
Elena Rodriguez		770-734-8060		770-453-7716		ETC		Nathan Pera		OHM Remediation Services Corp	
PROJECT NAME		PROJECT LOCATION		PROJECT NUMBER		LABORATORY PHONE		LABORATORY FAX		RECIPIENT NAME	
DMT		Memphis TN		20560		901-327-2750		901-327-6334		Elena Rodriguez	
PROJECT CONTACT		PROJECT PHONE NUMBER		PROJECT FAX		LABORATORY ADDRESS		ADDRESS		CITY STATE AND ZIP CODE	
Steve Offner		901-743-1117		901-743-1048		2924 Walnut Grove Road		5445 Triangle Pkwy, #400		Norcross, GA 30092	
PROJECT ADDRESS		CITY STATE AND ZIP CODE		CLIENT		CITY STATE AND ZIP CODE		CITY STATE AND ZIP CODE		CITY STATE AND ZIP CODE	
1708 Dunn Ave.		Memphis, TN 38114		USACE		Memphis TN 38111					
PROJECT MANAGER		PROJECT MANAGER'S PHONE		PROJECT MANAGER'S FAX							
Steve Offner		770-326-2571		770-453-7716							
Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont	QC Level	TAT	Analyses	Comments	
1	RA-B-C3-B4	Soil	8-24-78	1410	1.447	3	300y	✓	PHH 8220B-2023-09-06	Please fax results on DUE DATE to SITE and to Lab Coordinator	
2	RA-B-C3-B5	Soil	8-24-78	1430	1.402	3	300y	✓			
3	RA-B-C3-B6	Soil	8-24-78	1430	1.402	3	300y	✓			
4	RA-B-C3-B8	Soil	8-24-78	1440	1.402	3	300y	✓			
5	RA-B-E0-003-C3	Liquid	8-24-78	1400	1.411	3	300y	✓			
6											
7											
8											
9											
10											

SAMPLES COLLECTED BY: Steve Offner / Mike Lafferty COURIER AND AIR BILL NUMBER: Delivered in Person

REINFORCED BY: Steve Offner RECEIVED BY: Steve Offner DATE: 8/24/78 TIME: 1400

COOLER TEMPERATURE UPON RECEIPT: _____ SAMPLE'S CONDITION UPON RECEIPT: _____

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

COOLER RECEIPT FORM

Cooler Receipt Form
9808720.CRF p. 1

LIMS #: 9808-720 _____ Number of Coolers: _____
Date Received: _____
VDTSR: _____
PROJECT: DDMT/Memphis, TN _____

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS

- A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 08/24/98
by (print): Lynette Bugg (sign): Lynette Bugg
1. Did cooler come with a shipping slip (airbill, etc.)? NO
If YES, enter carrier name & airbill number: _____
- 2a. Were custody seals on outside of cooler? NO
2b. Were custody seals on sample containers? NO
3. Were custody seals unbroken and intact at the date and time of arrival? NA
4. Did you screen samples for radioactivity using a Geiger Counter? NO
5. Were custody papers sealed in a plastic bag & taped inside to the lid? NO
6. Were custody papers filled out properly (ink, signed, etc.)? YES
7. Did you sign custody papers in the appropriate place? YES
8. Was project identifiable from custody papers? If YES, enter project name at top of this form. YES
9. If required, was enough ice used? cooler temp: <4°C, Type of ice: Crushed YES
10. Have designated person initial here to acknowledge receipt of cooler LB date: 08/24/98
- B. LOG-IN PHASE: Date samples were logged-in: 08/24/98
by (print): Lynette Bugg (sign): Lynette Bugg
11. Describe type of packing in cooler: Bubble Wrap and Ice
12. Were all bottles sealed in separate plastic bags? YES
13. Did all bottles arrive unbroken and were labels in good condition? YES
14. Were all bottle labels complete (ID, date, time, signature, preserved, etc.)? YES
15. Did all bottle labels agree with custody papers? YES
16. Were correct containers used for the tests indicated? YES
17. Were correct preservatives added to samples? YES
18. Was a sufficient amount of sample sent for tests indicated? YES
19. Were bubbles absent in VOA samples? If NO, list by sample#: NA
20. Was the project manager called and status discussed? If YES, give details on the back of this form. NO
21. Who was called? _____ By whom? _____ (date) _____

VDTSR - Validated Date/Time of Sample Receipt (Date sample is logged into LIMS system)

000005

Environmental Testing & Consulting, Inc.

Sample Reports

000006

ENVIRONMENTAL TESTING & CONSULTING, INC. 379 95
Memphis, TN
INORGANIC ANALYSIS DATA SHEET
PERCENT SOLIDS

Client Name :OHM Remediation Services
Project Name :DDMT

Date Sample Received :08/24/98
Contract Laboratory Order Number :9808-720

<u>Contract Lab</u> <u>Sample No</u>	<u>Field</u> <u>ID</u>	<u>Date</u> <u>Sampled</u>	<u>Result</u> <u>Units : (%)</u>	<u>Date</u> <u>Analyzed</u>	<u>M thod</u>	<u>By</u>
9808-720-01	RA-B-CS-B4	08/24/98	98	08/25/98	160.3	MC
9808-720-02	RA-B-CS-B5	08/24/98	98	08/25/98	160.3	MC
9808-720-03	RA-B-CS-B6	08/24/98	100	08/25/98	160.3	MC
9808-720-04	RA-B-CS-B8	08/24/98	97	08/25/98	160.3	MC


LABORATORY MANAGER

000007

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 96

Client Name OHM Remediation Services
Defense Depot - M mphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project 20560

Site ID DDMT
Memphis, TN

Date Arrived 08/24/98
ETC Order Number 9808720

ETC Lab ID 9808720-01

Sample ID: RA-B-CS-B4**QC Batch : P04024**

Matrix :SOIL

Sample Date :08/24/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				08/26/98	08/27/98	CB	8270C 3550B
Acenaphthene	ND	ug/Kg	67				
Acenaphthylene	ND	ug/Kg	67				
Anthracene	ND	ug/Kg	67				
Benzo(a)anthracene	ND	ug/Kg	67				
Benzo(b)fluoranthene	47J	ug/Kg	67				
Benzo(k)fluoranthene	ND	ug/Kg	67				
Benzo(g,h,i)perylene	ND	ug/Kg	67				
Benzo(a)pyrene	ND	ug/Kg	67				
Chrysene	34J	ug/Kg	67				
Dibenzo(a,h)anthracene	ND	ug/Kg	67				
Fluoranthene	56J	ug/Kg	67				
Fluorene	ND	ug/Kg	67				
Indeno(1,2,3-cd)pyrene	ND	ug/Kg	67				
Naphthalene	ND	ug/Kg	67				
Phenanthrene	ND	ug/Kg	67				
Pyrene	50J	ug/Kg	67				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	78		39	80			
S2 - 2-Fluorobiphenyl	89 Q		43	84			
S3 - 4-Terphenyl-d14	100		40	121			

ND - Not Detected


LABORATORY MANAGER

000008

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9808-720-1

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.8 (g/mL) G

Lab File ID: 0901009

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/26/98

GC Column: DB-5MS ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (mL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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FORM I BNA-GCMS-TIC

000009

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 98

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project 20560

Date Arrived 08/24/98
ETC Order Number 9808720

ETC Lab ID 9808720-02
Sample ID: RA-B-CS-B5
QC Batch : P04024

Matrix :SOIL
Sample Date :08/24/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				08/26/98	08/26/98	CB	8270C 3550B
Acenaphthene	ND	ug/Kg	67				
Acenaphthylene	ND	ug/Kg	67				
Anthracene	ND	ug/Kg	67				
Benzo (a) anthracene	108	ug/Kg	67				
Benzo (b) fluoranthene	201	ug/Kg	67				
Benzo (k) fluoranthene	110	ug/Kg	67				
Benzo (g, h, i) perylene	86	ug/Kg	67				
Benzo (a) pyrene	132	ug/Kg	67				
Chrysene	145	ug/Kg	67				
Dibenzo (a, h) anthracene	ND	ug/Kg	67				
Fluoranthene	218	ug/Kg	67				
Fluorene	ND	ug/Kg	67				
Indeno (1, 2, 3-cd) pyrene	71	ug/Kg	67				
Naphthalene	ND	ug/Kg	67				
Phenanthrene	74	ug/Kg	67				
Pyrene	186	ug/Kg	67				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	68		39 80				
S2 - 2-Fluorobiphenyl	83		43 84				
S3 - 4-Terphenyl-d14	73		40 121				

ND - Not Detected


LABORATORY MANAGER

000010

379 99

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9808-720-2

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.6 (g/mL) G

Lab File ID: 1001010

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/26/98

GC Column: DB-5MS ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (mL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 27554-26-3	1,2-BENZENEDICARBOXYLIC ACID	15.66	1850	NJ
2.				
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FORM I BNA-GCMS-TIC

000011

379 100

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092
Site ID DDMT
Memphis, TN

Project 20560

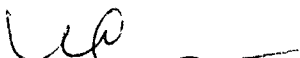
Date Arrived 08/24/98
ETC Order Number 9808720

ETC Lab ID 9808720-03
Sample ID: RA-B-CS-B6
QC Batch : P04028

Matrix :SOIL
Sample Date :08/24/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				08/26/98	08/26/98	CB	8270C 3550B
Acenaphthene	ND	ug/Kg	67				
Acenaphthylene	ND	ug/Kg	67				
Anthracene	44J	ug/Kg	67				
Benzo(a)anthracene	237	ug/Kg	67				
Benzo(b)fluoranthene	302	ug/Kg	67				
Benzo(k)fluoranthene	203	ug/Kg	67				
Benzo(g,h,i)perylene	184	ug/Kg	67				
Benzo(a)pyrene	218	ug/Kg	67				
Chrysene	275	ug/Kg	67				
Dibenzo(a,h)anthracene	ND	ug/Kg	67				
Fluoranthene	499	ug/Kg	67				
Fluorene	ND	ug/Kg	67				
Indeno(1,2,3-cd)pyrene	143	ug/Kg	67				
Naphthalene	ND	ug/Kg	67				
Phenanthrene	261	ug/Kg	67				
Pyrene	396	ug/Kg	67				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	71		39	80			
S2 - 2-Fluorobiphenyl	82		43	84			
S3 - 4-Terphenyl-d14	66		40	121			

ND - Not Detected


LABORATORY MANAGER

000012

379 101

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9808-720-3

Lab Name: ETC, INC.

Contract: 2

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.5 (g/mL) G

Lab File ID: 1101011

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/26/98

GC Column: DB-5MS ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (mL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 629-59-4	TETRADECANE	6.92	139	NJ
2. 117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	15.67	390	NJ
3. 629-92-5	NONADECANE	16.73	273	NJ
4. 192-97-2	BENZO[E]PYRENE	17.71	141	NJ
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____
10. _____	_____	_____	_____	_____
11. _____	_____	_____	_____	_____
12. _____	_____	_____	_____	_____
13. _____	_____	_____	_____	_____
14. _____	_____	_____	_____	_____
15. _____	_____	_____	_____	_____
16. _____	_____	_____	_____	_____
17. _____	_____	_____	_____	_____
18. _____	_____	_____	_____	_____
19. _____	_____	_____	_____	_____
20. _____	_____	_____	_____	_____
21. _____	_____	_____	_____	_____
22. _____	_____	_____	_____	_____
23. _____	_____	_____	_____	_____
24. _____	_____	_____	_____	_____
25. _____	_____	_____	_____	_____
26. _____	_____	_____	_____	_____
27. _____	_____	_____	_____	_____
28. _____	_____	_____	_____	_____
29. _____	_____	_____	_____	_____
30. _____	_____	_____	_____	_____

FORM I BNA-GCMS-TIC

000013

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 102

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project 20560

Date Arrived 08/24/98
ETC Order Number 9808720

ETC Lab ID **9808720-04**
Sample ID: RA-B-CS-B8
QC Batch : P04028

Matrix :SOIL
Sample Date :08/24/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				08/26/98	08/26/98	CB	8270C 3550B
Acenaphthene	ND	ug/Kg	67				
Acenaphthylene	ND	ug/Kg	67				
Anthracene	ND	ug/Kg	67				
Benzo(a)anthracene	65J	ug/Kg	67				
Benzo(b)fluoranthene	108	ug/Kg	67				
Benzo(k)fluoranthene	51J	ug/Kg	67				
Benzo(g,h,i)perylene	ND	ug/Kg	67				
Benzo(a)pyrene	66J	ug/Kg	67				
Chrysene	95	ug/Kg	67				
Dibenzo(a,h)anthracene	ND	ug/Kg	67				
Fluoranthene	137	ug/Kg	67				
Fluorene	ND	ug/Kg	67				
Indeno(1,2,3-cd)pyrene	ND	ug/Kg	67				
Naphthalene	ND	ug/Kg	67				
Phenanthrene	89	ug/Kg	67				
Pyrene	119	ug/Kg	67				

Surrogate Standard	% Recovery	QC Limits
S1 - Nitrobenzene-d5	74	39 80
S2 - 2-Fluorobiphenyl	80	43 84
S3 - 4-Terphenyl-d14	64	40 121

ND - Not Detected


LABORATORY MANAGER

000014

379 103

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9808-720-4

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 1201012

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/26/98

GC Column: DB-5MS ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (mL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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FORM I BNA-GCMS-TIC

000015

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 104

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project **20560**

Site ID **DDMT**
Memphis, TN

Date Arrived **08/24/98**
ETC Order Number **9808720**

ETC Lab ID **9808720-05****Sample ID: RA-B-EQ-003-CS****QC Batch : P05031**Matrix : **AQUEOUS**Sample Date : **08/24/98**

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				08/25/98	08/26/98	CB	8270C 3510C
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
Benzo(g,h,i)perylene	ND	ug/L	2.00				
Benzo(a)pyrene	ND	ug/L	2.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Naphthalene	ND	ug/L	2.00				
Phenanthrene	ND	ug/L	2.00				
Pyrene	ND	ug/L	2.00				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	71		35 85				
S2 - 2-Fluorobiphenyl	72		46 84				
S3 - 4-Terphenyl-d14	97		33 113				

ND - Not Detected


LABORATORY MANAGER

000016

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

379 105
CLIENT SAMPLE NO.

9808-720-5

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 0901009

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/26/98

GC Column: DB-5MS ID: 0.25 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (mL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I BNA-GCMS-TIC

000017

379 106

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC/MS Semi-Volatiles

000018

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

379 107

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-720
Method (SW-846) : 8270C/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P04024 P04024LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recoveries were flagged as outside QC Limits in sample 9808-720-01(RA-B-CS-B4), P04024LB, and P04024BS associated with this project. Sample 9808-720-01 and P04024LB were re-analyzed for verification with similar recoveries.

Laboratory Control Sample FORM 3
P04024BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3

9808-720-04 RPD : All analytes within QC limits.*
RA-B-CS-B8 Spike Recovery : All analytes within QC limits.*
*

RPD for Benzo(b)fluoranthene was flagged as outside QC Limits due to low recovery in the Matrix Spike Duplicate. MS recovery was within QC Limits.

Recovery for Fluoranthene was flagged outside QC Limits in the Matrix Spike Duplicate. MS recovery was within QC Limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P04024LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Calibration Verification : All criteria met. FORM 6
Daily Calibration : All criteria met. FORM 7A

Semi-Volatile Internal Standard Area and RT FORM 8

Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

000019

379 108

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-720
Method (SW-846) : 8270C/3550B

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.


Laboratory Manager

000020

FORM 2
SOIL BNA-GCMS SURROGATE RECOVERY

379 109

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Level: (low/med) LOW

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	P04024LB	0	0	89*	102*	0	111			2
02	P04024BS	0	0	80	96*	0	94			1
03	9808-720-1	0	0	82*	94*	0	98			2
04	9808-720-2	0	0	68	83	0	73			0
05	9808-720-3	0	0	71	82	0	66			0
06	9808-720-4	0	0	74	80	0	64			0
07	9808-720-4M	0	0	70	80	0	63			0
08	9808-720-4S	0	0	68	80	0	55			0
09	P04024LB	0	0	87*	94*	0	116			2
10	9808-720-1	0	0	78	89*	0	100			1
11										
12										
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QC LIMITS

S1 (2FP) = 2-Fluorophenol (0- 0)
 S2 (PHL) = Phenol-d6 (0- 0)
 S3 (NBZ) = Nitrobenzene-d5 (39- 80)
 S4 (FBP) = 2-Fluorobiphenyl (43- 84)
 S5 (TBP) = 2,4,6-Tribromophenol (0- 0)
 S6 (TPH) = Terphenyl-d14 (40-121)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

379 110

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO

P04024LB

Lab Name: ETC, INC.

Lab Prep Batch: P04024

SDG No.: 9808-720

Lab File ID: 0301003

Instrument ID: BNA2

Matrix: (soil/water) SOIL

Date Analyzed: 08/26/98

Level: (low/med) LOW

Time Analyzed: 1734

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P04024BS		0401004	08/26/98
02	9808-720-1		0901009	08/26/98
03	9808-720-2		1001010	08/26/98
04	9808-720-3		1101011	08/26/98
05	9808-720-4		1201012	08/26/98
06	9808-720-4M		1301013	08/26/98
07	9808-720-4S		1401014	08/26/98
08	9808-720-1		0601006	08/27/98
09				
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COMMENTS:

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

379 111
CLIENT SAMPLE NO.

P04024LB

Lab Name: ETC, INC.

SDG No.: 9808-720

Matrix: (soil/water) SOIL

Lab Prep Batch: P04024

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 0301003

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1 (mL)

Date Analyzed: 08/26/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9-----	Acenaphthene	66.7	U
208-96-8-----	Acenaphthylene	66.7	U
120-12-7-----	Anthracene	66.7	U
205-99-2-----	Benzo(b)fluoranthene	66.7	U
56-55-3-----	Benzo(a)Anthracene	66.7	U
207-08-9-----	Benzo(k)fluoranthene	66.7	U
191-24-2-----	Benzo(g,h,i)perylene	66.7	U
50-32-8-----	Benzo(a)pyrene	66.7	U
218-01-9-----	Chrysene	66.7	U
53-70-3-----	Dibenzo(a,h)anthracene	66.7	U
206-44-0-----	Fluoranthene	66.7	U
86-73-7-----	Fluorene	66.7	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	66.7	U
91-57-6-----	2-Methylnaphthalene	66.7	U
91-20-3-----	Naphthalene	66.7	U
85-01-8-----	Phenanthrene	66.7	U
129-00-0-----	Pyrene	66.7	U

FORM I BNA-GCMS

000023

379 112

FORM 3
SOIL BNA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P04024

SDG No.: 9808-720

Matrix Spike - Sample No.: P04024BS

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
Acenaphthene	1670		1340	80	34-126
Acenaphthylene	1670		1520	91	62-123
Anthracene	1670		1310	78	68-124
Benzo(b)fluoranthene	1670		1470	88	67-126
Benzo(a)Anthracene	1670		1510	90	60-133
Benzo(k)fluoranthene	1670		1590	95	75-131
Benzo(g,h,i)perylene	1670		1280	77	53-137
Benzo(a)pyrene	1670		1540	92	68-129
Chrysene	1670		1260	75	67-131
Dibenzo(a,h)anthracene	1670		1230	74	51-138
Fluoranthene	1670		1480	89	71-132
Fluorene	1670		1450	87	65-126
Indeno(1,2,3-cd)pyrene	1670		1260	75	34-170
Naphthalene	1670		1290	77	62-113
Phenanthrene	1670		1390	83	66-128
Pyrene	1670		1480	89	33-155

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 16 outside limits

COMMENTS:

000024

FORM 3
SOIL BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

379 113

Lab Name: ETC, INC.

Lab Prep Batch: P04024

SDG No.: 9808-720

Matrix Spike - Sample No.: 9808-720-4

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	M CONCENTRATION (ug/Kg)	M % REC #	QC. LIMITS REC.
Acenaphthene	1630	0.00	1160	71	34-126
Acenaphthylene	1630	0.00	1280	78	62-123
Anthracene	1630	0.00	1220	75	68-124
Benzo(b)fluoranthene	1630	105	1410	80	67-126
Benzo(a)Anthracene	1630	63.5	1550	91	60-133
Benzo(k)fluoranthene	1630	49.2	1540	91	75-131
Benzo(g,h,i)perylene	1630	0.00	1580	97	53-137
Benzo(a)pyrene	1630	64.4	1530	90	68-129
Chrysene	1630	92.5	1420	81	67-131
Dibenzo(a,h)anthracene	1630	0.00	1430	88	51-138
Fluoranthene	1630	133	1380	76	71-132
Fluorene	1630	0.00	1260	77	65-126
Indeno(1,2,3-cd)pyrene	1630	0.00	1470	90	34-170
Naphthalene	1630	0.00	1040	64	62-113
Phenanthrene	1630	86.6	1390	80	66-128
Pyrene	1630	115	1270	71	33-155

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

379 114

FORM 3
SOIL BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P04024

SDG No.: 9808-720

Matrix Spike - Sample No.: 9808-720-4

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	S CONCENTRATION (ug/Kg)	S % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Acenaphthene	1670	1210	72	1	20	34-126
Acenaphthylene	1670	1320	79	1	20	62-123
Anthracene	1670	1180	71	5	20	68-124
Benzo(b)fluoranthene	1670	1160	63*	24*	20	67-126
Benzo(a)Anthracene	1670	1410	81	12	20	60-133
Benzo(k)fluoranthene	1670	1490	86	6	20	75-131
Benzo(g,h,i)perylene	1670	1390	83	16	20	53-137
Benzo(a)pyrene	1670	1320	75	18	20	68-129
Chrysene	1670	1310	73	10	20	67-131
Dibenzo(a,h)anthracene	1670	1260	75	16	20	51-138
Fluoranthene	1670	1210	64*	17	20	71-132
Fluorene	1670	1260	75	3	20	65-126
Indeno(1,2,3-cd)pyrene	1670	1270	76	17	20	34-170
Naphthalene	1670	1160	69	8	20	62-113
Phenanthrene	1670	1310	73	9	20	66-128
Pyrene	1670	1130	61	15	20	33-155

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 16 outside limits

Spike Recovery: 2 out of 32 outside limits

COMMENTS:

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

379 115

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-720
Method (SW-846) : 8270C/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P05031 P05031LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*

*
Surrogate recoveries for 2-Fluorobiphenyl were flagged for high
recovery in P05031BS/BD.

Laboratory Control Sample FORM 3
P05031BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*
Due to the limited amount of sample available, no MS/MSD were
extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P05031LB

No Target Analytes detected above Practical Quantitation Limit.

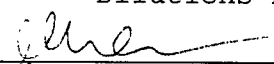
CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times
within QC limits.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.


Laboratory Manager

000027

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	P05031LB	0	0	74	78	0	92			0
02	P05031BS	0	0	80	85*	0	89			1
03	P05031BD	0	0	83	93*	0	96			1
04	9808-720-5	0	0	71	72	0	97			0
05										
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QC LIMITS

S1 (2FP) = 2-Fluorophenol (0- 0)
 S2 (PHL) = Phenol-d6 (0- 0)
 S3 (NBZ) = Nitrobenzene-d5 (35- 85)
 S4 (FBP) = 2-Fluorobiphenyl (46- 84)
 S5 (TBP) = 2,4,6-Tribromophenol (0- 0)
 S6 (TPH) = Terphenyl-d14 (33-113)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

379 117
CLIENT SAMPLE NO

P05031LB

Lab Name: ETC, INC.

Lab Prep Batch: P05031

Lab File ID: 0301003

Matrix: (soil/water) WATER

Level:(low/med) LOW

SDG No.: 9808-720

Instrument ID: BNA2

Date Analyzed: 08/26/98

Time Analyzed: 1020

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	=====	=====	=====	=====
01	P05031BS		0401004	08/26/98
02	P05031BD		0501005	08/26/98
03	9808-720-5		0901009	08/26/98
04				
05				
06				
07				
08				
09				
10				
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30				

COMMENTS:

379 118

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05031LB

Lab Name: ETC, INC.

SDG No.: 9808-720

Matrix: (soil/water) WATER

Lab Prep Batch: P05031

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 0301003

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1(mL)

Date Analyzed: 08/26/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
83-32-9-----	Acenaphthene	2.0	U
208-96-8-----	Acenaphthylene	2.0	U
120-12-7-----	Anthracene	2.0	U
205-99-2-----	Benzo(b)fluoranthene	2.0	U
56-55-3-----	Benzo(a)Anthracene	2.0	U
207-08-9-----	Benzo(k)fluoranthene	2.0	U
191-24-2-----	Benzo(g,h,i)perylene	2.0	U
50-32-8-----	Benzo(a)pyrene	2.0	U
218-01-9-----	Chrysene	2.0	U
53-70-3-----	Dibenzo(a,h)anthracene	2.0	U
206-44-0-----	Fluoranthene	2.0	U
86-73-7-----	Fluorene	2.0	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	2.0	U
91-57-6-----	2-Methylnaphthalene	2.0	U
91-20-3-----	Naphthalene	2.0	U
85-01-8-----	Phenanthrene	2.0	U
129-00-0-----	Pyrene	2.0	U

FORM I BNA-GCMS

000030

FCRM 3
WATER BNA-GCMS LABORATORY CONTROL SAMPLE

379 119

Lab Name: ETC, INC.

Lab Prep Batch: P05031

SDG No.: 9808-720

Matrix Spike - Sample No.: P05031BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Acenaphthene	50.0		40.6	81	37-123
Acenaphthylene	50.0		45.6	91	67-118
Anthracene	50.0		41.1	82	68-124
Benzo(b) fluoranthene	50.0		47.0	94	68-127
Benzo(a) Anthracene	50.0		45.6	91	69-125
Benzo(k) fluoranthene	50.0		45.6	91	73-128
Benzo(g,h,i) perylene	50.0		38.4	77	53-138
Benzo(a) pyrene	50.0		45.8	92	73-125
Chrysene	50.0		38.2	76	70-124
Dibenzo(a,h) anthracene	50.0		38.8	78	57-136
Fluoranthene	50.0		45.4	91	55-135
Fluorene	50.0		44.2	88	66-121
Indeno(1,2,3-cd) pyrene	50.0		37.9	76	57-140
Naphthalene	50.0		33.9	68	55-113
Phenanthrene	50.0		42.4	85	65-126
Pyrene	50.0		45.2	90	40-149

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

379 120

FORM 3
WATER BNA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P05031

SDG No.: 9808-720

Matrix Spike - Sample No.: P05031BD

COMPOUND	SPIKE ADDED (ug/L)	BD CONCENTRATION (ug/L)	BD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Acenaphthene	50.0	44.3	89	9	20	37-123
Acenaphthylene	50.0	48.2	96	5	20	67-118
Anthracene	50.0	44.6	89	8	20	68-124
Benzo(b)fluoranthene	50.0	46.2	92	2	20	68-127
Benzo(a)Anthracene	50.0	49.3	99	8	20	69-125
Benzo(k)fluoranthene	50.0	54.0	108	17	20	73-128
Benzo(g,h,i)perylene	50.0	38.9	78	1	20	53-138
Benzo(a)pyrene	50.0	49.8	100	8	20	73-125
Chrysene	50.0	41.7	83	9	20	70-124
Dibenzo(a,h)anthracene	50.0	41.1	82	5	20	57-136
Fluoranthene	50.0	48.4	97	6	20	55-135
Fluorene	50.0	47.4	95	8	20	66-121
Indeno(1,2,3-cd)pyrene	50.0	40.1	80	5	20	57-140
Naphthalene	50.0	37.0	74	8	20	55-113
Phenanthrene	50.0	46.4	93	9	20	65-126
Pyrene	50.0	47.8	96	6	20	40-149

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

RPD: 0 out of 16 outside limits
 Spike Recovery: 0 out of 32 outside limits

COMMENTS:

Environmental Testing & Consulting, Inc.

**Calibration Reports
Initial/Verification
GC/MS Semi-Volatiles**

000033

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Lab File ID: 0101001

DFTPP Injection Date: 08/26/98

Instrument ID: BNA2

DFTPP Injection Time: 0934

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	42.5
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	62.6
70	Less than 2.0% of mass 69	0.4 (0.7)1
127	40.0 - 60.0% of mass 198	51.2
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.5
275	10.0 - 30.0% of mass 198	18.0
365	Greater than 1.0% of mass 198	1.79
441	Present, but less than mass 443	7.7
442	Greater than 40.0% of mass 198	52.2
443	17.0 - 23.0% of mass 442	10.1 (19.3)2

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	DCS BNA 50		0201002	08/26/98	0949
02	P05031LB		0301003	08/26/98	1020
03	P05031BS		0401004	08/26/98	1051
04	P05031BD		0501005	08/26/98	1122
05	9808-720-5		0901009	08/26/98	1327
06					
07					
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21					
22					

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

379 123

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Lab File ID: 0101001

DFTPP Injection Date: 08/26/98

Instrument ID: BNA2

DFTPP Injection Time: 1647

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	47.4
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	65.5
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	53.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.1
275	10.0 - 30.0% of mass 198	17.7
365	Greater than 1.0% of mass 198	1.71
441	Present, but less than mass 443	6.1
442	Greater than 40.0% of mass 198	41.4
443	17.0 - 23.0% of mass 442	7.5 (18.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	DCS BNA 50		0201002	08/26/98	1702
02	P04024LB		0301003	08/26/98	1734
03	P04024BS		0401004	08/26/98	1805
04	9808-720-1		0901009	08/26/98	2041
05	9808-720-2		1001010	08/26/98	2112
06	9808-720-3		1101011	08/26/98	2144
07	9808-720-4		1201012	08/26/98	2215
08	9808-720-4M		1301013	08/26/98	2246
09	9808-720-4S		1401014	08/26/98	2317
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

379 124

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Lab File ID: 0101001

DFTPP Injection Date: 08/27/98

Instrument ID: BNA2

DFTPP Injection Time: 0836

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	47.6
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	68.2
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	57.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 30.0% of mass 198	19.2
365	Greater than 1.0% of mass 198	1.59
441	Present, but less than mass 443	6.9
442	Greater than 40.0% of mass 198	46.5
443	17.0 - 23.0% of mass 442	10.7 (23.0)2

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	DCS BNA 50		0201002	08/27/98	0851
02	PO4024LB		0401004	08/27/98	0953
03	9808-720-1		0601006	08/27/98	1055
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
BNA-GCMS INITIAL CALIBRATION DATA

379 125

Lab Name: ETC, INC. Contract:
Lab Code: Case No.: SAS No.: SDG No.: 9808-720
Instrument ID: BNA2 Calibration Date(s): 08/18/98 08/18/98
Column: DB-5MS ID: 0.25 (mm) Calibration Time(s): 0609 1019
LAB FILE ID: RF2: 0301002 RF5: 0401003 RF10: 0501004
RF20: 0601005 RF50: 0201002

COMPOUND	RF2	RF5	RF10	RF20	RF50
Acenaphthene	0.971	0.929	0.888	0.963	0.828
Acenaphthylene	1.776	1.761	1.646	1.734	1.381
Anthracene	0.917	0.956	0.925	0.983	0.820
Benzo(b)fluoranthene	1.122	1.256	1.200	1.424	1.135
Benzo(a)Anthracene	1.237	1.308	1.176	1.274	1.059
Benzo(k)fluoranthene	1.269	1.441	1.219	1.312	1.066
Aniline	2.247	2.249	2.327	2.534	2.142
Benzo(g,h,i)perylene	0.560	0.686	0.581	0.621	0.648
Benzo(a)pyrene	1.014	1.083	1.007	1.081	0.890
Benzoic Acid					0.098
Benzyl Alcohol	0.825	0.838	0.888	0.976	0.835
bis(2-Chloroethyl)ether	1.586	1.547	1.517	1.455	1.303
Bis(2-chloroethoxy)methane	0.465	0.449	0.424	0.400	0.384
N-Nitrosodimethylamine		0.874	1.036	1.098	0.993
bis(2-Chloroisopropyl)ether	2.127	1.924	1.896	1.981	1.750
bis(2-ethylhexyl)Phthalate	1.115	1.208	1.143	1.253	1.147
4-Bromophenyl-phenylether	0.201	0.215	0.199	0.194	0.173
Butylbenzylphthalate	0.851	0.948	0.875	0.957	0.889
4-Chloroaniline	0.432	0.416	0.420	0.464	0.407
4-Chloro-3-Methylphenol	0.294	0.305	0.281	0.316	0.277
2-Chloronaphthalene	1.033	1.044	1.011	1.067	0.814
2-Chlorophenol	1.473	1.459	1.466	1.530	1.299
4-Chlorophenyl-phenylether	0.534	0.575	0.523	0.550	0.474
Chrysene	1.125	1.126	1.025	1.114	0.924
Dibenzo(a,h)anthracene	0.557	0.629	0.535	0.591	0.605
Dibenzofuran	1.481	1.474	1.436	1.532	1.209
Di-n-Butylphthalate	1.293	1.463	1.388	1.490	1.249
1,2-Dichlorobenzene	1.382	1.337	1.363	1.538	1.281
1,3-Dichlorobenzene	1.598	1.463	1.451	1.626	1.302
1,4-Dichlorobenzene	1.477	1.400	1.448	1.594	1.329
3,3'-Dichlorobenzidine	0.271	0.304	0.301	0.337	0.260
2,4-Dichlorophenol	0.268	0.267	0.272	0.288	0.247
2,6-Dichlorophenol	0.896	0.911	0.969	1.026	0.862
Diethylphthalate	1.249	1.344	1.302	1.346	1.109
2,4-Dimethyphenol	0.455	0.419	0.402	0.418	0.356
Dimethylphthalate	1.285	1.314	1.279	1.333	1.076
4,6-Dinitro-2-methylphenol		0.122	0.131	0.156	0.147

FORM VI BNA-GCMS

000037

379 126

FORM 6
BNA-GCMS INITIAL CALIBRATION DATA

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Instrument ID: BNA2

Calibration Date(s): 08/18/98 08/18/98

Column: DB-5MS

ID: 0.25 (mm)

Calibration Time(s): 0609

1019

LAB FILE ID:

RF2: 0301002

RF5: 0401003

RF10: 0501004

RF20: 0601005

RF50: 0201002

COMPOUND	RF2	RF5	RF10	RF20	RF50
2,4-Dinitrophenol		0.083	0.110	0.154	0.155
2,4-Dinitrotoluene	0.270	0.326	0.323	0.372	0.308
2,6-Dinitrotoluene	0.302	0.315	0.294	0.329	0.259
Di-n-octylphthalate	1.302	1.609	1.492	1.584	1.355
Fluoranthene	0.929	1.017	0.951	1.028	0.823
Fluorene	1.113	1.118	1.059	1.142	0.936
Hexachlorobenzene	0.225	0.221	0.215	0.212	0.173
Hexachlorobutadiene	0.206	0.183	0.178	0.198	0.154
Hexachlorocyclopentadiene	0.259	0.309	0.319	0.357	0.289
Hexachloroethane	0.730	0.662	0.683	0.752	0.606
Indeno(1,2,3-cd)pyrene	0.556	0.650	0.583	0.615	0.642
Isophorone	0.831	0.817	0.793	0.847	0.706
2-Methylnaphthalene	0.696	0.652	0.620	0.665	0.566
2-Methylphenol	1.268	1.244	1.280	1.225	1.122
3&4-Methylphenol	0.863	0.739	0.738	0.822	0.733
Naphthalene	0.935	0.940	0.895	0.967	0.888
Nitrobenzene	0.500	0.464	0.435	0.483	0.375
2-Nitroaniline	0.367	0.364	0.365	0.396	0.333
3-Nitroaniline		0.253	0.271	0.309	0.272
4-Nitroaniline	0.116	0.185	0.206	0.250	0.225
2-Nitrophenol	0.216	0.217	0.215	0.226	0.204
4-Nitrophenol	0.560	0.566	0.551	0.578	0.460
Diphenylamine/n-NDPA	1.276	1.157	1.120	1.191	1.038
N-Nitrosodipropylamine	0.328	0.304	0.310	0.307	0.258
Pentachlorophenol		0.106	0.116	0.140	0.120
Phenanthrene	0.899	0.945	0.904	0.975	0.832
Phenol	2.348	2.199	2.035	2.260	2.062
Pyrene	0.949	1.065	0.996	1.039	0.813
1,2,4-Trichlorobenzene	1.112	1.047	1.080	1.179	0.948
2,4,5-Trichlorophenol	0.396	0.394	0.379	0.408	0.339
2,4,6-Trichlorophenol	0.381	0.394	0.365	0.388	0.340
Pyridine		1.358	1.524	1.592	1.421
Carbazole	1.211	1.237	1.321	1.561	1.255
Benzidine				0.378	0.364
Acetophenone	1.922	1.896	1.883	2.038	1.631
1,2-Diphenylhydrazine/Azoben	1.373	1.192	1.129	1.148	0.897

FORM VI BNA-GCMS

000038

FORM 6
BNA-GCMS INITIAL CALIBRATION DATA

379 127

Lab Name: ETC, INC. Contract: .
Lab Code: Case No.: SAS No.: SDG No.: 9808-720
Instrument ID: BNA2 Calibration Date(s): 08/18/98 08/18/98
Column: DB-5MS ID: 0.25 (mm) Calibration Time(s): 0609 1019
LAB FILE ID: RF2: 0301002 RF5: 0401003 RF10: 0501004
RF20: 0601005 RF50: 0201002

COMPOUND	RF2	RF5	RF10	RF20	RF50
2-Fluorophenol	1.432	1.352	1.547	1.633	1.364
Phenol-d6	2.021	1.874	1.902	2.043	1.709
Nitrobenzene-d5	0.513	0.475	0.480	0.510	0.420
2-Fluorobiphenyl	1.409	1.364	1.296	1.349	1.079
2,4,6-Tribromophenol		0.065	0.067	0.076	0.061
Terphenyl-d14	0.534	0.636	0.613	0.669	0.516

FORM VI BNA-GCMS

000039

379 128

FORM 6
BNA-GCMS INITIAL CALIBRATION DATA

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Instrument ID: BNA2

Calibration Date(s): 08/18/98 08/18/98

Column: DB-5MS

ID: 0.25 (mm)

Calibration Time(s): 0609

1019

LAB FILE ID:

RF80: 0701006

RF100: 0801007

RF120: 0901008

RF160: 1001009

COMPOUND	RF80	RF100	RF120	RF160
Acenaphthene	0.886	0.870	0.942	0.825
Acenaphthylene	1.508	1.504	1.572	1.448
Anthracene	0.931	0.919	0.975	0.758
Benzo(b)fluoranthene	1.259	1.162	1.300	
Benzo(a)Anthracene	1.176	1.120	1.218	1.011
Benzo(k)fluoranthene	1.148	1.075	1.136	0.945
Aniline	2.264	2.159	2.079	
Benzo(g,h,i)perylene	0.649	0.642	0.715	
Benzo(a)pyrene	0.982	0.954	1.043	0.838
Benzoic Acid	0.117	0.128	0.130	0.127
Benzyl Alcohol	0.878	0.848	0.852	
bis(2-Chloroethyl) ether	1.245	1.354	1.300	1.117
Bis(2-chloroethoxy) methane	0.363	0.363		
N-Nitrosodimethylamine	0.814	0.776	0.762	
bis(2-Chloroisopropyl) ether	1.754	1.742	1.602	
bis(2-ethylhexyl) Phthalate	1.237	1.219	1.207	1.060
4-Bromophenyl-phenylether	0.185	0.191	0.189	0.164
Butylbenzylphthalate	0.963	0.945	0.949	0.869
4-Chloroaniline	0.428	0.401	0.390	
4-Chloro-3-Methylphenol	0.279	0.245	0.288	0.248
2-Chloronaphthalene	0.890	0.845	0.840	
2-Chlorophenol	1.350	1.326	1.279	1.225
4-Chlorophenyl-phenylether	0.500	0.501	0.477	0.450
Chrysene	1.046	0.978	1.064	0.856
Dibenzo(a,h)anthracene	0.654	0.658	0.746	0.638
Dibenzofuran	1.358	1.318	1.378	
Di-n-Butylphthalate	1.271	1.289	1.231	1.028
1,2-Dichlorobenzene	1.404	1.319	1.305	
1,3-Dichlorobenzene	1.456	1.360	1.332	
1,4-Dichlorobenzene	1.433	1.344	1.350	1.247
3,3'-Dichlorobenzidine	0.265	0.263	0.276	
2,4-Dichlorophenol	0.248	0.247	0.251	0.232
2,6-Dichlorophenol	0.932	0.908	0.893	0.870
Diethylphthalate	1.167	1.179	1.119	1.041
2,4-Dimethylphenol	0.345	0.331	0.334	0.302
Dimethylphthalate	1.110	1.126	1.083	
4,6-Dinitro-2-methylphenol	0.151	0.152	0.151	

FORM VI BNA-GCMS

000040

FORM 6
BNA-GCMS INITIAL CALIBRATION DATA

379 129

Lab Name: ETC, INC. Contract:
Lab Code: Case No.: SAS No.: SDG No.: 9808-720
Instrument ID: BNA2 Calibration Date(s): 08/18/98 08/18/98
Column: DB-5MS ID: 0.25 (mm) Calibration Time(s): 0609 1019
LAB FILE ID: RF80: 0701006 RF100: 0801007 RF120: 0901008
RF160: 1001009

COMPOUND	RF80	RF100	RF120	RF160
2,4-Dinitrophenol	0.184	0.184	0.183	
2,4-Dinitrotoluene	0.341	0.329	0.332	
2,6-Dinitrotoluene	0.289	0.288	0.290	
Di-n-octylphthalate	1.369	1.400	1.404	
Fluoranthene	0.829	0.789	0.783	
Fluorene	1.026	0.993	1.030	0.945
Hexachlorobenzene	0.188	0.183	0.187	
Hexachlorobutadiene	0.162	0.155	0.154	0.133
Hexachlorocyclopentadiene	0.316	0.299	0.297	
Hexachloroethane	0.621	0.566	0.540	
Indeno(1,2,3-cd)pyrene	0.705	0.708	0.782	
Isophorone	0.719	0.706		
2-Methylnaphthalene	0.610	0.584	0.647	
2-Methylphenol	1.164	1.159	1.014	1.089
3&4-Methylphenol	0.632	0.675	0.665	0.533
Naphthalene	0.927	0.910	0.964	0.797
Nitrobenzene	0.383	0.373	0.363	
2-Nitroaniline	0.352	0.338	0.351	
3-Nitroaniline	0.279	0.264	0.270	
4-Nitroaniline	0.238	0.218	0.249	
2-Nitrophenol	0.189	0.206	0.213	0.195
4-Nitrophenol	0.512	0.488	0.504	
Diphenylamine/n-NDPA	1.150	1.148	1.240	
N-Nitrosodipropylamine	0.250	0.234	0.238	
Pentachlorophenol	0.129	0.127	0.127	0.115
Phenanthrene	0.909	0.878	0.925	0.768
Phenol	2.033	1.965	1.880	1.511
Pyrene	0.810	0.769	0.756	
1,2,4-Trichlorobenzene	1.041	0.971	0.944	
2,4,5-Trichlorophenol	0.351	0.360	0.371	0.309
2,4,6-Trichlorophenol	0.345	0.342	0.341	0.324
Pyridine	1.439	1.299	1.358	1.275
Carbazole	1.331	1.262	1.195	1.030
Benzidine	0.432	0.410	0.388	
Acetophenone	1.786	1.709	1.707	
1,2-Diphenylhydrazine/Azoben	1.145	1.114	1.100	

FORM VI BNA-GCMS

000041

379 130

FORM 6
BNA-GCMS INITIAL CALIBRATION DATA

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Instrument ID: BNA2

Calibration Date(s): 08/18/98 08/18/98

Column: DB-5MS

ID: 0.25 (mm)

Calibration Time(s): 0609 1019

LAB FILE ID:
RF160: 1001009

RF80: 0701006

RF100: 0801007

RF120: 0901008

COMPOUND	RF80	RF100	RF120	RF160
2-Fluorophenol	1.384	1.336	1.296	1.088
Phenol-d6	1.754	1.650	1.579	1.408
Nitrobenzene-d5	0.386	0.425	0.413	
2-Fluorobiphenyl	1.037	1.168	1.113	
2,4,6-Tribromophenol	0.069	0.068	0.067	0.057
Terphenyl-d14	0.472	0.504	0.454	

FORM VI BNA-GCMS

000042

FORM 6
BNA-GCMS INITIAL CALIBRATION DATA

379 131

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Instrument ID: BNA2

Calibration Date(s): 08/18/98 08/18/98

Column: DB-5MS ID: 0.25 (mm)

Calibration Time(s): 0609 1019

COMPOUND	CURVE	COEFFICIENTS		%RSD OR R^2
		A0	A1	
Acenaphthene	AVRG		0.90022407	6.0
Acenaphthylene	AVRG		1.59231943	9.0
Anthracene	AVRG		0.90936396	8.1
Benzo(b)fluoranthene	AVRG		1.23233067	8.1
Benzo(a)Anthracene	AVRG		1.17558992	8.3
Benzo(k)fluoranthene	AVRG		1.17929158	12.6
Aniline	AVRG		2.25010129	6.2
Benzo(g,h,i)perylene	AVRG		0.63794169	8.0
Benzo(a)pyrene	AVRG		0.98811920	8.4
Benzoic Acid	AVRG		0.12038575	11.0
Benzyl Alcohol	AVRG		0.86745420	5.6
bis(2-Chloroethyl)ether	AVRG		1.38046197	11.3
Bis(2-chloroethoxy)methane	AVRG		0.40692804	10.0
N-Nitrosodimethylamine	AVRG		0.90752836	14.8
bis(2-Chloroisopropyl)ether	AVRG		1.84715159	9.0
bis(2-ethylhexyl)Phthalate	AVRG		1.17656245	5.4
4-Bromophenyl-phenylether	AVRG		0.19015001	8.0
Butylbenzylphthalate	AVRG		0.91620420	4.8
4-Chloroaniline	AVRG		0.41979351	5.4
4-Chloro-3-Methylphenol	AVRG		0.28145117	8.3
2-Chloronaphthalene	AVRG		0.94305648	11.2
2-Chlorophenol	AVRG		1.37871990	7.6
4-Chlorophenyl-phenylether	AVRG		0.50946562	7.8
Chrysene	AVRG		1.02863619	9.1
Dibenzo(a,h)anthracene	AVRG		0.62375331	10.0
Dibenzofuran	AVRG		1.39825246	7.5
Di-n-Butylphthalate	AVRG		1.30040563	10.6
1,2-Dichlorobenzene	AVRG		1.36627677	5.9
1,3-Dichlorobenzene	AVRG		1.44847152	8.1
1,4-Dichlorobenzene	AVRG		1.40250300	7.2
3,3'-Dichlorobenzidine	LINR	0.00000000	3.70442611	0.997
2,4-Dichlorophenol	AVRG		0.25779749	6.6
2,6-Dichlorophenol	AVRG		0.91864257	5.6
Diethylphthalate	AVRG		1.20618847	9.1
2,4-Dimethyphenol	AVRG		0.37352010	13.8
Dimethylphthalate	AVRG		1.20077007	9.3
4,6-Dinitro-2-methylphenol	AVRG		0.14435431	8.7

FORM VI BNA-GCMS

000043

379 132

FORM 6
BNA-GCMS INITIAL CALIBRATION DATA

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Instrument ID: BNA2

Calibration Date(s): 08/18/98 08/18/98

Column: DB-5MS

ID: 0.25 (mm)

Calibration Time(s): 0609

1019

COMPOUND	CURVE	COEFFICIENTS		%RSD OR R^2
		A0	A1	
2,4-Dinitrophenol	LINR	0.11190798	5.24754716	0.997
2,4-Dinitrotoluene	AVRG		0.32507514	8.9
2,6-Dinitrotoluene	AVRG		0.29561549	7.0
Di-n-octylphthalate	AVRG		1.43935831	7.7
Fluoranthene	AVRG		0.89382894	11.2
Fluorene	AVRG		1.04024624	7.2
Hexachlorobenzene	AVRG		0.20049714	9.9
Hexachlorobutadiene	AVRG		0.16920383	13.9
Hexachlorocyclopentadiene	AVRG		0.30582339	9.2
Hexachloroethane	AVRG		0.64502213	11.7
Indeno(1,2,3-cd)pyrene	AVRG		0.65506780	11.3
Isophorone	AVRG		0.77420833	8.0
2-Methylnaphthalene	AVRG		0.63023965	6.8
2-Methylphenol	AVRG		1.17383718	7.6
3&4-Methylphenol	AVRG		0.71118570	14.0
Naphthalene	AVRG		0.91377517	5.6
Nitrobenzene	AVRG		0.42208128	13.0
2-Nitroaniline	AVRG		0.35842479	5.5
3-Nitroaniline	AVRG		0.27409623	6.3
4-Nitroaniline	LINR	0.03874910	4.15596919	0.993
2-Nitrophenol	AVRG		0.20903508	5.6
4-Nitrophenol	AVRG		0.52753467	8.0
Diphenylamine/n-NDPA	AVRG		1.16501115	6.2
N-Nitrosodipropylamine	AVRG		0.27881446	13.3
Pentachlorophenol	AVRG		0.12254017	8.6
Phenanthrene	AVRG		0.89290161	6.9
Phenol	AVRG		2.03274683	12.0
Pyrene	AVRG		0.89968533	14.0
1,2,4-Trichlorobenzene	AVRG		1.04027624	8.0
2,4,5-Trichlorophenol	AVRG		0.36742421	8.5
2,4,6-Trichlorophenol	AVRG		0.35790582	6.9
Pyridine	AVRG		1.40825600	7.7
Carbazole	AVRG		1.26692620	11.1
Benzidine	AVRG		0.39447960	6.8
Acetophenone	AVRG		1.82164791	7.5
1,2-Diphenylhydrazine/Azoben	LINR	0.02197152	0.89849146	0.994

FORM VI BNA-GCMS

000044

FORM 6
BNA-GCMS INITIAL CALIBRATION DATA

379 133

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Instrument ID: BNA2

Calibration Date(s): 08/18/98 08/18/98

Column: DB-5MS

ID: 0.25 (mm)

Calibration Time(s): 0609

1019

COMPOUND	CURVE	COEFFICIENTS		%RSD OR R^2
		A0	A1	
2-Fluorophenol	AVRG		1.38149481	11.2
Phenol-d6	AVRG		1.77105585	11.8
Nitrobenzene-d5	AVRG		0.45277177	10.6
2-Fluorobiphenyl	AVRG		1.22701573	11.8
2,4,6-Tribromophenol	AVRG		0.06612924	8.7
Terphenyl-d14	AVRG		0.54966695	14.5

FORM VI BNA-GCMS

000045

379 134

FORM 7
BNA-GCMS CONTINUING CALIBRATION CHECK

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Instrument ID: BNA2

Calibration Date: 08/26/98

Time: 0949

Lab File ID: 0201002

Init. Calib. Date(s): 08/18/98 08/18/98

Init. Calib. Times: 0609

1019

GC Column: DB-5MS ID: 0.25 (mm)

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Acenaphthene	0.900	0.818		9.1	20.0
Acenaphthylene	1.592	1.417		11.0	30.0
Anthracene	0.909	0.846		6.9	30.0
Benzo(b)fluoranthene	1.232	1.137		7.7	30.0
Benzo(a)Anthracene	1.175	1.043		11.2	30.0
Benzo(k)fluoranthene	1.179	1.177		0.2	30.0
Benzo(g,h,i)perylene	0.638	0.563		11.8	30.0
Benzo(a)pyrene	0.988	0.905		8.4	20.0
Chrysene	1.029	0.908		11.8	30.0
Dibenzo(a,h)anthracene	0.624	0.568		9.0	30.0
Fluoranthene	0.894	0.772		13.6	20.0
Fluorene	1.040	0.943		9.3	30.0
Indeno(1,2,3-cd)pyrene	0.655	0.712		8.7	30.0
2-Methylnaphthalene	0.630	0.574		8.9	30.0
Naphthalene	0.914	0.889		2.7	30.0
Phenanthrene	0.893	0.816		8.6	30.0
Pyrene	0.900	0.766		14.9	30.0
2-Fluorophenol	1.381	1.374		0.5	20.0
Phenol-d6	1.771	1.692		4.5	20.0
Nitrobenzene-d5	0.453	0.418		7.7	20.0
2-Fluorobiphenyl	1.227	1.090		11.2	20.0
2,4,6-Tribromophenol	0.066	0.061		7.6	20.0
Terphenyl-d14	0.550	0.487		11.4	20.0

FORM VII BNA-GCMS

000046

FORM 7
BNA-GCMS CONTINUING CALIBRATION CHECK

379 135

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Instrument ID: BNA2

Calibration Date: 08/26/98 Time: 1702

Lab File ID: 0201002

Init. Calib. Date(s): 08/18/98 08/18/98

Init. Calib. Times: 0609 1019

GC Column: DB-5MS ID: 0.25 (mm)

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Acenaphthene	0.900	0.823		8.6	20.0
Acenaphthylene	1.592	1.415		11.1	30.0
Anthracene	0.909	0.862		5.2	30.0
Benzo(b)fluoranthene	1.232	1.115		9.5	30.0
Benzo(a)Anthracene	1.175	1.032		12.2	30.0
Benzo(k)fluoranthene	1.179	1.176		0.2	30.0
Benzo(g,h,i)perylene	0.638	0.554		13.2	30.0
Benzo(a)pyrene	0.988	0.892		9.7	20.0
Chrysene	1.029	0.905		12.0	30.0
Dibenzo(a,h)anthracene	0.624	0.571		8.5	30.0
Fluoranthene	0.894	0.775		13.3	20.0
Fluorene	1.040	0.961		7.6	30.0
Indeno(1,2,3-cd)pyrene	0.655	0.725		10.7	30.0
2-Methylnaphthalene	0.630	0.560		11.1	30.0
Naphthalene	0.914	0.856		6.3	30.0
Phenanthrene	0.893	0.832		6.8	30.0
Pyrene	0.900	0.764		15.1	30.0
2-Fluorophenol	1.381	1.369		0.9	20.0
Phenol-d6	1.771	1.652		6.7	20.0
Nitrobenzene-d5	0.453	0.420		7.3	20.0
2-Fluorobiphenyl	1.227	1.057		13.8	20.0
2,4,6-Tribromophenol	0.066	0.067		1.5	20.0
Terphenyl-d14	0.550	0.488		11.3	20.0

FORM VII BNA-GCMS

000047

379 136

FORM 7
BNA-GCMS CONTINUING CALIBRATION CHECK

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Instrument ID: BNA2

Calibration Date: 08/27/98 Time: 0851

Lab File ID: 0201002

Init. Calib. Date(s): 08/18/98 08/18/98

Init. Calib. Times: 0609 1019

GC Column: DB-5MS ID: 0.25 (mm)

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Acenaphthene	0.900	0.798		11.3	20.0
Acenaphthylene	1.592	1.433		10.0	30.0
Anthracene	0.909	0.860		5.4	30.0
Benzo(b) fluoranthene	1.232	1.105		10.3	30.0
Benzo(a) Anthracene	1.175	1.000		14.9	30.0
Benzo(k) fluoranthene	1.179	1.224		3.8	30.0
Benzo(g,h,i) perylene	0.638	0.612		4.1	30.0
Benzo(a) pyrene	0.988	0.942		4.6	20.0
Chrysene	1.029	0.913		11.3	30.0
Dibenzo(a,h) anthracene	0.624	0.601		3.7	30.0
Fluoranthene	0.894	0.779		12.9	20.0
Fluorene	1.040	0.966		7.1	30.0
Indeno(1,2,3-cd) pyrene	0.655	0.730		11.4	30.0
2-Methylnaphthalene	0.630	0.542		14.0	30.0
Naphthalene	0.914	0.880		3.7	30.0
Phenanthrene	0.893	0.831		6.9	30.0
Pyrene	0.900	0.766		14.9	30.0
2-Fluorophenol	1.381	1.391		0.7	20.0
Phenol-d6	1.771	1.691		4.5	20.0
Nitrobenzene-d5	0.453	0.426		6.0	20.0
2-Fluorobiphenyl	1.227	1.106		9.9	20.0
2,4,6-Tribromophenol	0.066	0.064		3.0	20.0
Terphenyl-d14	0.550	0.479		12.9	20.0

FORM VII BNA-GCMS

000048

FORM 8
BNA-GCMS INTERNAL STANDARD AREA AND RT SUMMARY

379 137

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Lab File ID (Standard): 0201002

Date Analyzed: 08/26/98

Instrument ID: BNA2

Time Analyzed: 0949

	IS1(DCB)	RT	IS2(NPT)	RT	IS3(ANT)	RT
	AREA #	#	AREA #	#	AREA #	#
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	423978	4.53	1521265	5.55	823342	7.70
UPPER LIMIT	847956	5.03	3042530	6.05	1646684	8.20
LOWER LIMIT	211989	4.03	760632	5.05	411671	7.20
=====	=====	=====	=====	=====	=====	=====
CLIENT						
SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 P05031LB	433426	4.53	1612169	5.55	798252	7.69
02 P05031BS	419435	4.53	1534122	5.55	735215	7.69
03 P05031BD	418673	4.53	1508620	5.55	744418	7.69
04 9808-720-5	425949	4.53	1579520	5.55	835766	7.69
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22						

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

379 138

FORM 8
BNA-GCMS INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Lab File ID (Standard): 0201002

Date Analyzed: 08/26/98

Instrument ID: BNA2

Time Analyzed: 0949

	IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	1126771	10.23	520285	15.33	233581	17.90
UPPER LIMIT	2253542	10.73	1040570	15.83	467162	18.40
LOWER LIMIT	563386	9.73	260142	14.83	116790	17.40
=====	=====	=====	=====	=====	=====	=====
CLIENT SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 P05031LB	1045475	10.22	623676	15.32	495067*	17.91
02 P05031BS	1024140	10.22	557422	15.32	307887	17.91
03 P05031BD	1049682	10.22	565308	15.33	295880	17.91
04 9808-720-5	1141590	10.21	691166	15.32	501852*	17.91
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22						

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = + 0.50 minutes of internal standard RT

RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.

* Values outside of QC limits.

000050

FORM 8
BNA-GCMS INTERNAL STANDARD AREA AND RT SUMMARY

379 139

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Lab File ID (Standard): 0201002

Date Analyzed: 08/26/98

Instrument ID: BNA2

Time Analyzed: 1702

	IS1(DCB)	RT	IS2(NPT)	RT	IS3(ANT)	RT
	AREA #	#	AREA #	#	AREA #	#
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	404967	4.53	1436932	5.54	791070	7.69
UPPER LIMIT	809934	5.03	2873864	6.04	1582140	8.19
LOWER LIMIT	202484	4.03	718466	5.04	395535	7.19
=====	=====	=====	=====	=====	=====	=====
CLIENT						
SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 P04024LB	397481	4.52	1472561	5.53	778029	7.68
02 P04024BS	382048	4.52	1355033	5.53	692785	7.68
03 9808-720-1	389026	4.52	1385934	5.53	707696	7.68
04 9808-720-2	423444	4.52	1505300	5.53	761841	7.68
05 9808-720-3	430382	4.52	1551210	5.53	794351	7.68
06 9808-720-4	416967	4.52	1525379	5.54	802364	7.68
07 9808-720-4M	428951	4.52	1565039	5.54	807909	7.68
08 9808-720-4S	412210	4.52	1540457	5.54	785697	7.68
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IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

379 140

FORM 8
BNA-GCMS INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Lab File ID (Standard): 0201002

Date Analyzed: 08/26/98

Instrument ID: BNA2

Time Analyzed: 1702

	IS4 (PHN) AREA #	RT #	IS5 (CRY) AREA #	RT #	IS6 (PRY) AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	1109083	10.22	468247	15.31	187193	17.89
UPPER LIMIT	2218166	10.72	936494	15.81	374386	18.39
LOWER LIMIT	554542	9.72	234124	14.81	93596	17.39
=====	=====	=====	=====	=====	=====	=====
CLIENT SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 P04024LB	1066756	10.20	687944	15.30	456009*	17.89
02 P04024BS	979070	10.21	492338	15.31	234715	17.89
03 9808-720-1	900658	10.20	472892	15.30	251800	17.89
04 9808-720-2	1006785	10.20	442223	15.30	224309	17.89
05 9808-720-3	1032201	10.20	432158	15.30	224103	17.89
06 9808-720-4	1054933	10.20	328897	15.30	162459	17.89
07 9808-720-4M	1100801	10.21	267556	15.30	130702	17.89
08 9808-720-4S	1089773	10.21	263204	15.30	139383	17.89
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IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = + 0.50 minutes of internal standard RT

RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.

* Values outside of QC limits.

000052

FORM 8
BNA-GCMS INTERNAL STANDARD AREA AND RT SUMMARY

379 141

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Lab File ID (Standard): 0201002

Date Analyzed: 08/27/98

Instrument ID: BNA2

Time Analyzed: 0851

	IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	462077	4.52	1612300	5.54	831630	7.69
UPPER LIMIT	924154	5.02	3224600	6.04	1663260	8.19
LOWER LIMIT	231038	4.02	806150	5.04	415815	7.19
=====	=====	=====	=====	=====	=====	=====
CLIENT SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 PO4024LB	413107	4.51	1507516	5.53	803107	7.68
02 9808-720-1	391304	4.52	1415559	5.53	742186	7.68
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22						

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM 8
BNA-GCMS INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-720

Lab File ID (Standard): 0201002

Date Analyzed: 08/27/98

Instrument ID: BNA2

Time Analyzed: 0851

	IS4(PHN)		IS5(CRY)		IS6(PRY)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	1198655	10.21	504016	15.30	208200	17.88
UPPER LIMIT	2397310	10.71	1008032	15.80	416400	18.38
LOWER LIMIT	599328	9.71	252008	14.80	104100	17.38
=====	=====	=====	=====	=====	=====	=====
CLIENT						
SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 PO4024LB	1157641	10.19	783280	15.29	484938*	17.89
02 9808-720-1	1090258	10.20	582714	15.29	304982	17.88
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22						

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = + 0.50 minutes of internal standard RT

RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.

* Values outside of QC limits.

**COMPOSITE CONFIRMATION SAMPLES COLLECTED
FOLLOWING EXCAVATION OF AREA A & AREA B**

Date Collected 08/31/98

RA-A-009 (Composite of Grids A2, A3, A13 & A14)

RA-A-010 (Composite of Grids A5, A15, A16 & A17)

RA-A-011 (Duplicate of RA-A-009)

RA-B-012 (Composite of Grids B5 & B6)

RA-A-EQ-004-CS (Equip. Blank)



379 144

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334

Founded 1972

September 2, 1998

Ms. Elena Rodriguez
OHM Remediation Services
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Ref: Analytical Testing
ETC Order # 9808978
Project Description DDMT

Project # 20560 Defense Depot - Memphis, TN

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Nathan A. Pera, IV'.

Nathan A. Pera, IV
Chief Executive Officer

rt
Attachment

OHM_DDMT

SOUTHERN REGION

379 145

Chemical Analytical Data
Review/Evaluation/Validation

Report Type: ☐ Preliminary ☒ Final Date Received: _____ Project Number: 20560

Project Name: DDMT Analysis/Method: TCL Pest/PCB, PAHS, TAL

Laboratory: ETC Lab Project/Case Number: 9808978 ^{metals}

Sample Number(s): RA-A-009,010,-011,-012 B-012, RA-A-EQ-004-CS.

Evaluated By: S. Paranjape Date Evaluated: 2/1/99

Data Package Deliverables Requirement: ☐ OHM Minimum ☒ OHM Standard ☐ OHM Maximum

☐ Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs			☒	
Comment:				
Holding Times			☒	
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X		☒	
Comment:				
Surrogate Recoveries	X		☒	
Comment: <u>Below or Above limits for PAHS, results ND. Data OK</u>				
Lab Control Sample Recoveries	X		☒	
Comment:				
Lab Control Sample Duplicate or Other Spike Recoveries	X		☒	
Comment:				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X		☒	
Comment:				
Matrix Spike Recoveries	X		☒	
Comment:				
Matrix Spike Duplicate Recoveries	X		☒	
Comment:				
Matrix Spike / Matrix Spike Duplicate RPD	X		☒	
Comment:				
Laboratory Blanks (daily, method, instrument)	X		☒	
Comment:				
Field Blanks (trip, eqpt rinsate, ambient, matrix)	X		☒	
Comment:				

Quality Control Deliverables		Required	Received	Passed	Failed
Field Duplicates RPD		X			
Comment:	N/A				
Second Source Check					
Comment:					
Second Column Confirmation		✓		✓	
Comment:					
Percent Moisture/Solids		✓		✓	
Comment:					
Initial / Continuing Calibrations		✓		✓	
Comment:	cont cal. out for BINA non target compounds. Data ok cont cal. out for run after analysis. Data ok.				
Internal Standard Areas and Retention Times (Organics Only)		✓		✓	
Comment:	Areas low for Perylene-12, results flagged J!				
Chromatograms		✓		✓	
Comment:					
Sample Prep Worksheets		✓		✓	
Comment:					
Raw Data Calculations					
Comment:	N/A				
Laboratory Duplicates		✓		✓	
Comment:					
Instrument Performance Checks (Organics Only)		✓		✓	
Comment:					
Tentatively Identified Compounds (TICs)		✓		✓	
Comment:					
Completeness	# Samples	# Analyses	Tot # Analyses	Tot # Accept Analyses	% Complete
Completeness = (Tot # Analyses / Tot # Accepted Analyses) x 100	3	4	20	20	20
General Comments:					

Summary: ☐ See attached pages

Summary: 100% low, data flagged J for pest sample RA-B-012.
Ent. std area low for Perylene 12, results flagged J, RA-A-011
RA-B-012

Check Applicable:

- ☐ Lab contacted—Corrective actions in process Date Contacted: _____
☐ Corrective actions received and accepted Date Received/Accepted: _____
☐ The data, as reported by the laboratory, are acceptable.
☒ The data, with qualifiers as described in the "Summary" portion of this report, are acceptable.
☐ The data are unacceptable.
☐ Other _____

S. Paranjape
Evaluator's Signature

2/1/99
Date

Environmental Testing & Consulting, Inc.
Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

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ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

Client Name **OHM Remediation Services**
 Site ID **DDMT**
Memphis, TN

ETC				
<u>Sample ID</u>	<u>Field ID</u>	<u>Matrix</u>	<u>Method</u>	<u>Method Description</u>
980897801	RA-A-009	SOIL	6010B	Silver
980897801	RA-A-009	SOIL	6010B	Aluminum
980897801	RA-A-009	SOIL	7060A	Arsenic
980897801	RA-A-009	SOIL	8270C	GC/MS PAH
980897801	RA-A-009	SOIL	6010B	Barium
980897801	RA-A-009	SOIL	6010B	Beryllium
980897801	RA-A-009	SOIL	6010B	Calcium
980897801	RA-A-009	SOIL	6010B	Cadmium
980897801	RA-A-009	SOIL	9010A	Cyanide
980897801	RA-A-009	SOIL	6010B	Cobalt
980897801	RA-A-009	SOIL	6010B	Chromium
980897801	RA-A-009	SOIL	6010B	Copper
980897801	RA-A-009	SOIL	6010B	Iron
980897801	RA-A-009	SOIL	7471A	Mercury
980897801	RA-A-009	SOIL	6010B	Potassium
980897801	RA-A-009	SOIL	6010B	Magnesium
980897801	RA-A-009	SOIL	6010B	Manganese
980897801	RA-A-009	SOIL	6010B	Sodium
980897801	RA-A-009	SOIL	6010B	Nickel
980897801	RA-A-009	SOIL	8081A	Organochlorine Pesticides
980897801	RA-A-009	SOIL	7421	Lead
980897801	RA-A-009	SOIL	8082	PCBs
980897801	RA-A-009	SOIL	6010B	Antimony
980897801	RA-A-009	SOIL	7740	Selenium
980897801	RA-A-009	SOIL	7841	Thallium
980897801	RA-A-009	SOIL	6010B	Vanadium
980897801	RA-A-009	SOIL	6010B	Zinc
980897802	RA-A-010	SOIL	6010B	Silver
980897802	RA-A-010	SOIL	6010B	Aluminum
980897802	RA-A-010	SOIL	7060A	Arsenic
980897802	RA-A-010	SOIL	8270C	GC/MS PAH
980897802	RA-A-010	SOIL	6010B	Barium
980897802	RA-A-010	SOIL	6010B	Beryllium
980897802	RA-A-010	SOIL	6010B	Calcium
980897802	RA-A-010	SOIL	6010B	Cadmium
980897802	RA-A-010	SOIL	9010A	Cyanide
980897802	RA-A-010	SOIL	6010B	Cobalt
980897802	RA-A-010	SOIL	6010B	Chromium
980897802	RA-A-010	SOIL	6010B	Copper
980897802	RA-A-010	SOIL	6010B	Iron
980897802	RA-A-010	SOIL	7471A	Mercury
980897802	RA-A-010	SOIL	6010B	Potassium
980897802	RA-A-010	SOIL	6010B	Magnesium
980897802	RA-A-010	SOIL	6010B	Manganese
980897802	RA-A-010	SOIL	6010B	Sodium
980897802	RA-A-010	SOIL	6010B	Nickel
980897802	RA-A-010	SOIL	8081A	Organochlorine Pesticides
980897802	RA-A-010	SOIL	7421	Lead
980897802	RA-A-010	SOIL	8082	PCBs
980897802	RA-A-010	SOIL	6010B	Antimony
980897802	RA-A-010	SOIL	7740	Selenium
980897802	RA-A-010	SOIL	7841	Thallium
980897802	RA-A-010	SOIL	6010B	Vanadium
980897802	RA-A-010	SOIL	6010B	Zinc
980897803	RA-A-011	SOIL	6010B	Silver

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

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Client Name **OHM Remediation Services**
Site ID **DDMT**
Memphis, TN

ETC

<u>Sample ID</u>	<u>Field ID</u>	<u>Matrix</u>	<u>Method</u>	<u>Method Description</u>
980897803	RA-A-011	SOIL	6010B	Aluminum
980897803	RA-A-011	SOIL	7060A	Arsenic
980897803	RA-A-011	SOIL	8270C	GC/MS PAH
980897803	RA-A-011	SOIL	6010B	Barium
980897803	RA-A-011	SOIL	6010B	Beryllium
980897803	RA-A-011	SOIL	6010B	Calcium
980897803	RA-A-011	SOIL	6010B	Cadmium
980897803	RA-A-011	SOIL	9010A	Cyanide
980897803	RA-A-011	SOIL	6010B	Cobalt
980897803	RA-A-011	SOIL	6010B	Chromium
980897803	RA-A-011	SOIL	6010B	Copper
980897803	RA-A-011	SOIL	6010B	Iron
980897803	RA-A-011	SOIL	7471A	Mercury
980897803	RA-A-011	SOIL	6010B	Potassium
980897803	RA-A-011	SOIL	6010B	Magnesium
980897803	RA-A-011	SOIL	6010B	Manganese
980897803	RA-A-011	SOIL	6010B	Sodium
980897803	RA-A-011	SOIL	6010B	Nickel
980897803	RA-A-011	SOIL	8081A	Organochlorine Pesticides
980897803	RA-A-011	SOIL	7421	Lead
980897803	RA-A-011	SOIL	8082	PCBs
980897803	RA-A-011	SOIL	6010B	Antimony
980897803	RA-A-011	SOIL	7740	Selenium
980897803	RA-A-011	SOIL	7841	Thallium
980897803	RA-A-011	SOIL	6010B	Vanadium
980897803	RA-A-011	SOIL	6010B	Zinc
980897804	RA-B-012	SOIL	6010B	Silver
980897804	RA-B-012	SOIL	6010B	Aluminum
980897804	RA-B-012	SOIL	7060A	Arsenic
980897804	RA-B-012	SOIL	8270C	GC/MS PAH
980897804	RA-B-012	SOIL	6010B	Barium
980897804	RA-B-012	SOIL	6010B	Beryllium
980897804	RA-B-012	SOIL	6010B	Calcium
980897804	RA-B-012	SOIL	6010B	Cadmium
980897804	RA-B-012	SOIL	9010A	Cyanide
980897804	RA-B-012	SOIL	6010B	Cobalt
980897804	RA-B-012	SOIL	6010B	Chromium
980897804	RA-B-012	SOIL	6010B	Copper
980897804	RA-B-012	SOIL	6010B	Iron
980897804	RA-B-012	SOIL	7471A	Mercury
980897804	RA-B-012	SOIL	6010B	Potassium
980897804	RA-B-012	SOIL	6010B	Magnesium
980897804	RA-B-012	SOIL	6010B	Manganese
980897804	RA-B-012	SOIL	6010B	Sodium
980897804	RA-B-012	SOIL	6010B	Nickel
980897804	RA-B-012	SOIL	8081A	Organochlorine Pesticides
980897804	RA-B-012	SOIL	7421	Lead
980897804	RA-B-012	SOIL	8082	PCBs
980897804	RA-B-012	SOIL	6010B	Antimony
980897804	RA-B-012	SOIL	7740	Selenium
980897804	RA-B-012	SOIL	7841	Thallium
980897804	RA-B-012	SOIL	6010B	Vanadium
980897804	RA-B-012	SOIL	6010B	Zinc
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Silver
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Aluminum
980897805	RA-A-EQ-004-CS	AQUEOUS	7060A	Arsenic

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ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

Client Name **OHM Remediation Services**
 Site ID **DDMT**
Memphis, TN

ETC

<u>Sample ID</u>	<u>Field ID</u>	<u>Matrix</u>	<u>Method</u>	<u>Method Description</u>
980897805	RA-A-EQ-004-CS	AQUEOUS	8270C	GC/MS PAH
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Barium
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Beryllium
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Calcium
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Cadmium
980897805	RA-A-EQ-004-CS	AQUEOUS	9010A	Cyanide
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Cobalt
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Chromium
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Copper
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Iron
980897805	RA-A-EQ-004-CS	AQUEOUS	7470A	Mercury
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Potassium
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Magnesium
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Manganese
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Sodium
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Nickel
980897805	RA-A-EQ-004-CS	AQUEOUS	8081A	Organochlorine Pesticides
980897805	RA-A-EQ-004-CS	AQUEOUS	7421	Lead
980897805	RA-A-EQ-004-CS	AQUEOUS	8082	PCBs
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Antimony
980897805	RA-A-EQ-004-CS	AQUEOUS	7740	Selenium
980897805	RA-A-EQ-004-CS	AQUEOUS	7841	Thallium
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Vanadium
980897805	RA-A-EQ-004-CS	AQUEOUS	6010B	Zinc

Environmental Testing & Consulting, Inc.

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Login
Chain-of-Custody

000005



OHM Remediation Services Corp
Subsidiary of OHM Corporation
U.S. Route 234 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

LABORATORY COPY

218018

FORM 0019 REV 97

OHM's LAB COORDINATOR		LAB COORDINATOR'S PHONE		LAB COORDINATOR'S FAX		LABORATORY SERVICE ID		LABORATORY CONTACT		MAIL REPORT (COMPANY NAME)	
Elena Rodriguez		770-734-8060		770-453-7716		ETC		Nathan Pera		OHM Remediation Services Corp	
PROJECT NAME		PROJECT LOCATION		PROJECT NUMBER		LABORATORY PHONE		LABORATORY FAX		RECIPIENT NAME	
DDMT		Memphis, TN		20560		901-327-2750		901-327-6334		Elena Rodriguez	
PROJECT CONTACT		PROJECT PHONE NUMBER		PROJECT FAX		LABORATORY ADDRESS		ADDRESS			
Steve Offner		901-743-1117		901-743-1048		2924 Walnut Grove Road		5445 Triangle Pkwy, #400			
PROJECT ADDRESS		CITY STATE AND ZIP CODE		CLIENT		CITY STATE AND ZIP CODE		CITY STATE AND ZIP CODE			
1708 Dunn Ave.		Memphis, TN 38114		USACE		Memphis TN 38111		Memphis, CA 30092			
PROJECT MANAGER		PROJECT MANAGER'S PHONE		PROJECT MANAGER'S FAX							
Steve Offner		770-326-2571		770-453-7716							
Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T	Analyses	Comments	
1	RA-A-009		3-31-98	0930	4x802	3x20	OHM III	3day	✓	✓	✓
2	RA-A-010		3-31-98	1015	4x802	3x20	OHM III	3day	✓	✓	✓
3	RA-A-011		3-31-98	1030	4x802	3x20	OHM III	3day	✓	✓	✓
4	RA-B-012		3-31-98	1330	4x802	3x20	OHM III	3day	✓	✓	✓
5	RA-A-EQ-001-CS		3-31-98	0930	6x14	OHM III	3day	✓	✓	✓	✓
6											
7											
8											
9											
10											
SAMPLES COLLECTED BY: <i>Steve Offner</i> COPIES: <i>Delivered to PC 5/24/98</i>											
REINQUISHED BY: <i>REAR</i> RECEIVED BY: <i>REAR</i> DATE: <i>3/31/98</i> TIME: <i>1405</i>											
COOLER TEMPERATURE UPON RECEIPT: <i>24°C</i>											
SAMPLE'S CONDITION UPON RECEIPT: <i>OK</i>											
Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager											

COOLER RECEIPT FORM

Cooler Receipt Form
9808978.CRF p. 1

LIMS #: 9808978 Number of Coolers: 1
Date Received: 8/31/98
VDTSR: 8/31/98,1500
PROJECT: DDMT-Memphis, TN

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS

A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 8/31/98
by (print): Rebekah Barger (sign): REBARGER

1. Did cooler come with a shipping slip (airbill, etc.)? NO
If YES, enter carrier name & airbill number:

2a. Were custody seals on outside of cooler? NO

2b. Were custody seals on sample containers? NO

3. Were custody seals unbroken and intact at the date and time of arrival? NA

4. Did you screen samples for radioactivity using a Geiger Counter? NO

5. Were custody papers sealed in a plastic bag & taped inside to the lid? NO

6. Were custody papers filled out properly (ink, signed, etc.)? YES

7. Did you sign custody papers in the appropriate place? YES

8. Was project identifiable from custody papers? If YES, enter project name at top of this form. YES

9. If required, was enough ice used? cooler temp: <4°C, Type of ice: Loose Cubes YES

10. Have designated person initial here to acknowledge receipt of cooler: RB date: 8/31/98

B. LOG-IN PHASE: Date samples were logged-in: 8/31/98
by (print): Rebekah Barger (sign): REBARGER

11. Describe type of packing in cooler: Bubble Wrap, Loose Ice Cubes

12. Were all bottles sealed in separate plastic bags? YES

13. Did all bottles arrive unbroken and were labels in good condition? YES

14. Were all bottle labels complete (ID, date, time, signature, preserved, etc.)? YES

15. Did all bottle labels agree with custody papers? YES

16. Were correct containers used for the tests indicated? YES

17. Were correct preservatives added to samples? YES

18. Was a sufficient amount of sample sent for tests indicated? YES

19. Were bubbles absent in VOA samples? If NO, list by sample#: NA

20. Was the project manager called and status discussed? If YES, give details on the back of this form. NO

21. Who was called? NA By whom? NA (date) NA

VDTSR - Validated Date/Time of Sample Receipt (Date sample is logged into LIMS system)

000007

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Environmental Testing & Consulting, Inc.

Sample Reports

000008

ENVIRONMENTAL TESTING & CONSULTING, INC.

Memphis, TN

INORGANIC ANALYSIS DATA SHEET

PERCENT SOLIDS

379 155

Client Name :OHM Remediation Services
Project Name :DDMT

Date Sample Received :08/31/98
Contract Laboratory Order Number :9808-978

<u>Contract Lab</u> <u>Sample No</u>	<u>Field</u> <u>ID</u>	<u>Date</u> <u>Sampled</u>	<u>Result</u> <u>Units : (%)</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u>	<u>By</u>
9808-978-01	RA-A-009	08/31/98	97	09/01/98	160.3	MC
9808-978-02	RA-A-010	08/31/98	95	09/01/98	160.3	MC
9808-978-03	RA-A-011	08/31/98	97	09/01/98	160.3	MC
9808-978-04	RA-B-012	08/31/98	92	09/01/98	160.3	MC


LABORATORY MANAGER

000009

379 156

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

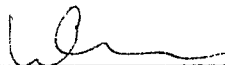
Site ID DDMT
Memphis, TN

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID 9808978-01
Sample ID: RA-A-009

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/Kg	1.00	09/02/98	9010A	CY090298


LABORATORY MANAGER

000010

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

379 157

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID DDMT
Memphis, TN

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID 9808978-02
Sample ID: RA-A-010

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/Kg	1.00	09/02/98	9010A	CY090298


LABORATORY MANAGER

000011

379 158

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID DDMT
Memphis, TN

Date Arrived 08/31/98
ETC Order Number 9808978

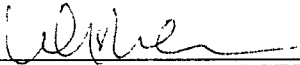
ETC Lab ID 9808978-03

Sample ID: RA-A-011

Matrix :SOIL

Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/Kg	1.00	09/02/98	9010A	CY090298


LABORATORY MANAGER

000012

379 159
ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # **20560**

Site ID **DDMT**
Memphis, TN

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID **9808978-04**
Sample ID: RA-B-012

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/Kg	1.00	09/02/98	9010A	CY090298


LABORATORY MANAGER

000013

379 160

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400

Project # 20560

Site ID Norcross, GA 30092
DDMT
Memphis, TN

Date Arrived 08/31/98

ETC Order Number 9808978

ETC Lab ID 9808978-05

Sample ID: RA-A-EQ-004-CS

Matrix :AQUEOUS

Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/L	0.010	09/02/98	9010A	CY090298


LABORATORY MANAGER

000014

379 161

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID 9808978-01
Sample ID: RA-A-009

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V8-SO-06				NR	3051
Mercury Digestion Batch	V4-SO-30				RM	7471A
Silver	ND	mg/Kg	0.700	13:31	09/02/98	NR 6010B
Aluminum	10,100	mg/Kg	4.00	15:05	09/02/98	TD 6010B
Arsenic	9.48	mg/Kg	0.200	17:43	09/01/98	JF 7060A
Barium	130	mg/Kg	0.200	13:31	09/02/98	TD 6010B
Beryllium	0.494	mg/Kg	0.100	13:31	09/02/98	TD 6010B
Calcium	2,860	mg/Kg	1.00	13:31	09/02/98	TD 6010B
Cadmium	ND	mg/Kg	0.400	13:31	09/02/98	TD 6010B
Cobalt	7.76	mg/Kg	0.700	13:31	09/02/98	TD 6010B
Chromium	17.1	mg/Kg	0.700	13:31	09/02/98	TD 6010B
Copper	17.0	mg/Kg	0.600	13:31	09/02/98	TD 6010B
Iron	19,600	mg/Kg	0.700	15:05	09/02/98	TD 6010B
Mercury	0.038	mg/Kg	0.020	13:28	09/02/98	RM 7471A
Potassium	806	mg/Kg	20.0	13:31	09/02/98	TD 6010B
Magnesium	2,300	mg/Kg	3.00	13:31	09/02/98	TD 6010B
Manganese	574	mg/Kg	0.200	13:31	09/02/98	TD 6010B
Sodium	89.1	mg/Kg	20.0	13:31	09/02/98	TD 6010B
Nickel	18.0	mg/Kg	1.50	13:31	09/02/98	TD 6010B
Lead	32.8	mg/Kg	0.100	11:32	09/02/98	JF 7421
Antimony	ND	mg/Kg	3.20	13:31	09/02/98	TD 6010B
Selenium	ND	mg/Kg	0.200	10:58	09/03/98	RM 7740
Thallium	0.187	mg/Kg	0.100	11:39	09/03/98	JF 7841
Vanadium	21.6	mg/Kg	0.800	13:31	09/02/98	TD 6010B
Zinc	64.9	mg/Kg	1.00	13:31	09/02/98	TD 6010B


LABORATORY MANAGER

000015

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ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560

Date Arrived 08/31/98
 ETC Order Number 9808978

ETC Lab ID **9808978-02**
Sample ID: RA-A-010

Matrix :SOIL
 Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V8-SO-06				NR	3051
Mercury Digestion Batch	V4-SO-30				RM	7471A
Silver	ND	mg/Kg	0.700	13:38	09/02/98	NR 6010B
Aluminum	9,520	mg/Kg	4.00	13:38	09/02/98	TD 6010B
Arsenic	11.5	mg/Kg	0.200	17:49	09/01/98	JF 7060A
Barium	166	mg/Kg	0.200	13:38	09/02/98	TD 6010B
Beryllium	0.557	mg/Kg	0.100	13:38	09/02/98	TD 6010B
Calcium	1,860	mg/Kg	1.00	13:38	09/02/98	TD 6010B
Cadmium	ND	mg/Kg	0.400	13:38	09/02/98	TD 6010B
Cobalt	10.6	mg/Kg	0.700	13:38	09/02/98	TD 6010B
Chromium	15.7	mg/Kg	0.700	13:38	09/02/98	TD 6010B
Copper	18.1	mg/Kg	0.600	13:38	09/02/98	TD 6010B
Iron	21,200	mg/Kg	0.700	15:11	09/02/98	TD 6010B
Mercury	0.024	mg/Kg	0.020	13:29	09/02/98	RM 7471A
Potassium	787	mg/Kg	20.0	13:38	09/02/98	TD 6010B
Magnesium	2,390	mg/Kg	3.00	13:38	09/02/98	TD 6010B
Manganese	804	mg/Kg	0.200	13:38	09/02/98	TD 6010B
Sodium	96.2	mg/Kg	20.0	13:38	09/02/98	TD 6010B
Nickel	20.1	mg/Kg	1.50	13:38	09/02/98	TD 6010B
Lead	17.7	mg/Kg	0.100	11:34	09/02/98	JF 7421
Antimony	ND	mg/Kg	3.20	13:38	09/02/98	TD 6010B
Selenium	ND	mg/Kg	0.200	11:05	09/03/98	RM 7740
Thallium	0.233	mg/Kg	0.100	11:50	09/03/98	JF 7841
Vanadium	21.6	mg/Kg	0.800	13:38	09/02/98	TD 6010B
Zinc	63.1	mg/Kg	1.00	13:38	09/02/98	TD 6010B


 LABORATORY MANAGER

000016

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400

Project # 20560

Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Date Arrived 08/31/98

ETC Order Number 9808978

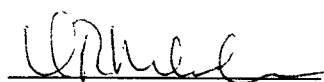
ETC Lab ID 9808978-03

Sample ID: RA-A-011

Matrix :SOIL

Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V8-SO-06				NR	3051
Mercury Digestion Batch	V4-SO-30				RM	7471A
Silver	ND	mg/Kg	0.700	13:44	09/02/98	NR 6010B
Aluminum	9,070	mg/Kg	4.00	13:44	09/02/98	TD 6010B
Arsenic	6.73	mg/Kg	0.200	17:52	09/01/98	JF 7060A
Barium	88.1	mg/Kg	0.200	13:44	09/02/98	TD 6010B
Beryllium	0.454	mg/Kg	0.100	13:44	09/02/98	TD 6010B
Calcium	3,010	mg/Kg	1.00	13:44	09/02/98	TD 6010B
Cadmium	ND	mg/Kg	0.400	13:44	09/02/98	TD 6010B
Cobalt	7.62	mg/Kg	0.700	13:44	09/02/98	TD 6010B
Chromium	15.4	mg/Kg	0.700	13:44	09/02/98	TD 6010B
Copper	14.6	mg/Kg	0.600	13:44	09/02/98	TD 6010B
Iron	17,800	mg/Kg	0.700	15:17	09/02/98	TD 6010B
Mercury	0.020	mg/Kg	0.020	13:30	09/02/98	RM 7471A
Potassium	795	mg/Kg	20.0	13:44	09/02/98	TD 6010B
Magnesium	2,260	mg/Kg	3.00	13:44	09/02/98	TD 6010B
Manganese	544	mg/Kg	0.200	13:44	09/02/98	TD 6010B
Sodium	92.8	mg/Kg	20.0	13:44	09/02/98	TD 6010B
Nickel	17.6	mg/Kg	1.50	13:44	09/02/98	TD 6010B
Lead	8.42	mg/Kg	0.100	11:37	09/02/98	JF 7421
Antimony	ND	mg/Kg	3.20	13:44	09/02/98	TD 6010B
Selenium	ND	mg/Kg	0.200	11:12	09/03/98	RM 7740
Thallium	0.152	mg/Kg	0.100	12:01	09/03/98	JF 7841
Vanadium	23.7	mg/Kg	0.800	13:44	09/02/98	TD 6010B
Zinc	48.0	mg/Kg	1.00	13:44	09/02/98	TD 6010B


 LABORATORY MANAGER

000017

379 164

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID **DDMT**
Memphis, TN

Date Arrived 08/31/98
 ETC Order Number 9808978

ETC Lab ID **9808978-04**
Sample ID: RA-B-012

Matrix :SOIL
 Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V8-SO-06					NR 3051
Mercury Digestion Batch	V4-SO-30					RM 7471A
Silver	ND	mg/Kg	0.700	14:18	09/02/98	NR 6010B
Aluminum	13,100	mg/Kg	4.00	14:38	09/02/98	TD 6010B
Arsenic	10.3	mg/Kg	0.200	17:21	09/01/98	JF 7060A
Barium	125	mg/Kg	0.200	14:18	09/02/98	TD 6010B
Beryllium	0.545	mg/Kg	0.100	14:18	09/02/98	TD 6010B
Calcium	1,740	mg/Kg	1.00	14:18	09/02/98	TD 6010B
Cadmium	ND	mg/Kg	0.400	14:18	09/02/98	TD 6010B
Cobalt	9.55	mg/Kg	0.700	14:18	09/02/98	TD 6010B
Chromium	14.8	mg/Kg	0.700	14:18	09/02/98	TD 6010B
Copper	17.8	mg/Kg	0.600	14:18	09/02/98	TD 6010B
Iron	21,700	mg/Kg	0.700	14:38	09/02/98	TD 6010B
Mercury	0.044	mg/Kg	0.020	13:32	09/02/98	RM 7471A
Potassium	975	mg/Kg	20.0	14:18	09/02/98	TD 6010B
Magnesium	2,430	mg/Kg	3.00	14:18	09/02/98	TD 6010B
Manganese	784	mg/Kg	0.200	14:18	09/02/98	TD 6010B
Sodium	65.5	mg/Kg	20.0	14:18	09/02/98	TD 6010B
Nickel	17.7	mg/Kg	1.50	14:18	09/02/98	TD 6010B
Lead	12.6	mg/Kg	0.100	11:18	09/02/98	JF 7421
Antimony	ND	mg/Kg	3.20	14:18	09/02/98	TD 6010B
Selenium	ND	mg/Kg	0.200	11:19	09/03/98	RM 7740
Thallium	0.269	mg/Kg	0.100	11:29	09/03/98	JF 7841
Vanadium	22.8	mg/Kg	0.800	14:18	09/02/98	TD 6010B
Zinc	67.9	mg/Kg	1.00	14:18	09/02/98	TD 6010B


 LABORATORY MANAGER

000018

379 165

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID DDMT
Memphis, TN

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID 9808978-05
Sample ID: RA-A-EQ-004-CS

Matrix :AQUEOUS
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V11-AQ-54				JB	3015
Mercury Digestion Batch	V4-AQ-35				RM	7470A
Silver	ND	mg/L	0.009	13:11	09/02/98	TD 6010B
Aluminum	ND	mg/L	0.060	13:11	09/02/98	TD 6010B
Arsenic	ND	mg/L	0.003	17:07	09/01/98	JF 7060A
Barium	ND	mg/L	0.003	13:11	09/02/98	TD 6010B
Beryllium	ND	mg/L	0.002	13:11	09/02/98	TD 6010B
Calcium	0.066	mg/L	0.015	13:11	09/02/98	TD 6010B
Cadmium	ND	mg/L	0.005	13:11	09/02/98	TD 6010B
Cobalt	ND	mg/L	0.009	13:11	09/02/98	TD 6010B
Chromium	ND	mg/L	0.009	13:11	09/02/98	TD 6010B
Copper	ND	mg/L	0.008	13:11	09/02/98	TD 6010B
Iron	0.018	mg/L	0.009	13:11	09/02/98	TD 6010B
Mercury	ND	mg/L	0.0002	15:58	09/01/98	RM 7470A
Potassium	ND	mg/L	0.250	13:11	09/02/98	TD 6010B
Magnesium	ND	mg/L	0.040	13:11	09/02/98	TD 6010B
Manganese	ND	mg/L	0.003	13:11	09/02/98	TD 6010B
Sodium	0.152	mg/L	0.050	13:11	09/02/98	TD 6010B
Nickel	ND	mg/L	0.020	13:11	09/02/98	TD 6010B
Lead	ND	mg/L	0.002	11:09	09/02/98	JF 7421
Antimony	ND	mg/L	0.040	13:11	09/02/98	TD 6010B
Selenium	ND	mg/L	0.003	17:07	09/01/98	JF 7740
Thallium	ND	mg/L	0.002	10:28	09/03/98	JF 7841
Vanadium	ND	mg/L	0.010	13:11	09/02/98	TD 6010B
Zinc	ND	mg/L	0.010	13:11	09/02/98	TD 6010B


LABORATORY MANAGER

000019

379 166

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project **20560**

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID **9808978-01**
Sample ID: RA-A-009
QC Batch : P04028

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				09/01/98	09/01/98	CB	8270C 3550B
Acenaphthene	ND	ug/Kg	67				
Acenaphthylene	ND	ug/Kg	67				
Anthracene	ND	ug/Kg	67				
Benzo(a)anthracene	ND	ug/Kg	67				
Benzo(b)fluoranthene	ND	ug/Kg	67				
Benzo(k)fluoranthene	ND	ug/Kg	67				
Benzo(g,h,i)perylene	ND	ug/Kg	67				
Benzo(a)pyrene	ND	ug/Kg	67				
Chrysene	ND	ug/Kg	67				
Dibenzo(a,h)anthracene	ND	ug/Kg	67				
Fluoranthene	ND	ug/Kg	67				
Fluorene	ND	ug/Kg	67				
Indeno(1,2,3-cd)pyrene	ND	ug/Kg	67				
Naphthalene	ND	ug/Kg	67				
Phenanthrene	ND	ug/Kg	67				
Pyrene	ND	ug/Kg	67				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	83 Q		39 80				
S2 - 2-Fluorobiphenyl	80		43 84				
S3 - 4-Terphenyl-d14	77		40 121				

ND - Not Detected


LABORATORY MANAGER

000020

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

379 167
CLIENT SAMPLE NO.

9808-978-1

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: 1201013

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/01/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 57-10-3	HEXADECANOIC ACID	11.49	366	NJ
2. 72-55-9	P,P-DDE	13.19	214	NJ
3. 50-29-3	CHLOROPHENOTHANE	13.86	350	NJ
4. 50-29-3	P,P'-DDT	14.42	1100	NJ
5. 27554-26-3	1,2-BENZENEDICARBOXYLIC ACID	15.60	177	NJ
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FORM I BNA-GCMS-TIC

000021

379 168

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project **20560**

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID **9808978-02**
Sample ID: RA-A-010
QC Batch : P04028

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				09/01/98	09/01/98	CB	8270C 3550B
Acenaphthene	ND	ug/Kg	67				
Acenaphthylene	ND	ug/Kg	67				
Anthracene	ND	ug/Kg	67				
Benzo(a)anthracene	ND	ug/Kg	67				
Benzo(b)fluoranthene	ND	ug/Kg	67				
Benzo(k)fluoranthene	ND	ug/Kg	67				
Benzo(g,h,i)perylene	ND	ug/Kg	67				
Benzo(a)pyrene	ND	ug/Kg	67				
Chrysene	ND	ug/Kg	67				
Dibenzo(a,h)anthracene	ND	ug/Kg	67				
Fluoranthene	ND	ug/Kg	67				
Fluorene	ND	ug/Kg	67				
Indeno(1,2,3-cd)pyrene	ND	ug/Kg	67				
Naphthalene	ND	ug/Kg	67				
Phenanthrene	ND	ug/Kg	67				
Pyrene	ND	ug/Kg	67				

Surrogate Standard	% Recovery	QC Limits
S1 - Nitrobenzene-d5	76	39 80
S2 - 2-Fluorobiphenyl	84	43 84
S3 - 4-Terphenyl-d14	84	40 121

ND - Not Detected


LABORATORY MANAGER

000022

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

379 169
CLIENT SAMPLE NO.

9808-978-2

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.4 (g/mL) G

Lab File ID: 1301014

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/01/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 72-55-9	P,P'-DDE	13.19	164	NJ
2. 50-29-3	P,P'-DDT	14.42	826	NJ
3.				
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FORM I BNA-GCMS-TIC

000023

379 170

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project 20560

Site ID DDMT
 Memphis, TN

Date Arrived 08/31/98
 ETC Order Number 9808978

ETC Lab ID 9808978-03
Sample ID: RA-A-011
QC Batch : P04028

Matrix :SOIL
 Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				09/01/98	09/01/98	CB	8270C 3550B
Acenaphthene	ND	ug/Kg	67				
Acenaphthylene	ND	ug/Kg	67				
Anthracene	ND	ug/Kg	67				
Benzo(a)anthracene	ND	ug/Kg	67				
Benzo(b)fluoranthene	ND	ug/Kg	67 J				
Benzo(k)fluoranthene	ND	ug/Kg	67 J				
Benzo(g,h,i)perylene	ND	ug/Kg	67 J				
Benzo(a)pyrene	ND	ug/Kg	67 J				
Chrysene	ND	ug/Kg	67				
Dibenzo(a,h)anthracene	ND	ug/Kg	67 J				
Fluoranthene	ND	ug/Kg	67				
Fluorene	ND	ug/Kg	67				
Indeno(1,2,3-cd)pyrene	ND	ug/Kg	67 J				
Naphthalene	ND	ug/Kg	67				
Phenanthrene	ND	ug/Kg	67				
Pyrene	ND	ug/Kg	67				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	70		39 80				
S2 - 2-Fluorobiphenyl	65		43 84				
S3 - 4-Terphenyl-d14	61		40 121				

ND - Not Detected


 LABORATORY MANAGER

000024

379 171

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9808-978-3

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.6 (g/mL) G

Lab File ID: 1401015

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/01/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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FORM I BNA-GCMS-TIC

000025

379 172

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
D fense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project **20560**

Date Arrived 08/31/98
 ETC Order Number 9808978

ETC Lab ID **9808978-04**
Sample ID: RA-B-012
QC Batch : P04028

Matrix :SOIL
 Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				09/01/98	09/01/98	CB	8270C 3550B
Acenaphthene	ND	ug/Kg	67				
Acenaphthylene	ND	ug/Kg	67				
Anthracene	ND	ug/Kg	67				
Benzo(a)anthracene	ND	ug/Kg	67				
Benzo(b)fluoranthene	ND	ug/Kg	67				
Benzo(k)fluoranthene	ND	ug/Kg	67				
Benzo(g,h,i)perylene	ND	ug/Kg	67				
Benzo(a)pyrene	ND	ug/Kg	67				
Chrysene	90	ug/Kg	67				
Dibenzo(a,h)anthracene	ND	ug/Kg	67				
Fluoranthene	135	ug/Kg	67				
Fluorene	ND	ug/Kg	67				
Indeno(1,2,3-cd)pyrene	ND	ug/Kg	67				
Naphthalene	ND	ug/Kg	67				
Phenanthrene	55J	ug/Kg	67				
Pyrene	111	ug/Kg	67				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	77		39		80		
S2 - 2-Fluorobiphenyl	72		43		84		
S3 - 4-Terphenyl-d14	71		40		121		

ND - Not Detected


 LABORATORY MANAGER

000026

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

379 173
CLIENT SAMPLE NO.

9808-978-4

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: 1501016

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/01/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

FORM I BNA-GCMS-TIC

000027

379 174

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services** Project **20560**
Defense D pot - Memphis, TN
5445 Triangle Parkway
Suite 400
Site ID **Norcross, GA 30092**
DDMT
Memphis, TN

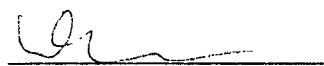
Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID **9808978-05**
Sample ID: RA-A-EQ-004-CS
QC Batch : P05034

Matrix :AQUEOUS
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				09/01/98	09/02/98	CB	8270C 3510C
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
Benzo(g,h,i)perylene	ND	ug/L	2.00				
Benzo(a)pyrene	ND	ug/L	2.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Naphthalene	ND	ug/L	2.00				
Phenanthrene	ND	ug/L	2.00				
Pyrene	ND	ug/L	2.00				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	84		35 85				
S2 - 2-Fluorobiphenyl	82		46 84				
S3 - 4-Terphenyl-d14	87		33 113				

ND - Not Detected


LABORATORY MANAGER

000028

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

379 175
CLIENT SAMPLE NO.

9808-978-5

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 0801008

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/02/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
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19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

FORM I BNA-GCMS-TIC

000029

379 176

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
 FID # DACA45-96-D-0014

Date Arrived 08/31/98
 ETC Order Number 9808978

ETC Lab ID 9808978-01
Sample ID: RA-A-009

Matrix :SOIL
 Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides				09/01/98	09/04/98	RG	8081A
QC Batch	P06014	ug/Kg					
Aldrin	ND	ug/Kg	20.0				
Alpha-BHC	ND	ug/Kg	20.0				
Beta-BHC	ND	ug/Kg	20.0				
Delta-BHC	ND	ug/Kg	20.0				
Gamma-BHC (Lindane)	ND	ug/Kg	20.0				
Alpha-Chlordane	68.5	ug/Kg	20.0				
Gamma-Chlordane	53.5	ug/Kg	20.0				
Chlordane	469	ug/Kg	200				
4,4'-DDD	54.3	ug/Kg	20.0				
4,4'-DDE	268	ug/Kg	20.0				
4,4'-DDT	1,220	ug/Kg	20.0				
Dieldrin	414	ug/Kg	20.0				
Endosulfan I	ND	ug/Kg	20.0				
Endosulfan II	ND	ug/Kg	20.0				
Endosulfan Sulfate	ND	ug/Kg	20.0				
Endrin	ND	ug/Kg	20.0				
Endrin Aldehyde	ND	ug/Kg	20.0				
Endrin Ketone	ND	ug/Kg	20.0				
Heptachlor	ND	ug/Kg	20.0				
Heptachlor Epoxide	ND	ug/Kg	20.0				
Methoxychlor	ND	ug/Kg	20.0				
Toxaphene	ND	ug/Kg	2000				
Surrogate Standard				% Recovery			
S1 - Decachlorobiphenyl	110		64	154			
S2 - Tetrachloro-m-xylene	78		39	130			


 LABORATORY MANAGER

ND - Not Detected

J00030

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 177

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

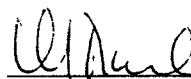
Project # 20560
FID # DACA45-96-D-0014

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID 9808978-02
Sample ID: RA-A-010

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides							8081A
				09/01/98	09/04/98	RG	
QC Batch	P06014	ug/Kg					
Aldrin	ND	ug/Kg	20.0				
Alpha-BHC	ND	ug/Kg	20.0				
Beta-BHC	ND	ug/Kg	20.0				
Delta-BHC	ND	ug/Kg	20.0				
Gamma-BHC (Lindane)	ND	ug/Kg	20.0				
Alpha-Chlordane	84.0	ug/Kg	20.0				
Gamma-Chlordane	63.7	ug/Kg	20.0				
Chlordane	142J	ug/Kg	200				
4,4'-DDD	51.0	ug/Kg	20.0				
4,4'-DDE	176J	ug/Kg	200				
4,4'-DDT	1,040	ug/Kg	20.0				
Dieldrin	299	ug/Kg	20.0				
Endosulfan I	ND	ug/Kg	20.0				
Endosulfan II	ND	ug/Kg	20.0				
Endosulfan Sulfate	ND	ug/Kg	20.0				
Endrin	ND	ug/Kg	20.0				
Endrin Aldehyde	ND	ug/Kg	20.0				
Endrin Ketone	ND	ug/Kg	20.0				
Heptachlor	ND	ug/Kg	20.0				
Heptachlor Epoxide	ND	ug/Kg	20.0				
Methoxychlor	ND	ug/Kg	20.0				
Toxaphene	ND	ug/Kg	2000				
Surrogate Standard							
	% Recovery		QC Limits				
S1 - Decachlorobiphenyl	124		64 154				
S2 - Tetrachloro-m-xylene	78		39 130				


LABORATORY MANAGER

ND - Not Detected

000031

379 178

ENVIRONMENTAL TESTING & CONSULTING, INC.
 2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

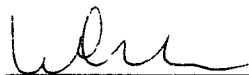
Project # 20560
 FID # DACA45-96-D-0014

Date Arrived 08/31/98
 ETC Order Number 9808978

ETC Lab ID **9808978-03**
Sample ID: RA-A-011

Matrix :SOIL
 Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides				09/01/98	09/04/98	RG	8081A
QC Batch	P06014	ug/Kg					
Aldrin	ND	ug/Kg	20.0				
Alpha-BHC	ND	ug/Kg	20.0				
Beta-BHC	ND	ug/Kg	20.0				
Delta-BHC	ND	ug/Kg	20.0				
Gamma-BHC (Lindane)	ND	ug/Kg	20.0				
Alpha-Chlordane	ND	ug/Kg	20.0				
Gamma-Chlordane	ND	ug/Kg	20.0				
Chlordane	ND	ug/Kg	200				
4,4'-DDD	14.2J	ug/Kg	20.0				
4,4'-DDE	29.0	ug/Kg	20.0				
4,4'-DDT	141J	ug/Kg	200				
Dieldrin	ND	ug/Kg	20.0				
Endosulfan I	ND	ug/Kg	20.0				
Endosulfan II	ND	ug/Kg	20.0				
Endosulfan Sulfate	ND	ug/Kg	20.0				
Endrin	ND	ug/Kg	20.0				
Endrin Aldehyde	ND	ug/Kg	20.0				
Endrin Ketone	ND	ug/Kg	20.0				
Heptachlor	ND	ug/Kg	20.0				
Heptachlor Epoxide	ND	ug/Kg	20.0				
Methoxychlor	ND	ug/Kg	20.0				
Toxaphene	ND	ug/Kg	2000				
Surrogate Standard	% Recovery		QC Limits				
S1 - Decachlorobiphenyl	100		64	154			
S2 - Tetrachloro-m-xylene	71		39	130			


 LABORATORY MANAGER

ND - Not Detected

000032

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 179

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

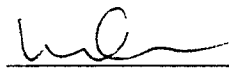
Project # 20560
FID # DACA45-96-D-0014

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID 9808978-04
Sample ID: RA-B-012

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides							
				09/01/98	09/04/98	RG	8081A
QC Batch	P06014	ug/Kg					
Aldrin	ND	ug/Kg	2.00				
Alpha-BHC	ND	ug/Kg	2.00				
Beta-BHC	2.68	ug/Kg	2.00				
Delta-BHC	ND	ug/Kg	2.00				
Gamma-BHC (Lindane)	ND	ug/Kg	2.00				
Alpha-Chlordane	ND	ug/Kg	2.00				
Gamma-Chlordane	ND	ug/Kg	2.00				
Chlordane	ND	ug/Kg	20.0				
4,4'-DDD	ND	ug/Kg	2.00				
4,4'-DDE	ND	ug/Kg	2.00				
4,4'-DDT	ND	ug/Kg	2.00				
Dieldrin	ND	ug/Kg	2.00				
Endosulfan I	ND	ug/Kg	2.00				
Endosulfan II	ND	ug/Kg	2.00				
Endosulfan Sulfate	ND	ug/Kg	2.00				
Endrin	ND	ug/Kg	2.00				
Endrin Aldehyde	ND	ug/Kg	2.00				
Endrin Ketone	ND	ug/Kg	2.00				
Heptachlor	ND	ug/Kg	2.00				
Heptachlor Epoxide	ND	ug/Kg	2.00				
Methoxychlor	ND	ug/Kg	2.00				
Toxaphene	ND	ug/Kg	200				
Surrogate Standard							
		% Recovery	QC Limits				
S1 - Decachlorobiphenyl	59	Q	64	154			
S2 - Tetrachloro-m-xylene	60		39	130			


LABORATORY MANAGER

ND - Not Detected

000033

379 180

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
FID # DACA45-96-D-0014

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID 9808978-05
Sampl ID: RA-A-EQ-004-CS

Matrix :AQUEOUS
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides				09/01/98	09/04/98	RG	8081A
QC Batch	P07014	ug/L					
Aldrin	ND	ug/L	0.040				
Alpha-BHC	ND	ug/L	0.040				
Beta-BHC	ND	ug/L	0.040				
Delta-BHC	ND	ug/L	0.040				
Gamma-BHC (Lindane)	ND	ug/L	0.040				
Alpha-Chlordane	ND	ug/L	0.040				
Gamma-Chlordane	0.071	ug/L	0.040				
Chlordane	ND	ug/L	0.250				
4,4'-DDD	ND	ug/L	0.040				
4,4'-DDE	ND	ug/L	0.040				
4,4'-DDT	ND	ug/L	0.040				
Dieldrin	ND	ug/L	0.040				
Endosulfan I	ND	ug/L	0.040				
Endosulfan II	ND	ug/L	0.040				
Endosulfan Sulfate	ND	ug/L	0.040				
Endrin	ND	ug/L	0.040				
Endrin Aldehyde	ND	ug/L	0.040				
Endrin Ketone	ND	ug/L	0.040				
Heptachlor	ND	ug/L	0.040				
Heptachlor Epoxide	ND	ug/L	0.040				
Methoxychlor	ND	ug/L	0.040				
Toxaphene	ND	ug/L	3.00				
Surrogate Standard		% Recovery	QC Limits				
S1 - Decachlorobiphenyl	35		34	115			
S2 - Tetrachloro-m-xylene	81		31	96			


LABORATORY MANAGER

ND - Not Detected

000034

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 181

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project **20560**

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID **9808978-01**
Sample ID: RA-A-009
QC Batch : P06014

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs				09/01/98	09/03/98	RG	8082 3550B
PCB-1016	ND	ug/Kg	35				
PCB-1221	ND	ug/Kg	35				
PCB-1232	ND	ug/Kg	35				
PCB-1242	ND	ug/Kg	35				
PCB-1248	ND	ug/Kg	35				
PCB-1254	ND	ug/Kg	35				
PCB-1260	ND	ug/Kg	35				
Surrogate Standard							
S1 - Tetrachloro-m-xylene	65		39	130			
S2 - Decachlorobiphenyl	98		64	154			

ND - Not Detected


LABORATORY MANAGER

000035

379 182

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services** Project **20560**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092
Site ID **DDMT**
Memphis, TN

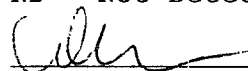
Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID **9808978-02**
Sample ID: RA-A-010
QC Batch : P06014

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs				09/01/98	09/03/98	RG	8082 3550B
PCB-1016	ND	ug/Kg	35				
PCB-1221	ND	ug/Kg	35				
PCB-1232	ND	ug/Kg	35				
PCB-1242	ND	ug/Kg	35				
PCB-1248	ND	ug/Kg	35				
PCB-1254	ND	ug/Kg	35				
PCB-1260	ND	ug/Kg	35				
Surrogate Standard	% Recovery		QC Limits				
S1 - Tetrachloro-m-xylene	59		39	130			
S2 - Decachlorobiphenyl	106		64	154			

ND - Not Detected


LABORATORY MANAGER

000036

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

379 183

Client Name **OHM Remediation Services** Project 20560
 Defense Depot - Memphis, TN
 5445 Triangle Parkway
 Suite 400
 Norcross, GA 30092
Site ID **DDMT**
 Memphis, TN

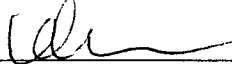
Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID **9808978-03**
Sample ID: RA-A-011
QC Batch : P06014

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs				09/01/98	09/03/98	RG	8082 3550B
PCB-1016	ND	ug/Kg	35				
PCB-1221	ND	ug/Kg	35				
PCB-1232	ND	ug/Kg	35				
PCB-1242	ND	ug/Kg	35				
PCB-1248	ND	ug/Kg	35				
PCB-1254	ND	ug/Kg	35				
PCB-1260	ND	ug/Kg	35				
<u>Surrogate Standard</u>			<u>% Recovery</u>	<u>QC Limits</u>			
S1 - Tetrachloro-m-xylene		56	39	130			
S2 - Decachlorobiphenyl		98	64	154			

ND - Not Detected


LABORATORY MANAGER

000037

379 184

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services** Project **20560**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID **9808978-04**
Sample ID: RA-B-012
QC Batch : P06014

Matrix :SOIL
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs				09/01/98	09/03/98	RG	8082 3550B
PCB-1016	ND	ug/Kg	35				
PCB-1221	ND	ug/Kg	35				
PCB-1232	ND	ug/Kg	35				
PCB-1242	ND	ug/Kg	35				
PCB-1248	ND	ug/Kg	35				
PCB-1254	ND	ug/Kg	35				
PCB-1260	ND	ug/Kg	35				
<u>Surrogate Standard</u>	<u>% Recovery</u>		<u>QC Limits</u>				
S1 - Tetrachloro-m-xylene	75		39				130
S2 - Decachlorobiphenyl	103		64				154

ND - Not Detected


LABORATORY MANAGER

000038

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

379 185

Client Name **OHM Remediation Services** Project **20560**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092
Site ID **DDMT**
Memphis, TN

Date Arrived 08/31/98
ETC Order Number 9808978

ETC Lab ID **9808978-05**
Sample ID: RA-A-EQ-004-CS
QC Batch : P09008

Matrix :AQUEOUS
Sample Date :08/31/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs				09/01/98	09/02/98	RG	8082 3510C
PCB-1016	ND	ug/L	0.50				
PCB-1221	ND	ug/L	0.50				
PCB-1232	ND	ug/L	0.50				
PCB-1242	ND	ug/L	0.50				
PCB-1248	ND	ug/L	0.50				
PCB-1254	ND	ug/L	0.50				
PCB-1260	ND	ug/L	0.50				
Surrogate Standard	% Recovery		QC Limits				
S1 - Tetrachloro-m-xylene	72		31 96				
S2 - Decachlorobiphenyl	51		34 115				

ND - Not Detected


LABORATORY MANAGER

000039

Environmental Testing & Consulting, Inc.

**Quality Control Reports
Inorganics**

000040

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
INORGANICS

379 187

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-978

HOLDING TIMES

Sample Analysis : All samples analyzed within Method Specified
Holding Times.

CALIBRATION

Laboratory Control Sample : All criteria met.

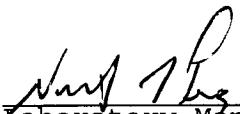
QUALITY CONTROL

Matrix Spike

Spike Recovery : All analytes within QC limits

Method Blank

No Target Analytes detected above Detection Limit.


Laboratory Manager

000041

379 188

Environmental Testing & Consulting, Inc.
Inorganic QC Data Summary

Client Name OHM Remediation Services
Project Defense Depot-Memphis, TN

ETC Order Number 9808-978
File Name 9808-978.QC1

Method Blank

Analyte	Date Analyzed	Blank Concentration mg/Kg	QC Batch
Cyanide	09/02/98	<1.00	CY090298

Calibration Verification (CV)

Analyte	Date Analyzed	CV Conc mg/Kg	CV Conc Found	% Difference
Cyanide	09/02/98	0.200	0.208	4

Laboratory Control Sample (LCS)

Analyte	Date Analyzed	LCS Conc mg/Kg	LCS Conc Found	% Recovery
Cyanide	09/02/98	20.0	19.6	98

Matrix Spike/Matrix Spike Duplicate

Sample ID	Analyte	Spike mg/Kg	Sample mg/Kg	MS Conc Found	MS % Recovery	QC Limits	RPD
9808-978-04MS	Cyanide	19.6	<1.00	17.4	89	70-130	2
9808-978-04MSD	Cyanide	18.2	<1.00	16.6	91	70-130	

000042

Quality Control Reports

Metals (ICP/GFAA/CV)

000043

379 190

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-978

HOLDING TIMES

QC Batch(s) for this order : ICP/GFAA V8-SO-06
Mercury V4-SO-30

Sample Analysis : All samples digested and analyzed within 180
days of collection.
Mercury Analysis : All samples analyzed within 28 days of collection.

CALIBRATION

Initial Calibration : All criteria met.
Continuing Calibration : All criteria met.

SAMPLE ANALYSIS

Instrumentation : Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer

Dilutions Required : No dilutions required.*

*
Dilutions were performed on several samples to bring the Target
Analyte(s) within calibration range. Refer to Table 1.

Due to low recoveries and failing Post Digestion Spike, all Selenium
and Thallium data was reported based on the Method of Standard
Additions.

QUALITY CONTROL

9808-978.MQCBLANK

Method Blank

V8-SO-06BLK - ICP/GFAA Metals
V4-SO-30BLK - Mercury

Calcium identified in V8-SO-06BLK at 2.10 mg/Kg.
Iron identified in V8-SO-06BLK at 2.10 mg/Kg.
Lead identified in V8-SO-06BLK at 0.104 mg/Kg.

9808-978.MQCLCS

Laboratory Control Sample(s)

V8-SO-06LCS - ICP/GFAA Metals
V4-SO-30LCS - Mercury

All criteria met.

000044

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

379 191

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-978

QUALITY CONTROL

9808-978.MQCMSMSD

Matrix Spike / Matrix Spike Dup - ICP Metals

9808-978-04 RPD : All analytes within QC limits.
RA-B-012 Spike Recovery : All analytes within QC limits.*

*
Recoveries for Antimony were flagged as outside QC Limits in the Matrix Spike and Matrix Spike Duplicate. A Post Digestion Spike was performed for verification :

Analyte	mg/L Expected	mg/L Found	% Recovery	QA Evaluation
Antimony	0.500	0.473	95	Pass

Recoveries for multiple analytes were flagged as outside QC Limits due to the level of these analytes present in the sample relative to the spike amounts. In addition, concentrations of other analytes were high relative to the spike amounts. Dilution Tests were performed for verification :

Analyte	No Dilution	1:5 Dilution	1:25 Dilution	% Difference	QA Evaluation
Aluminum	-----	13100 mg/Kg	13200 mg/Kg	1	Pass
Calcium	1740	1770	-----	2	Pass
Iron	-----	21700	21700	0	Pass
Manganese	784	787	-----	0	Pass
Potassium	975	959	-----	2	Pass
Magnesium	2430	2420	-----	0	Pass
Zinc	67.9	67.0	-----	1	Pass

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Graphite Metals

9808-978-04 RPD : All analytes within QC limits.
RA-B-012 Spike Recovery : All analytes within QC limits.*

*
Recovery for Lead was flagged as outside QC Limits due to the level of this analyte present relative to the spike amount. In addition due to the Arsenic present relative to the spike amount, Dilution Tests were performed for both analytes for verification :

Analyte	1:2 Dilution	1:10 Dilution	% Difference	QA Evaluation
Arsenic	10.3 mg/Kg	11.1 mg/Kg	8	Pass

Analyte	1:3 Dilution	1:15 Dilution	% Difference	QA Evaluation
Lead	12.6 mg/Kg	13.3 mg/Kg	6	Pass

000045

379 192

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN

ETC Order # : 9808-978

QUALITY CONTROL

Recoveries for Selenium and Thallium were flagged as outside QC Limits in the Matrix Spike and Matrix Spike Duplicate. The Post Digestion Spike failed evaluation criteria. All data was reported based on MSA.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Hg

9808-978-04 RPD : All analytes within QC limits.

RA-B-012 Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Dilution Test - Dilution result must agree within 10% of original result when sample is diluted by a factor of 5.

Post Digestion Spike - Recovery must be +/-15% of expected value.


Laboratory Manager

000046

Environmental Testing & Consulting, Inc.
Metals Dilution Factor Summary Table
Table 1

Sample ID	Analyte	Dilution Factor	Code
9808-978-01	Aluminum	1:5	C
9808-978-01	Iron	1:5	C
9808-978-01	Lead	1:10	C
9808-978-02	Iron	1:5	C
9808-978-02	Arsenic	1:2	C
9808-978-02	Lead	1:4	C
9808-978-03	Iron	1:5	C
9808-978-03	Lead	1:2	C
9808-978-04	Aluminum	1:5	C
9808-978-04	Iron	1:5	C
9808-978-04	Arsenic	1:2	C
9808-978-04	Lead	1:3	C

C - Dilution to bring analyte within calibration range.

I - Dilution to due to spectral interference from the metal indicated.

000047

379 194

SOLID METHOD BLANK
METALS

Lab Name

Environmental Testing and Consulting, Inc

Laboratory ID ICP/GFAA Metals

V8-SO-06 BLK

QC Batch

V8-SO-06

Laboratory ID Mercury

V4-SO-30 BLK

V4-SO-30

Date Sample Prepared

09/01/98

ICP/GFAA Metals

09/02/98

Mercury

Metals	Concentration mg/Kg	Detection Limit mg/Kg	Date Analyzed	Method
Silver	<0.700	0.700	09/02/98	6010B
Aluminum	<4.00	4.00	09/02/98	6010B
Arsenic	<0.200	0.200	09/01/98	7060A
Barium	<0.200	0.200	09/02/98	6010B
Beryllium	<0.100	0.100	09/02/98	6010B
Calcium	2.10	1.00	09/02/98	6010B
Cadmium	<0.400	0.400	09/02/98	6010B
Cobalt	<0.700	0.700	09/02/98	6010B
Chromium	<0.700	0.700	09/02/98	6010B
Copper	<0.600	0.600	09/02/98	6010B
Iron	2.10	0.700	09/02/98	6010B
Potassium	<20.0	20.0	09/02/98	6010B
Magnesium	<3.00	3.00	09/02/98	6010B
Manganese	<0.200	0.200	09/02/98	6010B
Sodium	<20.0	20.0	09/02/98	6010B
Nickel	<1.50	1.50	09/02/98	6010B
Lead	0.104	0.100	09/02/98	7421
Antimony	<3.20	3.20	09/02/98	6010B
Selenium	<0.200	0.200	09/01/98	7740
Thallium	<0.100	0.100	09/03/98	7841
Vanadium	<0.800	0.800	09/02/98	6010B
Zinc	<1.00	1.00	09/02/98	6010B
Mercury	<0.020	0.020	09/02/98	7471A

Metals Blank

9808-978.MQCBLANK

000048

379 195

SOLID LABORATORY CONTROL SAMPLE
METALS

Lab Name

Environmental Testing and Consulting, Inc

Laboratory Control ID

ICP/GFAA Metals V8-SO-06 LCS
Mercury V4-SO-30 LCS

QC Batch

V8-SO-06
V4-SO-30

Date Prepared

ICP/GFAA Metals 09/01/98
Mercury 09/02/98

Metals	Spike Added mg/Kg	Found mg/Kg	% R	#	QC Limits
Silver	20.0	20.2	101	80	120
Aluminum	200	203	102	80	120
Arsenic	5.00	4.54	91	85	115
Barium	200	199	100	80	120
Beryllium	20.0	20.2	101	80	120
Calcium	400	439	110	80	120
Cadmium	20.0	21.0	105	80	120
Cobalt	100	105	105	80	120
Chromium	40.0	41.9	105	80	120
Copper	40.0	43.0	108	80	120
Iron	200	219	110	80	120
Potassium	400	392	98	80	120
Magnesium	400	416	104	80	120
Manganese	20.0	21.2	106	80	120
Sodium	400	409	102	80	120
Nickel	100	107	107	80	120
Lead	2.00	2.06	103	85	115
Antimony	200	214	107	80	120
Selenium	5.00	4.54	91	85	115
Thallium	2.00	1.83	92	85	115
Vanadium	100	105	105	80	120
Zinc	20.0	22.7	114	80	120
Mercury	0.167	0.161	96	80	120

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

Metals Laboratory Control Sample

9808-978.MQCLCS

000049

SOLID MATRIX SPIKE
METALS

Lab Name Environmental Testing and Consulting, Inc

	QC Batch	
Laboratory ID MS ICP/GFAA Metals	9808-978-04	V8-SO-06
Laboratory ID MS Mercury	9808-978-04	V4-SO-30

Date Sample Prepared	09/01/98	ICP/GFAA Metals
	09/02/98	Mercury

Metals	SPIKE Added mg/Kg	SAMPLE Conc mg/Kg	MS Conc mg/Kg	RPD < 20% #	MS % Rec #	QC Limits	
Silver	20.1	ND	20.0	6	100	75	125
Aluminum	201	13100	16400	9	1642 *	75	125
Arsenic	5.03	10.3	15.5	0	103	70	130
Barium	201	125	329	8	102	75	125
Beryllium	20.1	0.545	20.9	9	101	75	125
Calcium	403	1740	2200	0	114	75	125
Cadmium	20.1	ND	20.3	7	101	75	125
Cobalt	101	9.55	111	6	100	75	125
Chromium	40.3	14.8	57.4	3	106	75	125
Copper	40.3	17.8	58.9	11	102	75	125
Iron	201	21700	23500	3	896 *	75	125
Potassium	403	975	1600	4	155 *	75	125
Magnesium	403	2430	3060	3	156 *	75	125
Manganese	20.1	784	733	4	-254 *	75	125
Sodium	403	65.5	466	12	99	75	125
Nickel	101	17.7	121	6	102	75	125
Lead	2.01	12.6	14.8	14	110	70	130
Antimony	201	ND	ND	0	*	75	125
Selenium	5.03	ND	2.69	15	54 *	70	130
Thallium	2.01	0.177	1.43	8	62 *	70	130
Vanadium	101	22.8	120	5	96	75	125
Zinc	20.1	67.9	88.0	3	100	75	125
Mercury	0.175	0.044	0.211	0	95	75	125

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits ND - Not Detected

Metals Matrix Spike

9808-978.MQCMSMSD

000050

SOLID MATRIX SPIKE DUPLICATE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MS ICP/GFAA Metals	9808-978-04	QC Batch
Laboratory ID MS Mercury	9808-978-04	V8-SO-06
		V4-SO-30

Date Sample Prepared	09/01/98	ICP/GFAA Metals
	09/02/98	Mercury

Metals	SPIKE Added mg/Kg	SAMPLE Conc mg/Kg	MSD Conc mg/Kg		MSD % Rec	QC Limits	
						#	
Silver	21.7	ND	21.2		98	75	125
Aluminum	217	13100	15000		876	*	75 125
Arsenic	5.23	10.3	15.5		99	70	130
Barium	217	125	355		106	75	125
Beryllium	21.7	0.545	22.9		103	75	125
Calcium	435	1740	2210		108	75	125
Cadmium	21.7	ND	21.7		100	75	125
Cobalt	109	9.55	118		100	75	125
Chromium	43.5	14.8	58.9		101	75	125
Copper	43.5	17.3	65.7		111	75	125
Iron	217	21900	22800		415	*	75 125
Potassium	435	975	1530		128	*	75 125
Magnesium	435	2430	2960		122	75	125
Manganese	21.7	784	707		-355	*	75 125
Sodium	435	65.5	527		106	75	125
Nickel	109	17.7	129		102	75	125
Lead	2.09	12.6	17.1		215	*	70 130
Antimony	217	ND	ND			*	75 125
Selenium	5.23	ND	3.14		60	*	70 130
Thallium	2.09	0.177	1.32		55	*	70 130
Vanadium	109	22.8	126		95	75	125
Zinc	21.7	67.9	85.8		83	75	125
Mercury	0.169	0.044	0.202		94	75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits ND - Not Detected

Metals Matrix Spike Duplicate

9808-978.MQCMSMSD

000051

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - AQUEOUS

379 198

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-978

HOLDING TIMES

QC Batch(s) for this order : ICP/GFAA V11-AQ-54
Mercury V4-AQ-35

Sample Analysis : All samples digested and analyzed within 180
days of collection.
Mercury Analysis : All samples analyzed within 28 days of collection.

CALIBRATION

Initial Calibration : All criteria met.
Continuing Calibration : All criteria met.

SAMPLE ANALYSIS

Instrumentation : Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer
Dilutions Required : No dilutions required.

QUALITY CONTROL

9808-978.MQCBLANK

Method Blank

V11-AQ-54BLK - ICP/GFAA Metals
V4-AQ-35BLK - Mercury

No analytes detected in the method Blank.

9808-978.MQCLCS

Laboratory Control Sample(s)

V11-AQ-54LCS - ICP/GFAA Metals
V4-AQ-35LCS - Mercury

All criteria met.

9808-978.MQCMSMSD

Matrix Spike / Matrix Spike Dup - ICP Metals

9808-978-05 RPD : All analytes within QC limits.
RA-A-EQ-004-CS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

000052

379 199

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-978

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Graphite Metals

9808-978-05 RPD : All analytes within QC limits.
RA-A-EQ-004-CS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Hg

9808-953-01 RPD : All analytes within QC limits.
Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Dilution Test - Dilution result must agree within 10% of original
result when sample is diluted by a factor of 5.

Post Digestion Spike - Recovery must be +/-15% of expected value.


Laboratory Manager

000053

379 200

AQUEOUS METHOD BLANK
METALS

Lab Name	Environmental Testing and Consulting, Inc		
Laboratory ID ICP/GFAA Metals	V11-AQ-54 BLK	QC Batch	V11-AQ-54
Laboratory ID Mercury	V4-AQ-35 BLK	V4-AQ-35	
Date Sample Prepared	09/01/98	ICP/GFAA Metals	
	09/01/98	Mercury	

Metals	Concentration mg/L	Detection Limit mg/L	Date Analyzed	Method
Silver	<0.009	0.009	09/02/98	6010B
Aluminum	<0.060	0.060	09/02/98	6010B
Arsenic	<0.003	0.003	09/01/98	7060A
Barium	<0.003	0.003	09/02/98	6010B
Beryllium	<0.002	0.002	09/02/98	6010B
Calcium	<0.015	0.015	09/02/98	6010B
Cadmium	<0.005	0.005	09/02/98	6010B
Cobalt	<0.009	0.009	09/02/98	6010B
Chromium	<0.009	0.009	09/02/98	6010B
Copper	<0.008	0.008	09/02/98	6010B
Iron	<0.009	0.009	09/02/98	6010B
Potassium	<0.250	0.250	09/02/98	6010B
Magnesium	<0.040	0.040	09/02/98	6010B
Manganese	<0.003	0.003	09/02/98	6010B
Sodium	<0.050	0.050	09/02/98	6010B
Nickel	<0.020	0.020	09/02/98	6010B
Lead	<0.002	0.002	09/02/98	7421
Antimony	<0.040	0.040	09/02/98	6010B
Selenium	<0.003	0.003	09/01/98	7740
Thallium	<0.002	0.002	09/03/98	7841
Vanadium	<0.010	0.010	09/02/98	6010B
Zinc	<0.010	0.010	09/02/98	6010B
Mercury	<0.0002	0.0002	09/01/98	7470A

Metals Blank

9808-978.mqcBLANK

000054

379 201

AQUEOUS LABORATORY CONTROL SAMPLE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory Control ID	ICP/GFAA Metals	<u>V11-AQ-54</u>	LCS	QC Batch
	Mercury	<u>V4-AQ-35</u>	LCS	<u>V11-AQ-54</u>
				<u>V4-AQ-35</u>

Date Prepared	ICP/GFAA Metals	<u>09/01/98</u>	
	Mercury	<u>09/01/98</u>	

Metals	Spike Added mg/L	Found mg/L	% R	#	QC Limits
Silver	0.250	0.247	99	80	120
Aluminum	2.50	2.47	99	80	120
Arsenic	0.063	0.056	89	85	115
Barium	2.50	2.44	98	80	120
Beryllium	0.250	0.249	100	80	120
Calcium	5.00	5.25	105	80	120
Cadmium	0.250	0.260	104	80	120
Cobalt	1.25	1.28	102	80	120
Chromium	0.500	0.511	102	80	120
Copper	0.500	0.500	100	80	120
Iron	2.50	2.60	104	80	120
Potassium	5.00	4.68	94	80	120
Magnesium	5.00	5.03	101	80	120
Manganese	0.250	0.259	104	80	120
Sodium	5.00	4.99	100	80	120
Nickel	1.25	1.30	104	80	120
Lead	0.025	0.025	100	85	115
Antimony	2.50	2.59	104	80	120
Selenium	0.063	0.058	92	85	115
Thallium	0.025	0.023	92	85	115
Vanadium	1.25	1.28	102	80	120
Zinc	0.250	0.254	102	80	120
Mercury	0.0050	0.0053	106	80	120

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

Metals Laboratory Control Sample

9808-978.mqcLCS

000055

AQUEOUS MATRIX SPIKE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MS ICP/GFAA Metals	9808-978-05	QC Batch V11-AQ-54
Laboratory ID MS Mercury	9808-953-01	V4-AQ-35

Date Sample Prepared	09/01/98	ICP/GFAA Metals
	09/01/98	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MS Conc mg/L	RPD <20% #	MS % Rec #	QC Limits	
Silver	0.250	ND	0.257	2	103	75	125
Aluminum	2.50	ND	2.58	0	103	75	125
Arsenic	0.063	ND	0.056	4	89	85	115
Barium	2.50	ND	2.58	2	103	75	125
Beryllium	0.250	ND	0.259	1	104	75	125
Calcium	5.00	0.066	5.49	1	109	75	125
Cadmium	0.250	ND	0.265	1	106	75	125
Cobalt	1.25	ND	1.33	2	106	75	125
Chromium	0.500	ND	0.527	2	105	75	125
Copper	0.500	ND	0.529	2	106	75	125
Iron	2.50	0.018	2.71	1	108	75	125
Potassium	5.00	ND	5.19	6	104	75	125
Magnesium	5.00	ND	5.25	2	105	75	125
Manganese	0.250	ND	0.268	1	107	75	125
Sodium	5.00	0.152	5.32	0	103	75	125
Nickel	1.25	ND	1.34	1	107	75	125
Lead	0.025	ND	0.025	4	100	85	115
Antimony	2.50	ND	2.73	4	109	75	125
Selenium	0.063	ND	0.058	2	92	85	115
Thallium	0.025	ND	0.024	0	96	85	115
Vanadium	1.25	ND	1.33	2	106	75	125
Zinc	0.250	ND	0.269	3	108	75	125
Mercury	0.0050	ND	0.0054	0	108	75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

ND - Not Detected

Metals Matrix Spike

9808-978.mqcMSMSD

000056

379 203

AQUEOUS MATRIX SPIKE DUPLICATE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MS ICP/GFAA Metals	9808-978-05	QC Batch V11-AQ-54
Laboratory ID MS Mercury	9808-953-01	V4-AQ-35

Date Sample Prepared	09/01/98	ICP/GFAA Metals
	09/01/98	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MSD Conc mg/L		MSD % Rec #	QC Limits	
Silver	0.250	ND	0.252		101	75	125
Aluminum	2.50	ND	2.58		103	75	125
Arsenic	0.063	ND	0.054		86	85	115
Barium	2.50	ND	2.52		101	75	125
Beryllium	0.250	ND	0.257		103	75	125
Calcium	5.00	0.066	5.43		107	75	125
Cadmium	0.250	ND	0.263		105	75	125
Cobalt	1.25	ND	1.31		105	75	125
Chromium	0.500	ND	0.516		103	75	125
Copper	0.500	ND	0.517		103	75	125
Iron	2.50	0.018	2.68		107	75	125
Potassium	5.00	ND	4.87		97	75	125
Magnesium	5.00	ND	5.17		103	75	125
Manganese	0.250	ND	0.265		106	75	125
Sodium	5.00	0.152	5.34		104	75	125
Nickel	1.25	ND	1.33		106	75	125
Lead	0.025	ND	0.024		96	85	115
Antimony	2.50	ND	2.63		105	75	125
Selenium	0.063	ND	0.057		91	85	115
Thallium	0.025	ND	0.024		96	85	115
Vanadium	1.25	ND	1.31		105	75	125
Zinc	0.250	ND	0.262		105	75	125
Mercury	0.0050	ND	0.0054		108	75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits ND - Not Detected

Metals Matrix Spike Duplicate

9808-978.mqcMSMSD

000057

Environmental Testing & Consulting, Inc.

379 204

Quality Control Reports

GC/MS Semi-Volatiles

000058

379 205

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN

ETC Order # : 9808-978
Method (SW-846) : 8270C/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P04028 P04028LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recovery for Nitrobenzene-d5 was flagged for high recovery in sample 9808-978-01(RA-A-009). Review of extraction information and the raw data showed no obvious matrix interference. This sample was re-analyzed for verification with similar recoveries.

Surrogate recoveries for Nitrobenzene-d5 and 2-Fluorobiphenyl were flagged for high recovery in P04028BS associated with this project. P04028BS was re-analyzed for verification with similar recoveries.

Laboratory Control Sample FORM 3
P04028BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9808-978-04 RPD : All analytes within QC limits.
RA-B-012 Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P04028LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*

*
Benzidine for Calibration Verification 09/02/98 was flagged with a percent difference >30.0%. This analyte was not a Target Analyte associated with this project. The data was not affected.

Terphenyl-d14 (Surrogate) was flagged with a low response indicating that the reported recovery for this analyte may be slightly biased low.

000059

MEMPHIS, TN

CASE NARRATIVE

GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN

ETC Order # : 9808-978
Method (SW-846) : 8270C/3550B

CALIBRATIONSemi-Volatile Internal Standard Area and RT FORM 8

Daily Check Standard(s) Internal Standard Areas and Retention Times
within QC limits.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.



Laboratory Manager

000060

379.207

FORM 2
SOIL BNA-GCMS SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

Level: (low/med) LOW

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	P04028LB	0	0	69	80	0	82			0
02	P04028BS	0	0	85*	102*	0	104			2
03	9808-978-1	0	0	83*	80	0	77			1
04	9808-978-2	0	0	76	84	0	84			0
05	9808-978-3	0	0	70	65	0	61			0
06	9808-978-4	0	0	77	72	0	71			0
07	9808-978-4M	0	0	74	83	0	78			0
08	P04028BS	0	0	86*	103*	0	99			2
09	9808-978-1	0	0	83*	81	0	76			1
10	9808-978-4S	0	0	71	82	0	81			0
11										
12										
13										
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QC LIMITS

S1 (2FP) = 2-Fluorophenol (0- 0)
 S2 (PHL) = Phenol-d6 (0- 0)
 S3 (NBZ) = Nitrobenzene-d5 (39- 80)
 S4 (FBP) = 2-Fluorobiphenyl (43- 84)
 S5 (TBP) = 2,4,6-Tribromophenol (0- 0)
 S6 (TPH) = Terphenyl-d14 (40-121)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

000061

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

379 208

CLIENT SAMPLE NO

P04028LB

Lab Name: ETC, INC.

Lab Prep Batch: P04028

Lab File ID: 1001011

Matrix: (soil/water) SOIL

Level: (low/med) LOW

SDG No.: 9808-978

Instrument ID: BNA2

Date Analyzed: 09/01/98

Time Analyzed: 1740

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P04028BS		1101012	09/01/98
02	9808-978-1		1201013	09/01/98
03	9808-978-2		1301014	09/01/98
04	9808-978-3		1401015	09/01/98
05	9808-978-4		1501016	09/01/98
06	9808-978-4M		1601018	09/01/98
07	P04028BS		1101019	09/01/98
08	9808-978-1		1201020	09/01/98
09	9808-978-4S		0301003	09/02/98
10				
11				
12				
13				
14				
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16				
17				
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COMMENTS:

379 209

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P04028LB

Lab Name: ETC, INC.

SDG No.: 9808-978

Matrix: (soil/water) SOIL

Lab Prep Batch: P04028

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 1001011

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/01/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/KG
			Q
83-32-9-----	Acenaphthene	66.7	U
208-96-8-----	Acenaphthylene	66.7	U
120-12-7-----	Anthracene	66.7	U
56-55-3-----	Benzo(a) Anthracene	66.7	U
205-99-2-----	Benzo(b) fluoranthene	66.7	U
207-08-9-----	Benzo(k) fluoranthene	66.7	U
191-24-2-----	Benzo(g,h,i) perylene	66.7	U
50-32-8-----	Benzo(a) pyrene	66.7	U
218-01-9-----	Chrysene	66.7	U
53-70-3-----	Dibenzo(a,h) anthracene	66.7	U
206-44-0-----	Fluoranthene	66.7	U
86-73-7-----	Fluorene	66.7	U
193-39-5-----	Indeno(1,2,3-cd) pyrene	66.7	U
91-57-6-----	2-Methylnaphthalene	66.7	U
91-20-3-----	Naphthalene	66.7	U
85-01-8-----	Phenanthrene	66.7	U
129-00-0-----	Pyrene	66.7	U

FORM I BNA-GCMS

000063

FORM 3
SOIL BNA-GCMS LABORATORY CONTROL SAMPLE

379 210

Lab Name: ETC, INC.

Lab Prep Batch: P04028

SDG No.: 9808-978

Matrix Spike - Sample No.: P04028BS

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	1670		1520	91	34-126
Acenaphthylene	1670		1720	103	62-123
Anthracene	1670		1520	91	68-124
Benzo(a)Anthracene	1670		1690	101	60-133
Benzo(b)fluoranthene	1670		1790	107	67-126
Benzo(k)fluoranthene	1670		2110	126	75-131
Benzo(g,h,i)perylene	1670		1550	93	53-137
Benzo(a)pyrene	1670		1820	109	68-129
Chrysene	1670		1440	86	67-131
Dibenzo(a,h)anthracene	1670		1500	90	51-138
Fluoranthene	1670		1670	100	71-132
Fluorene	1670		1630	98	65-126
Indeno(1,2,3-cd)pyrene	1670		1230	74	34-170
Naphthalene	1670		1400	84	62-113
Phenanthrene	1670		1600	96	66-128
Pyrene	1670		1660	99	33-155

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 16 outside limits

COMMENTS:

000064

379 211

FORM 3

SOIL BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P04028

SDG No.: 9808-978

Matrix Spike - Sample No.: 9808-978-4

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Acenaphthene	1660	0.00	1250	75	34-126
Acenaphthylene	1660	0.00	1390	84	62-123
Anthracene	1660	0.00	1240	75	68-124
Benzo(a)Anthracene	1660	61.2	1410	81	60-133
Benzo(b)fluoranthene	1660	0.00	1450	87	67-126
Benzo(k)fluoranthene	1660	0.00	1710	103	75-131
Benzo(g,h,i)perylene	1660	0.00	1140	69	53-137
Benzo(a)pyrene	1660	0.00	1440	87	68-129
Chrysene	1660	82.4	1280	72	67-131
Dibenzo(a,h)anthracene	1660	0.00	1120	67	51-138
Fluoranthene	1660	124	1440	79	71-132
Fluorene	1660	0.00	1300	78	65-126
Indeno(1,2,3-cd)pyrene	1660	0.00	959	58	34-170
Naphthalene	1660	0.00	1120	67	62-113
Phenanthrene	1660	51.0	1340	78	66-128
Pyrene	1660	102	1400	78	33-155

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

COMMENTS:

FORM 3
SOIL BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P04028

379 212

SDG No.: 9808-978

Matrix Spike - Sample No.: 9808-978-4

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Acenaphthene	1630	1210	74	1	20	34-126
Acenaphthylene	1630	1360	83	1	20	62-123
Anthracene	1630	1200	74	1	20	68-124
Benzo(a)Anthracene	1630	1420	83	2	20	60-133
Benzo(b)fluoranthene	1630	1490	91	4	20	67-126
Benzo(k)fluoranthene	1630	1850	113	9	20	75-131
Benzo(g,h,i)perylene	1630	1240	76	10	20	53-137
Benzo(a)pyrene	1630	1520	93	7	20	68-129
Chrysene	1630	1220	70	3	20	67-131
Dibenzo(a,h)anthracene	1630	996	61	9	20	51-138
Fluoranthene	1630	1560	88	11	20	71-132
Fluorene	1630	1320	81	4	20	65-126
Indeno(1,2,3-cd)pyrene	1630	919	56	4	20	34-170
Naphthalene	1630	1130	69	3	20	62-113
Phenanthrene	1630	1350	80	2	20	66-128
Pyrene	1630	1470	84	7	20	33-155

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 16 outside limits

Spike Recovery: 0 out of 32 outside limits

COMMENTS:

379 213

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-978
Method (SW-846) : 8270C/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P05034 P05034LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recoveries for Nitrobenzene-d5 were flagged for high
recovery in P05034LB and P05034BD associated with this project.

Surrogate recoveries for 2-Fluorobiphenyl were flagged for high
recovery in P05034BS and P05034BD associated with this project.

Laboratory Control Sample FORM 3
P05034BS/BD

All criteria met.*

*
RPD for Indeno(1,2,3-cd)pyrene was flagged as outside QC
Limits due to higher recovery in the Blank Spike Duplicate. BS/BD
recoveries were within QC Limits.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*
Due to the limited amount of sample available, no MS/MSD were
extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P05034LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*

*
Benzidine for Calibration Verification 09/02/98 was flagged with
a percent difference >30.0%. This analyte was not a Target Analyte
associated with this project. The data was not affected.

000067

ENVIRONMENTAL TESTING AND CONSULTING, INC.

MEMPHIS, TN

CASE NARRATIVE

GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

379 214

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN

ETC Order # : 9808-978
Method (SW-846) : 8270C/3510C

CALIBRATION

Terphenyl-d14 (Surrogate) was flagged with a low response indicating that the reported recovery for this analyte may be slightly biased low.

Semi-Volatile Internal Standard Area and RT FORM 8

Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.



Laboratory Manager

000068

379 215

FORM 2
WATER BNA-GCMS SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	P05034LB	0	0	91*	77	0	71			1
02	P05034BS	0	0	84	90*	0	85			1
03	P05034BD	0	0	91*	97*	0	97			2
04	9808-978-5	0	0	84	82	0	87			0
05										
06										
07										
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30										

QC LIMITS

S1 (2FP) = 2-Fluorophenol (0- 0)
 S2 (PHL) = Phenol-d6 (0- 0)
 S3 (NBZ) = Nitrobenzene-d5 (35- 85)
 S4 (FBP) = 2-Fluorobiphenyl (46- 84)
 S5 (TBP) = 2,4,6-Tribromophenol (0- 0)
 S6 (TPH) = Terphenyl-d14 (33-113)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

000069

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

379 216

CLIENT SAMPLE NO

P05034LB

Lab Name: ETC, INC.

Lab Prep Batch: P05034

Lab File ID: 0701008

Matrix: (soil/water) WATER

Level: (low/med) LOW

SDG No.: 9808-978

Instrument ID: BNA2

Date Analyzed: 09/01/98

Time Analyzed: 1607

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P05034BS		0801009	09/01/98
02	P05034BD		0901010	09/01/98
03	9808-978-5		0801008	09/02/98
04				
05				
06				
07				
08				
09				
10				
11				
12				
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30				

COMMENTS:

379 217 FORM 1 BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05034LB

Lab Name: ETC, INC.

SDG No.: 9808-978

Matrix: (soil/water) WATER

Lab Prep Batch: P05034

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 0701008

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/01/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
83-32-9-----	Acenaphthene	2.0 U	
208-96-8-----	Acenaphthylene	2.0 U	
120-12-7-----	Anthracene	2.0 U	
56-55-3-----	Benzo(a) Anthracene	2.0 U	
205-99-2-----	Benzo(b) fluoranthene	2.0 U	
207-08-9-----	Benzo(k) fluoranthene	2.0 U	
191-24-2-----	Benzo(g,h,i) perylene	2.0 U	
50-32-8-----	Benzo(a) pyrene	2.0 U	
218-01-9-----	Chrysene	2.0 U	
53-70-3-----	Dibenzo(a,h) anthracene	2.0 U	
206-44-0-----	Fluoranthene	2.0 U	
86-73-7-----	Fluorene	2.0 U	
193-39-5-----	Indeno(1,2,3-cd) pyrene	2.0 U	
91-57-6-----	2-Methylnaphthalene	2.0 U	
91-20-3-----	Naphthalene	2.0 U	
85-01-8-----	Phenanthrene	2.0 U	
129-00-0-----	Pyrene	2.0 U	

FORM I BNA-GCMS

000071

FORM 3
WATER BNA-GCMS LABORATORY CONTROL SAMPLE

379 218

Lab Name: ETC, INC.

Lab Prep Batch: P05034

SDG No.: 9808-978

Matrix Spike - Sample No.: P05034BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Acenaphthene	50.0		39.2	78	37-123
Acenaphthylene	50.0		44.4	89	67-118
Anthracene	50.0		38.7	77	68-124
Benzo(a)Anthracene	50.0		43.2	86	69-125
Benzo(b)fluoranthene	50.0		45.3	91	68-127
Benzo(k)fluoranthene	50.0		52.8	106	73-128
Benzo(g,h,i)perylene	50.0		39.8	80	53-138
Benzo(a)pyrene	50.0		45.4	91	73-125
Chrysene	50.0		35.9	72	70-124
Dibenzo(a,h)anthracene	50.0		38.6	77	57-136
Fluoranthene	50.0		42.8	86	55-135
Fluorene	50.0		43.1	86	66-121
Indeno(1,2,3-cd)pyrene	50.0		31.9	64	57-140
Naphthalene	50.0		34.3	69	55-113
Phenanthrene	50.0		41.1	82	65-126
Pyrene	50.0		42.1	84	40-149

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

379 219

FORM 3
WATER BNA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P05034

SDG No.: 9808-978

Matrix Spike - Sample No.: P05034BD

COMPOUND	SPIKE ADDED (ug/L)	BD CONCENTRATION (ug/L)	BD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Acenaphthene	50.0	44.0	88	12	20	37-123
Acenaphthylene	50.0	50.3	101	13	20	67-118
Anthracene	50.0	44.5	89	14	20	68-124
Benzo(a)Anthracene	50.0	50.3	101	16	20	69-125
Benzo(b)fluoranthene	50.0	51.3	103	12	20	68-127
Benzo(k)fluoranthene	50.0	61.2	122	14	20	73-128
Benzo(g,h,i)perylene	50.0	47.4	95	17	20	53-138
Benzo(a)pyrene	50.0	54.1	108	17	20	73-125
Chrysene	50.0	40.5	81	12	20	70-124
Dibenzo(a,h)anthracene	50.0	46.6	93	19	20	57-136
Fluoranthene	50.0	47.8	96	11	20	55-135
Fluorene	50.0	47.6	95	10	20	66-121
Indeno(1,2,3-cd)pyrene	50.0	39.3	79	21*	20	57-140
Naphthalene	50.0	38.6	77	11	20	55-113
Phenanthrene	50.0	46.8	94	14	20	65-126
Pyrene	50.0	47.2	94	11	20	40-149

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 16 outside limits

Spike Recovery: 0 out of 32 outside limits

COMMENTS:

000073

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC Pesticides

379 221

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-978
Method (SW-846) : 8081A/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P06014 P06014LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recovery for Decachlorobiphenyl was flagged as outside
QC Limits in sample 9808-978-04(RA-B-012). Surrogate recovery for
Tetrachloro-m-xylene was within QC Limits.

Laboratory Control Sample FORM 3
P06014BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9808-978-04 RPD : All analytes within QC limits.
RA-B-012 Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P06014LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*
Endrin/Breakdown : All criteria met. FORM 7A
*

Calibration Verification(CV) : P309041B.19R (Primary)

Analyte	%Diff(15% Max)	Response
Tetrachloro-m-xylene	16.5	Low

Low response indicates that reported levels for this analyte may be
biased low. Surrogate recoveries for Tetrachloro-m-xylene were within
QC Limits for all samples associated with this project. The data was
not affected.

J00075

Client Name : OHM Remediation Services
 Project Name : Defense Depot Memphis TN

ETC Order # : 9808-978
 Method (SW-846) : 8081A/3550B

CALIBRATIONCalibration Verification(CV) : P309041B.20R (Primary)

Analyte	%Diff(15% Max)	Response
Tetrachloro-m-xylene	17.5	Low

Low response indicates that reported levels for this analyte may be biased low. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits for all samples associated with this project. The data was not affected.

Calibration Verification(CV) : P309041B.21R (Primary - Chlordane)

Analyte	%Diff(15% Max)	Response
Tetrachloro-m-xylene	16.4	High

High response indicates that reported levels for this analyte may be biased high. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits for all samples associated with this project. The data was not affected.

Calibration Verification(CV) : P309041B.28R (Primary)

Analyte	%Diff(15% Max)	Response
Decachlorobiphenyl	17.0	Low

Low response indicates that reported levels for this analyte may be biased low. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits for all samples associated with this project. The data was not affected.

Calibration Verification(CV) : P309041B.29R (Primary)

Analyte	%Diff(15% Max)	Response
Tetrachloro-m-xylene	18.0	Low
Decachlorobiphenyl	18.0	Low

Low responses indicate that reported levels for these analytes may be biased low. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits for all samples associated with this project. The data was not affected.

Calibration Verification(CV) : P109071B.20R (Primary)

Analyte	%Diff(15% Max)	Response
4,4'-DDT	29.5	High
Endosulfan I	19.0	High
Endosulfan II	24.0	High
Endosulfan sulfate	22.0	High
Endrin aldehyde	50.5	High
Endrin ketone	27.5	High
Heptachlor	25.0	High
Methoxychlor	40.5	High

379 223

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - SOILClient Name : OHM Remediation Services
Project Name : Defense Depot Memphis TNETC Order # : 9808-978
Method (SW-846) : 8081A/3550B

CALIBRATION

High recoveries for these analytes indicate that reported levels may be biased high. P06014LB and P06014BS were the only samples associated with this CV. Recoveries in P06014BS were within QC Limits. The data was not affected.

Calibration Verification(CV) : P109071B.21R (Primary)

Analyte	%Diff(15% Max)	Response
delta-BHC	17.0	High
alpha-chlordane	17.0	High
gamma-chlordane	18.0	High
4,4'-DDD	21.5	High
4,4'-DDE	16.0	High
4,4'-DDT	42.0	High
Dieldrin	18.0	High
Endosulfan I	24.5	High
Endosulfan II	33.0	High
Endosulfan sulfate	34.0	High
Endrin	16.0	High
Endrin aldehyde	70.0	High
Endrin ketone	38.5	High
Heptachlor	29.0	High
Heptachlor epoxide	15.5	High
Methoxychlor	56.0	High

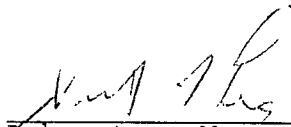
High recoveries for these analytes indicate that reported levels may be biased high. P06014LB and P06014BS were the only samples associated with this CV. Recoveries in P06014BS were within QC Limits. The data was not affected.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.*

*
Dilutions were performed on samples associated with this order to bring the Target Analyte(s) within calibration range.

Sample ID	Dilutions Performed
9808-978-01	1:10,100
9808-978-02	1:10,100
9808-978-03	1:10,100


Laboratory Manager

J00077

FORM 2
SOIL PESTICIDE SURROGATE RECOVERY

379 224

Lab Name: ETC, INC.

Contract: .

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

Level: (low/med) LOW

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	9808-978-4	60	59*							1
02	9808-978-4M	31	41							0
03	9808-978-4S	36	44							0
04	9808-978-1	78	110							0
05	9808-978-2	78	124							0
06	9808-978-3	71	100							0
07	P06014LB	68	89							0
08	P06014BS	80	98							0
09										
10										
11										
12										
13										
14										
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30										

QC LIMITS

S1 (TMX) = Tetrachloro-m-xylene (39-130)
S2 (DBC) = Decachlorobiphenyl (64-154)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

000078

379 225

FORM 4
PESTICIDE METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

P06014LB

Lab Name: ETC, INC.

Lab Prep Batch: P06014

SDG No.: 9808-978

Lab File ID: P309041B-23R

Instrument ID: PEST3B

Matrix: (soil/water) SOIL

Date Analyzed: 09/04/98

Level: (low/med) LOW

Time Analyzed: 1956

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	9808-978-4		P309041B-12R	09/04/98
02	9808-978-4M		P309041B-14R	09/04/98
03	9808-978-4S		P309041B-15R	09/04/98
04	9808-978-1		P309041B-16R	09/04/98
05	9808-978-2		P309041B-17R	09/04/98
06	9808-978-3		P309041B-18R	09/04/98
07	P06014BS		P109071A-10R	09/07/98
08				
09				
10				
11				
12				
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COMMENTS:

000079

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

379 226
EPA GC SAMPLE NO.

P06014LB

Lab Name: ETC, INC.

SDG No.: 9808-978

Matrix: (soil/water) SOIL

Lab Prep Batch: P06014

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P309041B-23R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10 (mL)

Date Analyzed: 09/04/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

309-00-2-----	Aldrin	1.33	U
319-84-6-----	alpha-BHC	1.33	U
319-85-7-----	beta-BHC	1.33	U
319-86-8-----	delta-BHC	1.33	U
58-89-9-----	gamma-BHC	1.33	U
5103-71-9-----	alpha-chlordane	1.33	U
5103-74-2-----	gamma-chlordane	1.33	U
72-54-8-----	4,4'-DDD	1.33	U
72-55-9-----	4,4'-DDE	1.33	U
50-29-3-----	4,4'-DDT	1.33	U
60-57-1-----	Dieldrin	1.33	U
959-98-8-----	Endosulfan I	1.33	U
33213-65-9-----	Endosulfan II	1.33	U
1031-07-8-----	Endosulfan sulfate	1.33	U
72-20-8-----	Endrin	1.33	U
7421-93-4-----	Endrin aldehyde	1.33	U
53494-70-5-----	Endrin ketone	1.33	U
76-44-8-----	Heptachlor	1.33	U
1024-57-3-----	Heptachlor epoxide	1.33	U
72-43-5-----	Methoxychlor	1.33	U
57-74-9-----	Chlordane, Total	8.33	U
8001-35-2-----	Toxaphene	83.33	U

FORM I PESTICIDE

000080

379 227

FORM 3
SOIL PESTICIDE LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P06014

SDG No.: 9808-978

Matrix Spike - Sample No.: P06014BS

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
Aldrin	33.33		29.17	88	31-111
alpha-BHC	33.33		31.13	93	22-112
beta-BHC	33.33		32.06	96	54-120
delta-BHC	33.33		29.42	88	10- 96
gamma-BHC	33.33		29.49	88	26-113
alpha-chlordane	33.33		32.86	98	49-103
gamma-chlordane	33.33		33.15	99	50-106
4,4'-DDD	33.33		33.16	99	47-112
4,4'-DDE	33.33		31.58	95	36-117
4,4'-DDT	33.33		39.52	118	49-124
Dieldrin	33.33		32.28	97	44-108
Endosulfan I	33.33		32.88	99	49-103
Endosulfan II	33.33		35.29	106	53-115
Endosulfan sulfate	33.33		34.20	103	51-110
Endrin	33.33		34.45	103	44-118
Endrin aldehyde	33.33		34.91	105	48-128
Endrin ketone	33.33		37.93	114	38-130
Heptachlor	33.33		34.32	103	47-113
Heptachlor epoxide	33.33		31.93	96	47-112
Methoxychlor	33.33		40.92	123	39-147

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 20 outside limits

COMMENTS:

FORM 3
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

379 228

Lab Name: ETC, INC.

Lab Prep Batch: P06014

SDG No.: 9808-978

Matrix Spike - Sample No.: 9808-978-4

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	M CONCENTRATION (ug/Kg)	M % REC #	QC. LIMITS REC.
Aldrin	32.57		26.84	82	31-111
alpha-BHC	32.57		24.44	75	22-112
beta-BHC	32.57		33.58	103	54-120
delta-BHC	32.57		23.67	73	10- 96
gamma-BHC	32.57		26.40	81	26-113
alpha-chlordane	32.57		30.36	93	49-103
gamma-chlordane	32.57		30.08	92	50-106
4,4'-DDD	32.57		32.69	100	47-112
4,4'-DDE	32.57		31.20	96	36-117
4,4'-DDT	32.57		36.93	113	49-124
Dieldrin	32.57		31.34	96	44-108
Endosulfan I	32.57		30.64	94	49-103
Endosulfan II	32.57		31.74	97	53-115
Endosulfan sulfate	32.57		30.66	94	51-110
Endrin	32.57		35.65	109	44-118
Endrin aldehyde	32.57		36.34	112	48-128
Endrin ketone	32.57		32.92	101	38-130
Heptachlor	32.57		27.70	85	47-113
Heptachlor epoxide	32.57		29.37	90	47-112
Methoxychlor	32.57		36.92	113	39-147

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

379 229

FORM 3
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P06014

SDG No.: 9808-978

Matrix Spike - Sample No.: 9808-978-4

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	S CONCENTRATION (ug/Kg)	S % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Aldrin	32.47	28.74	88	7	20	31-111
alpha-BHC	32.47	26.04	80	6	20	22-112
beta-BHC	32.47	33.83	104	1	20	54-120
delta-BHC	32.47	23.62	73	0	20	10- 96
gamma-BHC	32.47	27.80	86	6	20	26-113
alpha-chlordane	32.47	30.49	94	1	20	49-103
gamma-chlordane	32.47	30.64	94	2	20	50-106
4,4'-DDD	32.47	31.44	97	3	20	47-112
4,4'-DDE	32.47	31.36	96	0	20	36-117
4,4'-DDT	32.47	36.23	112	1	20	49-124
Dieldrin	32.47	31.56	97	1	20	44-108
Endosulfan I	32.47	31.05	96	2	20	49-103
Endosulfan II	32.47	30.44	94	3	20	53-115
Endosulfan sulfate	32.47	29.54	91	3	20	51-110
Endrin	32.47	35.44	109	0	20	44-118
Endrin aldehyde	32.47	34.35	106	6	20	48-128
Endrin ketone	32.47	31.83	98	3	20	38-130
Heptachlor	32.47	28.83	89	4	20	47-113
Heptachlor epoxide	32.47	29.58	91	1	20	47-112
Methoxychlor	32.47	35.58	110	3	20	39-147

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 20 outside limits
Spike Recovery: 0 out of 40 outside limits

COMMENTS:

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - AQUEOUS

379 230

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-978
Method (SW-846) : 8081A/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P07014 P07014LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P07014BS/BD

All criteria met.*

*

Recoveries for Endrin ketone were flagged for high recovery in P07014BS/BD. High recovery indicates that detection levels were not affected. This analyte was not identified in the sample associated with this project. The data was not affected.

Recovery for delta-BHC was flagged for high recovery in P07014BD. High recovery indicates that detection levels were not affected. Recovery for delta-BHC was within QC Limits for P07014BS. The data was not affected.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*

Due to the limited amount of sample available, no MS/MSD were extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P07014LB

Endrin aldehyde identified in P07014LB at 0.0711 ug/L.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7
Endrin/Breakdown : All criteria met. FORM 7*

000084

379 231

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - AQUEOUS

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN

ETC Order # : 9808-978
Method (SW-846) : 8081A/3510C

CALIBRATION

*
Calibration Verification(CV) : P309041B.28R (Primary)

Analyte	%Diff(15% Max)	Response
Decachlorobiphenyl	17.0	Low

Low response indicates that reported levels for this analyte may be biased low. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits for all samples associated with this project. The data was not affected.

Calibration Verification(CV) : P309041B.29R (Primary)

Analyte	%Diff(15% Max)	Response
Tetrachloro-m-xylene	18.0	Low
Decachlorobiphenyl	18.0	Low

Low responses indicate that reported levels for these analytes may be biased low. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits for all samples associated with this project. The data was not affected.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000085

FORM 2
WATER PESTICIDE SURROGATE RECOVERY

379 232

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P07014LB	60	52							0
02	9808-978-5	81	35							0
03	P07014BS	66	37							0
04	P07014BD	64	71							0
05										
06										
07										
08										
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10										
11										
12										
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26										
27										
28										
29										
30										

QC LIMITS
S1 (TMX) = Tetrachloro-m-xylene (31- 96)
S2 (DBC) = Decachlorobiphenyl (34-115)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

000086

379 233

FORM 4
PESTICIDE METHOD BLANK SUMMARY

EPA GC SAMPLE NO

P07014LB

Lab Name: ETC, INC.

Lab Prep Batch: P07014

SDG No.: 9808-978

Lab File ID: P309041A-22R

Instrument ID: PEST3A

Matrix: (soil/water) WATER

Date Analyzed: 09/04/98

Level: (low/med) LOW

Time Analyzed: 1925

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	9808-978-5		P309041A-27R	09/04/98
02	P07014BS		P109071A-11R	09/07/98
03	P07014BD		P109071A-12R	09/07/98
04				
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COMMENTS:

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

379 234
EPA GC SAMPLE NO.

P07014LB

Lab Name: ETC, INC.

SDG No.: 9808-978

Matrix: (soil/water) WATER

Lab Prep Batch: P07014

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: P309041B-22R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10(mL)

Date Analyzed: 09/04/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
309-00-2-----	Aldrin	0.0400	U
319-84-6-----	alpha-BHC	0.0400	U
319-85-7-----	beta-BHC	0.0400	U
319-86-8-----	delta-BHC	0.0400	U
58-89-9-----	gamma-BHC	0.0400	U
5103-71-9-----	alpha-chlordane	0.0400	U
5103-74-2-----	gamma-chlordane	0.0400	U
72-54-8-----	4,4'-DDD	0.0400	U
72-55-9-----	4,4'-DDE	0.0400	U
50-29-3-----	4,4'-DDT	0.0400	U
60-57-1-----	Dieldrin	0.0400	U
959-98-8-----	Endosulfan I	0.0400	U
33213-65-9-----	Endosulfan II	0.0400	U
1031-07-8-----	Endosulfan sulfate	0.0400	U
72-20-8-----	Endrin	0.0400	U
7421-93-4-----	Endrin aldehyde	0.0711	U
53494-70-5-----	Endrin ketone	0.0400	U
76-44-8-----	Heptachlor	0.0400	U
1024-57-3-----	Heptachlor epoxide	0.0400	U
72-43-5-----	Methoxychlor	0.0400	U
57-74-9-----	Chlordane, Total	0.250	U
8001-35-2-----	Toxaphene	2.50	U

FORM I PESTICIDE

000088

379 235

FORM 3
WATER PESTICIDE LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P07014

SDG No.: 9808-978

Matrix Spike - Sample No.: P07014BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Aldrin	1.00		0.852	85	34-105
alpha-BHC	1.00		0.948	95	41-102
beta-BHC	1.00		1.02	102	26-151
delta-BHC	1.00		0.912	91	21- 92
gamma-BHC	1.00		0.907	91	41-102
alpha-chlordane	1.00		1.02	102	48-117
gamma-chlordane	1.00		1.03	103	50-108
4,4'-DDD	1.00		1.02	102	39-124
4,4'-DDE	1.00		0.972	97	41-111
4,4'-DDT	1.00		1.23	123	39-123
Dieldrin	1.00		1.01	101	42-111
Endosulfan I	1.00		1.04	104	48-117
Endosulfan II	1.00		1.11	111	52-114
Endosulfan sulfate	1.00		1.08	108	46-111
Endrin	1.00		1.07	107	45-117
Endrin aldehyde	1.00		1.18	118	48-125
Endrin ketone	1.00		1.18	118*	51-112
Heptachlor	1.00		0.992	99	43-114
Heptachlor epoxide	1.00		0.994	99	42-115
Methoxychlor	1.00		1.27	127	39-140

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

COMMENTS:

000089

FORM 3
WATER PESTICIDE LABORATORY CONTROL SAMPLE

379 236

Lab Name: ETC, INC.

Lab Prep Batch: P07014

SDG No.: 9808-978

Matrix Spike - Sample No.: P07014BD

COMPOUND	SPIKE ADDED (ug/L)	BD CONCENTRATION (ug/L)	BD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Aldrin	1.00	0.879	88	3	20	34-105
alpha-BHC	1.00	0.996	100	5	20	41-102
beta-BHC	1.00	1.07	107	5	20	26-151
delta-BHC	1.00	0.929	93*	2	20	21- 92
gamma-BHC	1.00	0.960	96	5	20	41-102
alpha-chlordane	1.00	1.05	105	3	20	48-117
gamma-chlordane	1.00	1.06	106	3	20	50-108
4,4'-DDD	1.00	1.02	102	0	20	39-124
4,4'-DDE	1.00	0.991	99	2	20	41-111
4,4'-DDT	1.00	1.22	122	1	20	39-123
Dieldrin	1.00	1.04	104	3	20	42-111
Endosulfan I	1.00	1.08	108	4	20	48-117
Endosulfan II	1.00	1.12	112	1	20	52-114
Endosulfan sulfate	1.00	1.08	108	0	20	46-111
Endrin	1.00	1.11	111	4	20	45-117
Endrin aldehyde	1.00	1.16	116	2	20	48-125
Endrin ketone	1.00	1.19	119*	1	20	51-112
Heptachlor	1.00	1.04	104	5	20	43-114
Heptachlor epoxide	1.00	1.03	103	4	20	42-115
Methoxychlor	1.00	1.26	126	1	20	39-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 20 outside limits
Spike Recovery: 3 out of 40 outside limits

COMMENTS:

379 237

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC PCBs

000091

MEMPHIS, TN
CASE NARRATIVE
GC PCBs, - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9808-978
Method (SW-846) : 8082/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P06014 P06014LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P06014BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9808-978-04 RPD : All analytes within QC limits.
RA-B-012 Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P06014LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000092

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

Level: (low/med) LOW

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
01	P06014LB	72	97							0
02	P06014BS	73	100							0
03	9808-978-1	65	98							0
04	9808-978-2	59	106							0
05	9808-978-3	56	98							0
09	9808-978-4	75	103							0
06	9808-978-4M	60	98							0
07	9808-978-4S	69	95							0
08										
09										
10										
11										
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23										
24										
25										
26										

QC LIMITS
 S1 (TMX) = Tetrachloro-m-xylene (39-130)
 S2 (DBC) = Decachlorobiphenyl (64-154)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

FORM 4
PCB METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

379 240

P06014LB

Lab Name: ETC, INC.

Lab Prep Batch: P06014

SDG No.: 9808-978

Lab File ID: C209021A-11R

Instrument ID: PEST2A

Matrix: (soil/water) SOIL

Date Analyzed: 09/02/98

Level: (low/med) LOW

Time Analyzed: 1858

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P06014BS		C209021A-14R	09/02/98
02	9808-978-1		C209021A-30R	09/03/98
03	9808-978-2		C209021A-31R	09/03/98
04	9808-978-3		C209021A-34R	09/03/98
05	9808-978-4		C209021A-35R	09/03/98
06	9808-978-4M		C209021A-36R	09/03/98
07	9808-978-4S		C209021A-35R	09/03/98
08				
09				
10				
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30				

COMMENTS:

379 241

FORM 1
PCB ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P06014LB

Lab Name: ETC, INC.

SDG No.: 9808-978

Matrix: (soil/water) SOIL

Lab Prep Batch: P06014

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: C209021A-11R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10 (mL)

Date Analyzed: 09/02/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2-----	Aroclor 1016	16.67	U
11104-28-2-----	Aroclor 1221	16.67	U
11141-16-5-----	Aroclor 1232	16.67	U
53469-21-9-----	Aroclor 1242	16.67	U
11097-69-1-----	Aroclor 1254	16.67	U
11096-82-5-----	Aroclor 1260	16.67	U
12672-29-6-----	Aroclor 1248	16.67	U

FORM I PCB

000095

FORM 3
SOIL PCB LABORATORY CONTROL SAMPLE

379 242

Lab Name: ETC, INC.

Lab Prep Batch: P06014

SDG No.: 9808-978

Matrix Spike - Sample No.: P06014BS Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
Aroclor 1242	333.3		291.6	87	25-125
Aroclor 1260	333.3		303.6	91	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III PCB

000096

379 243

FORM 3
SOIL PCB MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P06014

SDG No.: C209021A

Matrix Spike - Sample No.: 9808-978-4

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Aroclor 1242	331.1	0.000	285.3	86	25-125
Aroclor 1260	331.1	0.000	286.8	87	25-125

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
Aroclor 1242	331.1	283.3	86	0	20 25-125
Aroclor 1260	331.1	283.8	86	1	20 25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS:

FORM III PCB

000097

MEMPHIS, TN.

CASE NARRATIVE

GC PCBs - AQUEOUS

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN

ETC Order # : 9808-978
Method (SW-846) : 8082/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P09008 P09008LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P09008BS/BD

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*

Due to the limited amount of sample available, no MS/MSD were
extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P09008LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000098

379 245

FORM 2
WATER PCB SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9808-978

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P09008LB	72	100							0
02	P09008BS	67	85							0
03	P09008LCSD	79	100							0
04	9808-978-5	72	51							0
05										
06										
07										
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29										
30										

QC LIMITS

S1 (TMX) = Tetrachloro-m-xylene (31- 96)

S2 (DBC) = Decachlorobiphenyl (34-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

FORM 4
PCB METHOD BLANK SUMMARY

379 246
EPA GC SAMPLE NO.

P09008LB

Lab Name: ETC, INC.

Lab Prep Batch: P09008

Lab File ID: C209021A-10R

Matrix: (soil/water) WATER

Level: (low/med) LOW

SDG No.: 9808-978

Instrument ID: PEST2A

Date Analyzed: 09/02/98

Time Analyzed: 1818

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P09008BS		C209021A-12R	09/02/98
02	P09008BD		C209021A-13R	09/02/98
03	9808-978-5		C209021A-15R	09/02/98
04				
05				
06				
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COMMENTS:

379 247

FORM 1
PCB ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P09008LB

Lab Name: ETC, INC.

SDG No.: 9808-978

Matrix: (soil/water) WATER

Lab Prep Batch: P09008

Sample wt/vol: _____ (g/mL) ML

Lab File ID: C209021A-10R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10 (mL)

Date Analyzed: 09/02/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/L	
12674-11-2-----	Aroclor 1016		0.500	U
11104-28-2-----	Aroclor 1221		0.500	U
11141-16-5-----	Aroclor 1232		0.500	U
53469-21-9-----	Aroclor 1242		0.500	U
11097-69-1-----	Aroclor 1254		0.500	U
11096-82-5-----	Aroclor 1260		0.500	U
12672-29-6-----	Aroclor 1248		0.500	U

FORM I PCB

000101

FORM 3
WATER PCB LABORATORY CONTROL SAMPLE

379 248

Lab Name: ETC, INC.

Lab Prep Batch: P09008

SDG No.: 9808-978

Matrix Spike - Sample No.: P09008BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Aroclor 1242	10.00		8.45	84	25-125
Aroclor 1260	10.00		9.29	93	25-125

COMPOUND	SPIKE ADDED (ug/L)	BD CONCENTRATION (ug/L)	BD % REC #	% RPD #	QC LIMITS RPD REC.
Aroclor 1242	10.00	9.39	94	11	20 25-125
Aroclor 1260	10.00	9.51	95	2	20 25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS:

FORM III PCB

000102

DISPOSAL CHARACTERIZATION SAMPLES

Date Collected 09/03/98

RA-A-035-DS

RA-A-036-DS

RA-A-037-DS



379 250
ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334

Founded 1972

September 11, 1998

Ms. Elena Rodriguez
OHM Remediation Services
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Ref: Analytical Testing
ETC Order # 9809154
Project Description DDMT

Project # 20560 Defense Depot - Memphis, TN

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Nathan A. Pera, IV', is written over a horizontal line.

Nathan A. Pera, IV
Chief Executive Officer

rt
Attachment

OHM_DDMT

SOUTHERN REGION

379 251
Chemical Analytical Data
Review/Evaluation/Validation

Report Type: ☐ Preliminary ☒ Final Date Received: 9/24/98 Project Number: 920560
Project Name: DDMT Analysis/Method: TCLP / metals, VOA,
Laboratory: ETC BNA, PEST, Herb
Lab Project/Case Number: 9809154
Sample Number(s): RA-A-035 DS, 036 DS, 037 DS
TP-9-03-98
Evaluated By: S. Parangara Date Evaluated: 9/25/98
Data Package Deliverables Requirement: ☐ OHM Minimum ☒ OHM Standard ☐ OHM Maximum
☐ Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs			☒	☒
Comment:				
Holding Times			☒	☒
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X	☒	☒	☒
Comment:				
Surrogate Recoveries	X	☒	☒	☒
Comment:				
Lab Control Sample Recoveries	X	☒	☒	☒
Comment:				
Lab Control Sample Duplicate or Other Spike Recoveries	X	☒	☒	☒
Comment:				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X	☒	☒	☒
Comment:				
Matrix Spike Recoveries	X	☒	☒	☒
Comment:				
Matrix Spike Duplicate Recoveries	X	☒	☒	☒
Comment:				
Matrix Spike / Matrix Spike Duplicate RPD	X	☒	☒	☒
Comment:				
Laboratory Blanks (daily, method, instrument)	X	☒	☒	☒
Comment:				
Field Blanks (trip, eqpt rinsate, ambient, matrix)	X	☒	☒	☒
Comment:				

Quality Control Deliverables	Required	Received	Passed	Failed	
Field Duplicates RPD	X				
Comment:	N/A				
Second Source Check					
Comment:	N/A				
Second Column Confirmation					
Comment:					
Percent Moisture/Solids					
Comment:	N/A				
Initial / Continuing Calibrations		✓	✓		
Comment:					
Internal Standard Areas and Retention Times (Organics Only)		✓	✓		
Comment:					
Chromatograms		✓	✓		
Comment:					
Sample Prep Worksheets					
Comment:	Did not perform Data Eval				
Raw Data Calculations					
Comment:					
Laboratory Duplicates					
Comment:					
Instrument Performance Checks (Organics Only)		✓	✓		
Comment:					
Tentatively Identified Compounds (TICs)		✓	✓		
Comment:					
Completeness	# Samples	# Analyses	Tot # Analyses	Tot # Accept Analyses	% Complete
Completeness = (Tot # Analyses / Tot # Accepted Analyses) x 100	3	5	15	15	100
General Comments:					

Summary: [] See attached pages

Check Applicable:

- ☐ Lab contacted--Corrective actions in process Date Contacted: _____
☐ Corrective actions received and accepted Date Received/Accepted: _____
☒ The data, as reported by the laboratory, are acceptable.
☐ The data, with qualifiers as described in the "Summary" portion of this report, are acceptable.
☐ The data are unacceptable.
☐ Other _____

S. Parayape
 Evaluator's Signature

9/25/98
 Date

Environmental Testing & Consulting, Inc.
Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

379 254

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

Client Name **OHM Remediation Services**
 Site ID **DDMT**
Memphis, TN

<u>ETC</u> <u>Sample ID</u>	<u>Field ID</u>	<u>Matrix</u>	<u>Method</u>	<u>Method Description</u>
980915401	RA-A-035-DS	SOIL	6010B	Silver - TCLP
980915401	RA-A-035-DS	SOIL	6010B	Arsenic - TCLP
980915401	RA-A-035-DS	SOIL	8270C	TCLP Semivolatiles
980915401	RA-A-035-DS	SOIL	6010B	Barium - TCLP
980915401	RA-A-035-DS	SOIL	6010B	Cadmium - TCLP
980915401	RA-A-035-DS	SOIL	6010B	Chromium - TCLP
980915401	RA-A-035-DS	SOIL	8151A	TCLP Herbicides
980915401	RA-A-035-DS	SOIL	7470A	Mercury - TCLP
980915401	RA-A-035-DS	SOIL	8081A	TCLP Pesticides
980915401	RA-A-035-DS	SOIL	6010B	Lead - TCLP
980915401	RA-A-035-DS	SOIL	6010B	Selenium - TCLP
980915401	RA-A-035-DS	SOIL	8260B	TCLP Volatile Organics
980915402	RA-A-036-DS	SOIL	6010B	Silver - TCLP
980915402	RA-A-036-DS	SOIL	6010B	Arsenic - TCLP
980915402	RA-A-036-DS	SOIL	8270C	TCLP Semivolatiles
980915402	RA-A-036-DS	SOIL	6010B	Barium - TCLP
980915402	RA-A-036-DS	SOIL	6010B	Cadmium - TCLP
980915402	RA-A-036-DS	SOIL	6010B	Chromium - TCLP
980915402	RA-A-036-DS	SOIL	8151A	TCLP Herbicides
980915402	RA-A-036-DS	SOIL	7470A	Mercury - TCLP
980915402	RA-A-036-DS	SOIL	8081A	TCLP Pesticides
980915402	RA-A-036-DS	SOIL	6010B	Lead - TCLP
980915402	RA-A-036-DS	SOIL	6010B	Selenium - TCLP
980915402	RA-A-036-DS	SOIL	8260B	TCLP Volatile Organics
980915403	RA-A-037-DS	SOIL	6010B	Silver - TCLP
980915403	RA-A-037-DS	SOIL	6010B	Arsenic - TCLP
980915403	RA-A-037-DS	SOIL	8270C	TCLP Semivolatiles
980915403	RA-A-037-DS	SOIL	6010B	Barium - TCLP
980915403	RA-A-037-DS	SOIL	6010B	Cadmium - TCLP
980915403	RA-A-037-DS	SOIL	6010B	Chromium - TCLP
980915403	RA-A-037-DS	SOIL	8151A	TCLP Herbicides
980915403	RA-A-037-DS	SOIL	7470A	Mercury - TCLP
980915403	RA-A-037-DS	SOIL	8081A	TCLP Pesticides
980915403	RA-A-037-DS	SOIL	6010B	Lead - TCLP
980915403	RA-A-037-DS	SOIL	6010B	Selenium - TCLP
980915403	RA-A-037-DS	SOIL	8260B	TCLP Volatile Organics
980915404	TB-9-03-98	AQUEOUS	8260B	GC/MS Volatile Organics

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

000003



OHM Remediation Services Corp
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

LABORATORY COMPANY
21801354

FORM 0019 R 2-97

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont	QC Level	T.A.T	Analyses	Comments				
1	RA-A-035-DS	Soil	9-3-98	1330	4x802	OHM	7day	1	ICP Pb, Cd, Cu, Fe, Mn, Ni, Zn, As, Cr, Co, Hg, Mo, Se, V, W, Bi, Br, I, K, Li, Na, P, S, Sb, Sn, Sr, Tl, U, Y, Ba, Be, B, Ca, Cl, F, Ga, Ge, In, La, Nb, Os, Pt, Rb, Sc, Si, Ta, Te, Th, Ti, Tm, V, Zr, H, N, O, Al, C, Mg, Si, S, Zn, Ag, Au, Br, Ca, Cl, Cr, Cu, Fe, Hg, K, Li, Na, Ni, Pb, Se, Sn, Sr, Tl, U, V, W, Y, Ba, Be, Bi, Br, Cd, Co, Cs, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UU, UV, UW, UX, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
	Elena Rodriguez	770-734-8060	770-453-7716	ETC	Nathan Pera	OHM Remediation Services Corp								
	PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY PHONE	LABORATORY FAX	RECIPIENT NAME								
	DDMT	Memphis, TN	20560	901-327-2750	901-327-6334	Elena Rodriguez								
	PROJECT CONTACT	PROJECT PHONE NUMBER	PROJECT FAX	LABORATORY ADDRESS	ADDRESS									
	Steve Offner	901-743-1117	901-743-1048	2924 Walnut Grove Road	5445 Triangle Pkwy, #400									
	PROJECT ADDRESS	CITY STATE AND ZIP CODE	CLIENT	CITY STATE AND ZIP CODE	CITY STATE AND ZIP CODE									
	1708 Dunn Ave.	Memphis, TN 38114	USACE	Memphis TN 38111	Norcross, GA 30092									
	PROJECT MANAGER	PROJECT MANAGER'S PHONE	PROJECT MANAGER'S FAX											
	Steve Offner	770-326-2571	770-453-7716											

SAMPLES COLLECTED BY: Steve Offner / Wilson, 10/28/98
REINOLISHED BY: A. S. Offner
DELIVERED BY: PERSON
DATE: 9/3/98
TIME: 11:00
COOLER TEMPERATURE UPON RECEIPT: 24°C

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

ICP Pb, Cd, Cu, Fe, Mn, Ni, Zn, As, Cr, Co, Hg, Mo, Se, V, W, Bi, Br, I, K, Li, Na, P, S, Sb, Sn, Sr, Tl, U, Y, Ba, Be, B, Ca, Cl, F, Ga, Ge, In, La, Nb, Os, Pt, Rb, Sc, Si, Ta, Te, Th, Ti, Tm, V, Zr, H, N, O, Al, C, Mg, Si, S, Zn, Ag, Au, Br, Ca, Cl, Cr, Cu, Fe, Hg, K, Li, Na, Ni, Pb, Se, Sn, Sr, Tl, U, V, W, Y, Ba, Be, Bi, Br, Cd, Co, Cs, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UU, UV, UW, UX, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ

COOLER RECEIPT FORM

Cooler Receipt Form
9809154.CRF p. 1

LIMS #: 9809154 Number of Coolers: 1
 Date Received: 9/3/98
 VDTSR: 9/3/98, 1640
 PROJECT: DDMT

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS

A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 9/3/98
 by (print): Rebekah Barger (sign): [Signature]

1. Did cooler come with a shipping slip (airbill, etc.)?..... NO
 If YES, enter carrier name & airbill number: _____

2a. Were custody seals on outside of cooler?..... NO

2b. Were custody seals on sample containers?..... NO

3. Were custody seals unbroken and intact at the date and time of arrival?.... NA

4. Did you screen samples for radioactivity using a Geiger Counter?... NO

5. Were custody papers sealed in a plastic bag & taped inside to the lid?..... NO

6. Were custody papers filled out properly (ink, signed, etc.)?..... YES

7. Did you sign custody papers in the appropriate place?..... YES

8. Was project identifiable from custody papers? If YES, enter project name at top of this form..... YES

9 If required, was enough ice used? cooler temp: <4° c, Type of ice: Loose Cubes YES

10. Have designated person initial here to acknowledge receipt of cooler: RB date: 9/3/98

B LOG-IN PHASE: Date samples were logged-in: 9/3/98
 by (print): Rebekah Barger (sign): [Signature]

11. Describe type of packing in cooler: Loose Ice Cubes, Baggies, Bubble Wrap

12. Were all bottles sealed in separate plastic bags?..... YES

13. Did all bottles arrive unbroken and were labels in good condition?..... YES

14. Were all bottle labels complete (ID, date, time, signature, preserved, etc.)?..... YES

15. Did all bottle labels agree with custody papers?..... YES

16. Were correct containers used for the tests indicated?..... YES

17. Were correct preservatives added to samples?..... YES

18. Was a sufficient amount of sample sent for tests indicated?..... YES

19. Were bubbles absent in VOA samples? If NO, list by sample#: _____ YES

20. Was the project manager called and status discussed? If YES, give details on the back of this form.... YES

21. Who was called? Steve Grant By whom? Sally Herrmann (date) 9/4/98

VDTSR - Validated Date/Time of Sample Receipt (Date sample is logged into LIMS system)

000005

379 258

COOLER RECEIPT FORM

Cooler Receipt Form
9809154.CRF p. 2

Called to confirm that sample TB-9-03-98 was a Trip Blank and he needed to run only VOC's.

000006

Environmental Testing & Consulting, Inc.

Sample Reports

379' 260

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400

Project # 20560

Site ID **Norcross, GA 30092****DDMT**
Memphis, TN

Date Arrived 09/03/98

ETC Order Number 9809154

ETC Lab ID 9809154-01

Sample ID: RA-A-035-DS

Matrix :SOIL

Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V6-TC-08					NR 3015A
Mercury Digestion Batch	V3-TC-32					RM 7470
TCLP Extraction	Leachate	mg/L				TL 1311
Silver - TCLP	ND	mg/L	0.500	13:16	09/10/98	TD 6010B
Arsenic - TCLP	ND	mg/L	0.500	13:16	09/10/98	TD 6010B
Barium - TCLP	ND	mg/L	5.00	13:16	09/10/98	TD 6010B
Cadmium - TCLP	ND	mg/L	0.100	13:16	09/10/98	TD 6010B
Chromium - TCLP	ND	mg/L	0.500	13:16	09/10/98	TD 6010B
Mercury - TCLP	ND	mg/L	0.020	08:57	09/10/98	RM 7470A
Lead - TCLP	ND	mg/L	0.500	13:16	09/10/98	TD 6010B
Selenium - TCLP	ND	mg/L	0.500	13:16	09/10/98	TD 6010B


LABORATORY MANAGER

000008

379 261

ENVIRONMENTAL TESTING & CONSULTING, INC.
 2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560

Date Arrived 09/03/98
 ETC Order Number 9809154

ETC Lab ID **9809154-02**
Sample ID: RA-A-036-DS

Matrix :SOIL
 Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V6-TC-08				NR	3015A
Mercury Digestion Batch	V3-TC-32				RM	7470
TCLP Extraction	Leachate	mg/L			TL	1311
Silver - TCLP	ND	mg/L	0.500	13:22	09/10/98	TD 6010B
Arsenic - TCLP	ND	mg/L	0.500	13:22	09/10/98	TD 6010B
Barium - TCLP	ND	mg/L	5.00	13:22	09/10/98	TD 6010B
Cadmium - TCLP	ND	mg/L	0.100	13:22	09/10/98	TD 6010B
Chromium - TCLP	ND	mg/L	0.500	13:22	09/10/98	TD 6010B
Mercury - TCLP	ND	mg/L	0.020	08:59	09/10/98	RM 7470A
Lead - TCLP	ND	mg/L	0.500	13:22	09/10/98	TD 6010B
Selenium - TCLP	ND	mg/L	0.500	13:22	09/10/98	TD 6010B


 LABORATORY MANAGER

000009

379 262

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID **DDMT**
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809154

ETC Lab ID **9809154-03**
Sample ID: RA-A-037-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V6-TC-08				NR	3015A
Mercury Digestion Batch	V3-TC-32				RM	7470
TCLP Extraction	Leachate	mg/L			TL	1311
Silver - TCLP	ND	mg/L	0.500	13:28	09/10/98	TD 6010B
Arsenic - TCLP	ND	mg/L	0.500	13:28	09/10/98	TD 6010B
Barium - TCLP	ND	mg/L	5.00	13:28	09/10/98	TD 6010B
Cadmium - TCLP	ND	mg/L	0.100	13:28	09/10/98	TD 6010B
Chromium - TCLP	ND	mg/L	0.500	13:28	09/10/98	TD 6010B
Mercury - TCLP	ND	mg/L	0.020	09:00	09/10/98	RM 7470A
Lead - TCLP	ND	mg/L	0.500	13:28	09/10/98	TD 6010B
Selenium - TCLP	ND	mg/L	0.500	13:28	09/10/98	TD 6010B


LABORATORY MANAGER

000010

379 263

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809154

ETC Lab ID 9809154-01
Sample ID: RA-A-035-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction ZHE	Leachate		09/08/98		TL	1311
TCLP Volatile Organics				09/10/98	LS	8260B
QC Batch	V2091001					
Benzene	ND	0.010				
Carbon Tetrachloride	ND	0.010				
Chlorobenzene	ND	0.010				
Chloroform	ND	0.010				
1,4-Dichlorobenzene	ND	0.010				
1,2-Dichloroethane	ND	0.010				
1,1-Dichloroethene	ND	0.010				
Methyl Ethyl Ketone	ND	1.00				
Tetrachloroethene	ND	0.010				
Trichloroethene	ND	0.010				
Vinyl Chloride	ND	0.010				
Surrogate Standard	% Recovery	QC Limits				
S1 - Dibromofluoromethane	107	87	107			
S2 - Toluene-d8	96	91	108			
S3 - 4-Bromofluorobenzene	100	88	107			

ND - Not Detected

DL - Detection Limit


LABORATORY MANAGER

000011

379 264

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9809-154-1T

Lab Nam : ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML

Lab File ID: 0501005

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/10/98

GC Column: ID: 2.00 (mm)

Dilution Factor: 10.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 637-78-5	PROPANOIC ACID, 1-METHYLETHY	17.04	58.9	NJ
2. 638-11-9	BUTANOIC ACID, 1-METHYLETHYL	20.48	128	NJ
3. 106-42-3	P-XYLENE	22.32	52.7	NJ
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FORM I VOA-GCMS-TIC

000012

379 265

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809154

ETC Lab ID 9809154-02
Sample ID: RA-A-036-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction ZHE	Leachate		09/08/98		TL	1311
TCLP Volatile Organics				09/10/98	LS	8260B
QC Batch	V2091001					
Benzene	ND	0.010				
Carbon Tetrachloride	ND	0.010				
Chlorobenzene	ND	0.010				
Chloroform	ND	0.010				
1,4-Dichlorobenzene	ND	0.010				
1,2-Dichloroethane	ND	0.010				
1,1-Dichloroethene	ND	0.010				
Methyl Ethyl Ketone	ND	1.00				
Tetrachloroethene	ND	0.010				
Trichloroethene	ND	0.010				
Vinyl Chloride	ND	0.010				
Surrogate Standard	% Recovery	QC Limits				
S1 - Dibromofluoromethane	108 Q	87	107			
S2 - Toluene-d8	94	91	108			
S3 - 4-Bromofluorobenzene	99	88	107			

ND - Not Detected DL - Detection Limit


LABORATORY MANAGER

000013

379 266

FORM 1

CLIENT SAMPLE NO.

VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ETC, INC.

Contract:

9809-154-2T

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML

Lab File ID: 0701007

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/10/98

GC Column: ID: 2.00 (mm)

Dilution Factor: 10.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 637-78-5	PROPANOIC ACID, 1-METHYLETHY	17.04	54.9	NJ
2. 638-11-9	BUTANOIC ACID, 1-METHYLETHYL	20.49	129	NJ
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
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30.				

FORM I VOA-GCMS-TIC

000014

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name OHM Remediation Services
 Defense Depot - Memphis, TN
 5445 Triangle Parkway
 Suite 400
 Norcross, GA 30092

Project # 20560
 FID # DACA45-96-D-0014

Site ID DDMT
 Memphis, TN

Date Arrived 09/03/98
 ETC Order Number 9809154

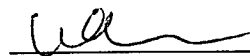
ETC Lab ID 9809154-03
Sample ID: RA-A-037-DS

Matrix :SOIL
 Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction ZHE	Leachate		09/08/98		TL	1311
TCLP Volatile Organics				09/10/98	LS	8260B
QC Batch	V2091001					
Benzene	ND	0.010				
Carbon Tetrachloride	ND	0.010				
Chlorobenzene	ND	0.010				
Chloroform	ND	0.010				
1,4-Dichlorobenzene	ND	0.010				
1,2-Dichloroethane	ND	0.010				
1,1-Dichloroethene	ND	0.010				
Methyl Ethyl Ketone	ND	1.00				
Tetrachloroethene	ND	0.010				
Trichloroethene	ND	0.010				
Vinyl Chloride	ND	0.010				
Surrogate Standard	% Recovery	QC Limits				
S1 - Dibromofluoromethane	105	87	107			
S2 - Toluene-d8	96	91	108			
S3 - 4-Bromofluorobenzene	100	88	107			

ND - Not Detected

DL - Detection Limit


 LABORATORY MANAGER

000015

379 268

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

Lab Name: ETC, INC.

Contract:

9809-154-3T

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML

Lab File ID: 0901009

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/10/98

GC Column: ID: 2.00 (mm)

Dilution Factor: 10.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 637-78-5	PROPANOIC ACID, 1-METHYLETHY	17.04	55.5	NJ
2. 638-11-9	BUTANOIC ACID, 1-METHYLETHYL	20.49	126	NJ
3.				
4.				
5.				
6.				
7.				
8.				
9.				
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30.				

FORM I VOA-GCMS-TIC

000016

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 269

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # **20560**
FID # **DACA45-96-D-0014**

Date Arrived **09/03/98**
ETC Order Number **9809154**

ETC Lab ID **9809154-04**
Sample ID: TB-9-03-98

Matrix : **AQUEOUS**
Sample Date : **09/03/98**

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics				09/10/98	09/10/98	LS	8260B
QC Batch	V2091001	ug/L					
Acetone	ND	ug/L	50.0				
Benzene	ND	ug/L	1.00				
Bromodichloromethane	ND	ug/L	1.00				
Bromoform	ND	ug/L	1.00				
Bromomethane	ND	ug/L	1.00				
Carbon Disulfide	ND	ug/L	1.00				
Carbon Tetrachloride	ND	ug/L	1.00				
Chlorobenzene	ND	ug/L	1.00				
Chlorodibromomethane	ND	ug/L	1.00				
Chloroethane	ND	ug/L	1.00				
Chloroform	ND	ug/L	1.00				
Chloromethane	ND	ug/L	1.00				
1,1-Dichloroethane	ND	ug/L	1.00				
1,2-Dichloroethane	ND	ug/L	1.00				
1,1-Dichloroethene	ND	ug/L	1.00				
trans-1,2-Dichloroethene	ND	ug/L	1.00				
1,2-Dichloropropane	ND	ug/L	1.00				
cis-1,3-Dichloropropene	ND	ug/L	1.00				
trans-1,3-Dichloropropene	ND	ug/L	1.00				
Ethylbenzene	ND	ug/L	1.00				
2-Hexanone (MBK)	ND	ug/L	5.00				
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.00				
2-Butanone (MEK)	ND	ug/L	20.0				
Methylene Chloride	ND	ug/L	20.0				
Styrene	ND	ug/L	1.00				
1,1,2,2-Tetrachloroethane	ND	ug/L	1.00				
Tetrachloroethene	ND	ug/L	1.00				
Toluene	ND	ug/L	1.00				
1,1,1-Trichloroethane	ND	ug/L	1.00				
1,1,2-Trichloroethane	ND	ug/L	1.00				
Trichloroethene	ND	ug/L	1.00				
Vinyl Acetate	ND	ug/L	20.0				
Vinyl Chloride	ND	ug/L	1.00				
o-Xylenes	ND	ug/L	1.00				
m-Xylenes	ND	ug/L	1.00				
p-Xylenes	ND	ug/L	1.00				
cis-1,2-Dichloroethene	ND	ug/L	1.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	106	87	107
S2 - Toluene-d8	92	91	108
S3 - 4-Bromofluorobenzene	98	88	107


LABORATORY MANAGER

ND - Not Detected

000017

379 270

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9809-154-4

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 10.00 (g/mL) ML

Lab File ID: 1101011

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/10/98

GC Column: ID: 2.00 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
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FORM I VOA-GCMS-TIC

000018

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 271

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project #. 20560
FID # DACA45-96-D-0014

Site ID DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809154

ETC Lab ID 9809154-01
Sample ID: RA-A-035-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction Organics	Leachate		09/08/98		TL	1311
TCLP Semivolatiles			09/09/98	09/10/98	RR	8270C
QC Batch	P05039					
1,4-Dichlorobenzene	ND	0.008				
2,4-Dinitrotoluene	ND	0.008				
Hexachlorobenzene	ND	0.008				
Hexachlorobutadiene	ND	0.008				
Hexachloroethane	ND	0.008				
2-Methylphenol	ND	0.008				
3-Methylphenol	ND	0.008				
4-Methylphenol	ND	0.008				
Nitrobenzene	ND	0.008				
Pentachlorophenol	ND	0.020				
Pyridine	ND	0.008				
2,4,5-Trichlorophenol	ND	0.008				
2,4,6-Trichlorophenol	ND	0.008				

Surrogate Standard	% Recovery	QC Limits
S1 - Nitrobenzene-d5	72	35 85
S2 - 2-Fluorobiphenyl	80	46 84
S3 - 4-Terphenyl-d14	84	33 113
S4 - Phenol-d6	34	12 48
S5 - 2,4,6-Tribromophenol	90	10 100
S6 - 2-Fluorophenol	47	21 73

ND - Not Detected DL - Detection Limit


LABORATORY MANAGER

000019

379 272

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
 FID # DACA45-96-D-0014

Site ID DDMT
 Memphis, TN

Date Arrived 09/03/98
 ETC Order Number 9809154

ETC Lab ID 9809154-02
Sample ID: RA-A-036-DS

Matrix :SOIL
 Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction Organics	Leachate		09/08/98		TL	1311
TCLP Semivolatiles			09/09/98	09/10/98	RR	8270C
QC Batch	P05039					
1,4-Dichlorobenzene	ND	0.008				
2,4-Dinitrotoluene	ND	0.008				
Hexachlorobenzene	ND	0.008				
Hexachlorobutadiene	ND	0.008				
Hexachloroethane	ND	0.008				
2-Methylphenol	ND	0.008				
3-Methylphenol	ND	0.008				
4-Methylphenol	ND	0.008				
Nitrobenzene	ND	0.008				
Pentachlorophenol	ND	0.020				
Pyridine	ND	0.008				
2,4,5-Trichlorophenol	ND	0.008				
2,4,6-Trichlorophenol	ND	0.008				
Surrogate Standard	% Recovery	QC Limits				
S1 - Nitrobenzene-d5	71	35 85				
S2 - 2-Fluorobiphenyl	84	46 84				
S3 - 4-Terphenyl-d14	96	33 113				
S4 - Phenol-d6	36	12 48				
S5 - 2,4,6-Tribromophenol	97	10 100				
S6 - 2-Fluorophenol	48	21 73				

ND - Not Detected DL - Detection Limit


 LABORATORY MANAGER

000020

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

379 273

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092
Site ID DDMT
Memphis, TN

Project # 20560
FID # DACA45-96-D-0014

Date Arrived 09/03/98
ETC Order Number 9809154

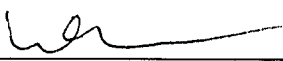
ETC Lab ID 9809154-03
Sample ID: RA-A-037-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction Organics	Leachate		09/08/98		TL	1311
TCLP Semivolatiles			09/09/98	09/10/98	RR	8270C
QC Batch	P05039					
1,4-Dichlorobenzene	ND	0.008				
2,4-Dinitrotoluene	ND	0.008				
Hexachlorobenzene	ND	0.008				
Hexachlorobutadiene	ND	0.008				
Hexachloroethane	ND	0.008				
2-Methylphenol	ND	0.008				
3-Methylphenol	ND	0.008				
4-Methylphenol	ND	0.008				
Nitrobenzene	ND	0.008				
Pentachlorophenol	ND	0.020				
Pyridine	ND	0.008				
2,4,5-Trichlorophenol	ND	0.008				
2,4,6-Trichlorophenol	ND	0.008				

Surrogate Standard	% Recovery	QC Limits
S1 - Nitrobenzene-d5	65	35 85
S2 - 2-Fluorobiphenyl	74	46 84
S3 - 4-Terphenyl-d14	83	33 113
S4 - Phenol-d6	33	12 48
S5 - 2,4,6-Tribromophenol	84	10 100
S6 - 2-Fluorophenol	42	21 73

ND - Not Detected DL - Detection Limit


LABORATORY MANAGER

000021

379 274

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111- (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400

Project # 20560
FID # DACA45-96-D-0014

Site ID **Norcross, GA 30092**
DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809154

ETC Lab ID **9809154-01**
Sample ID: RA-A-035-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction Organics	Leachate		09/08/98		TL	1311
TCLP Pesticides			09/09/98	09/11/98	RG	8081A
QC Batch	P07016					
Gamma-BHC (Lindane)	ND	0.001				
Chlordane	ND	0.010				
Endrin	ND	0.001				
Heptachlor	ND	0.001				
Methoxychlor	ND	0.040				
Toxaphene	ND	0.100				
Surrogate Standard	% Recovery	QC Limits				
S1 - Decachlorobiphenyl	51	34 115				
S2 - Tetrachloro-m-xylene	51	31 96				

ND - Not Detected

DL - Detection Limit


LABORATORY MANAGER

000022

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111- (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 275

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809154

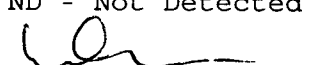
ETC Lab ID 9809154-02
Sample ID: RA-A-036-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction Organics	Leachate		09/08/98		TL	1311
TCLP Pesticides			09/09/98	09/11/98	RG	8081A
QC Batch	P07016					
Gamma-BHC (Lindane)	ND	0.001				
Chlordane	ND	0.010				
Endrin	ND	0.001				
Heptachlor	ND	0.001				
Methoxychlor	ND	0.040				
Toxaphene	ND	0.100				
Surrogate Standard	% Recovery		QC Limits			
S1 - Decachlorobiphenyl	40		34 115			
S2 - Tetrachloro-m-xylene	54		31 96			

ND - Not Detected

DL - Detection Limit


LABORATORY MANAGER

000023

379 276

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111- (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092
Site ID DDMT
Memphis, TN

Project # 20560
FID # DACA45-96-D-0014

Date Arrived 09/03/98
ETC Order Number 9809154

ETC Lab ID 9809154-03
Sample ID: RA-A-037-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction Organics	Leachate		09/08/98		TL	1311
TCLP Pesticides			09/09/98	09/11/98	RG	8081A
QC Batch	P07016					
Gamma-BHC (Lindane)	ND	0.001				
Chlordane	ND	0.010				
Endrin	ND	0.001				
Heptachlor	ND	0.001				
Methoxychlor	ND	0.040				
Toxaphene	ND	0.100				
Surrogate Standard	% Recovery	QC Limits				
S1 - Decachlorobiphenyl	48	34	115			
S2 - Tetrachloro-m-xylene	55	31	96			

ND - Not Detected DL - Detection Limit


LABORATORY MANAGER

000024

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET**379 277**

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID
DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809154

ETC Lab ID 9809154-01
Sample ID: RA-A-035-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE	DATE	BY	METHOD
			EXTRACTED	ANALYZED		
TCLP Extraction Organics	Leachate		09/08/98		TL	1311
TCLP Herbicides			09/09/98	09/10/98	RG	8151A
2,4-D	ND	0.010				
Silvex	ND	0.010				
<u>Surrogate Standard</u>	<u>% Recovery</u>	<u>QC Limits</u>				
S1 - 2,4,5-T	78	25 125				

ND - Not Detected

DL - Detection Limit


LABORATORY MANAGER

000025

379 278

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID
DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809154

ETC Lab ID 9809154-02
Sample ID: RA-A-036-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT UNITS: (mg/L)	DL	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
TCLP Extraction Organics	Leachate		09/08/98		TL	1311
TCLP Herbicides			09/09/98	09/10/98	RG	8151A
2,4-D	ND	0.010				
Silvex	ND	0.010				
<u>Surrogate Standard</u>	<u>% Recovery</u>	<u>QC Limits</u>				
S1 - 2,4,5-T	68	25 125				

ND - Not Detected DL - Detection Limit


LABORATORY MANAGER

000026

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 279

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID
DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809154

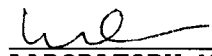
ETC Lab ID 9809154-03
Sample ID: RA-A-037-DS

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT	DL	DATE	DATE	BY	METHOD
	UNITS: (mg/L)		EXTRACTED	ANALYZED		
TCLP Extraction Organics	Leachate		09/08/98		TL	1311
TCLP Herbicides			09/09/98	09/12/98	RG	8151A
2,4-D	ND	0.010				
Silvex	ND	0.010				
Surrogate Standard	% Recovery		QC Limits			
S1 - 2,4,5-T	72		25	125		

ND - Not Detected

DL - Detection Limit


LABORATORY MANAGER

000027

379 280

Environmental Testing & Consulting, Inc.

**Quality Control Reports
TCLP**

000028

Environmental Testing & Consulting, Inc.

379 281

Quality Control Reports

Metals (ICP/GFAA/CV)

000029

379 282

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - TCLP

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-154

HOLDING TIMES

QC Batch(s) for this order : ICP/GFAA V6-TC-08
Mercury V3-TC-32

TCLP Extraction : All soils extracted within 180 days.
(28 days for Mercury)
Sample Preparation: All TCLP leachates prepared and analyzed
within 180 days. (28 days for Mercury)

CALIBRATION

Initial Calibration : All criteria met.
Continuing Calibration : All criteria met.

SAMPLE ANALYSIS

Instrumentation : Thermo Jarrell Ash Enviro-I ICP
CETAC M-6000A Mercury Analyzer

Dilutions Required : No dilutions required.

QUALITY CONTROL

9809-154.MQCBLANK

Method Blank

V6-TC-08BLK - ICP Metals
V3-TC-32BLK - Mercury

No analytes detected in the Method Blank.

9809-154.MQCLCS

Laboratory Control Sample(s)

V6-TC-08LCS - ICP Metals
V3-TC-32LCS - Mercury

All criteria met.

9809-154.MQCMSMSD

Matrix Spike / Matrix Spike Dup - ICP Metals

9809-154-03 RPD : All analytes within QC limits.
RA-A-037-DS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Hg

9809-154-03 RPD : All analytes within QC limits.
RA-A-037-DS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

000030

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - TCLP

379 283

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-154

Dilution Test - Dilution result must agree within 10% of original
result when sample is diluted by a factor of 5.

Post Digestion Spike - Recovery must be +/-15% of expected value.


Laboratory Manager

000031

379 284

TCLP METHOD BLANK
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID ICP/GFAA Metals V6-TC-08 BLK QC Batch V6-TC-08

Laboratory ID Mercury V3-TC-32 BLK QC Batch V3-TC-32

Date Sample Prepared 09/09/98 ICP/GFAA Metals

09/09/98 Mercury

Metals	Concentration mg/L	Detection Limit mg/L	Date Analyzed	Method
Silver	<0.500	0.500	09/10/98	6010B
Aluminum				6010B
Arsenic	<0.500	0.500	09/10/98	6010B
Barium	<5.00	5.00	09/10/98	6010B
Beryllium				6010B
Calcium				6010B
Cadmium	<0.100	0.100	09/10/98	6010B
Cobalt				6010B
Chromium	<0.500	0.500	09/10/98	6010B
Copper				6010B
Iron				6010B
Potassium				6010B
Magnesium				6010B
Manganese				6010B
Sodium				6010B
Nickel				6010B
Lead	<0.500	0.500	09/10/98	6010B
Antimony				6010B
Selenium	<0.500	0.500	09/10/98	6010B
Thallium				6010B
Vanadium				6010B
Zinc				6010B
Mercury	<0.020	0.020	09/10/98	7470A

Metals Blank

000032

9809-154.mqcBLANK

TCLP LABORATORY CONTROL SAMPLE
METALS

379 285

Lab Name Environmental Testing and Consulting, Inc

Laboratory Control ID ICP/GFAA Metals V6-TC-08 LCS QC Batch V6-TC-08
Mercury V3-TC-32 LCS V3-TC-32

Date Prepared ICP/GFAA Metals 09/09/98
Mercury 09/09/98

Metals	Spike Added mg/L	Found mg/L	% R	#	QC Limits
Silver	0.250	0.256	102	80	120
Aluminum				80	120
Arsenic	1.25	1.29	103	80	120
Barium	2.50	2.50	100	80	120
Beryllium				80	120
Calcium				80	120
Cadmium	0.250	0.261	104	80	120
Cobalt				80	120
Chromium	0.500	0.516	103	80	120
Copper				80	120
Iron				80	120
Potassium				80	120
Magnesium				80	120
Manganese				80	120
Sodium				80	120
Nickel				80	120
Lead	1.25	1.31	105	80	120
Antimony				80	120
Selenium	1.25	1.30	104	80	120
Thallium				80	120
Vanadium				80	120
Zinc				80	120
Mercury	0.0050	0.0052	104	80	120

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

Metals Laboratory Control Sample

000033

9809-154.mqcLCS

TCLP MATRIX SPIKE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MS ICP/GFAA Metals	9809-154-03	QC Batch
Laboratory ID MS Mercury	9809-154-03	V6-TC-08
		V3-TC-32

Date Sample Prepared	09/09/98	ICP/GFAA Metals
	09/09/98	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MS Conc mg/L	RPD <20% #	MS % Rec #	QC Limits	
Silver	0.250	ND	0.264	2	106	50	150
Aluminum						50	150
Arsenic	1.25	ND	1.41	1	113	50	150
Barium	2.50	1.56	4.08	1	101	50	150
Beryllium						50	150
Calcium						50	150
Cadmium	0.250	ND	0.266	3	106	50	150
Cobalt						50	150
Chromium	0.500	ND	0.526	3	105	50	150
Copper						50	150
Iron						50	150
Potassium						50	150
Magnesium						50	150
Manganese						50	150
Sodium						50	150
Nickel						50	150
Lead	1.25	ND	1.33	6	106	50	150
Antimony						50	150
Selenium	1.25	ND	1.49	1	119	50	150
Thallium						50	150
Vanadium						50	150
Zinc						50	150
Mercury	0.0050	ND	0.0055	10	110	50	150

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits ND - Not Detected

Metals Matrix Spike

000034
9809-154.mqcMSMSD

379 287

TCLP MATRIX SPIKE DUPLICATE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MS ICP/GFAA Metals	9809-154-03	QC Batch V6-TC-08
Laboratory ID MS Mercury	9809-154-03	V3-TC-32

Date Sample Prepared	09/09/98	ICP/GFAA Metals
	09/09/98	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MSD Conc mg/L		MSD % Rec	#	QC Limits
Silver	0.250	ND	0.259		104	50	150
Aluminum						50	150
Arsenic	1.25	ND	1.40		112	50	150
Barium	2.50	1.56	4.05		100	50	150
Beryllium						50	150
Calcium						50	150
Cadmium	0.250	ND	0.259		104	50	150
Cobalt						50	150
Chromium	0.500	ND	0.511		102	50	150
Copper						50	150
Iron						50	150
Potassium						50	150
Magnesium						50	150
Manganese						50	150
Sodium						50	150
Nickel						50	150
Lead	1.25	ND	1.25		100	50	150
Antimony						50	150
Selenium	1.25	ND	1.48		118	50	150
Thallium						50	150
Vanadium						50	150
Zinc						50	150
Mercury	0.0050	ND	0.0050		100	50	150

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits ND - Not Detected

Metals Matrix Spike Duplicate

000035
9809-154.mqcMSMSD

379 288

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC/MS Volatiles

000036

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - TCLP

379 289

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-154
Method (SW-846) : 1311/8260B

HOLDING TIMES

TCLP Extraction : All samples extracted within 14 days.
Sample Analysis : All VOC extracts analyzed within 14 days.

QUALITY CONTROL

QC Batch Form 4 Summary
V2091001 V209101LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*

*
Surrogate recovery for Dibromofluoromethane was flagged for high recovery in sample 9809-154-02T(RA-A-036-DS).

Laboratory Control Sample FORM 3
V209101BS/BD

All criteria met.*

*
Recovery for cis-1,2-Dichloroethene was flagged for high recovery in the V209101BS. BD recovery was within QC Limits.

Recoveries for 2-Chloroethyl vinyl ether and Tetrachloroethene were flagged for high recovery in the V209101BD. BS recoveries were within QC Limits.

Matrix Spike / Matrix Spike Dup FORM 3

9809-154-03 RPD : All analytes within QC limits.
RA-A-037-DS Spike Recovery : All analytes within QC limits.*

*
Recoveries for Chloroform and Trichloroethene were flagged for high recovery in the Matrix Spike. MSD recoveries were within QC Limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
V209101LB

No Target Analytes detected above Practical Quantitation Limit.
Trace level is considered to be less than 2 times the detection limit.

000037

379 290

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - TCLP

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-154
Method (SW-846) : 1311/8260B

CALIBRATION

BFB Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*

*
The following analytes were flagged with a percent difference
>30.0% :

Carbon Disulfide 2-Chloroethyl vinyl Ether
Vinyl Acetate

High response indicates that reported levels for these analytes
may be biased high. These compounds were not identified in samples
associated with this project. The data was not affected.

Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times
within QC limits.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.


Laboratory Manager

000038

FORM 2
WATER VOA-GCMS SYSTEM MONITORING COMPCUND RECOVERY

379 291

Lab Name: ETC, INC.

Contract: ..

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-154

	CLIENT SAMPLE NO.	SMC1 (DBF) #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER	TOT OUT
01	V209101LB	107	95	100		0
02	9809-154-1T	107	96	100		0
03	9809-154-2T	108*	94	99		1
04	9809-154-3T	105	96	100		0
05	9809-154-4	106	92	98		0
06	V209101BS	106	95	99		0
07	V209101BD	103	97	103		0
08	9809-154-3TM	105	96	99		0
09	9809-154-3TS	104	97	103		0
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
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27						
28						
29						
30						

QC LIMITS

SMC1 (DBF) = Dibromofluoromethane (87-107)
 SMC2 (TOL) = Toluene-d8 (91-108)
 SMC3 (BFB) = Bromofluorobenzene (88-107)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

000039

379 292

FORM 4
VOA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V209101LB

Lab Name: ETC, INC.

Lab Prep Batch: V2091001

SDG No.: 9809-154

Lab File ID: 0302003

Lab Prep Batch: V2091001

Date Analyzed: 09/10/98

Time Analyzed: 1445

GC Column: ID: 2 (mm)

Heated Purge: (Y/N) Y

Instrument ID: VOC2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	9809-154-1T		0501005	1613
02	9809-154-2T		0701007	1742
03	9809-154-3T		0901009	1910
04	9809-154-4		1101011	2038
05	V209101BS		1301013LCS	2207
06	V209101BD		1401014LCS	2251
07	9809-154-3TM		1501015	2334
08	9809-154-3TS		1601016	0018
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

379 293
CLIENT SAMPLE NO.

V209101LB

Lab Name: ETC, INC.

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Prep Batch: V2091001

Sample wt/vol: 10.00 (g/mL) ML

Lab File ID: 0302003

Level: (low/med) LOW

Date Analyzed: 09/10/98

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
71-43-2-----	Benzene	1.00	U	
78-93-3-----	Methyl-Ethyl Ketone	100	U	
56-23-5-----	Carbon Tetrachloride	1.00	U	
108-90-7-----	Chlorobenzene	1.00	U	
67-66-3-----	Chloroform	1.00	U	
106-46-7-----	1,4-Dichlorobenzene	1.00	U	
107-06-2-----	1,2-Dichloroethane	1.00	U	
75-35-4-----	1,1-Dichloroethene	1.00	U	
127-18-4-----	Tetrachloroethene	1.00	U	
108-88-3-----	Toluene	1.00	U	
79-01-6-----	Trichloroethene	1.00	U	
75-01-4-----	Vinyl Chloride	1.00	U	

FORM I VOA-GCMS

000041

379 294

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V209101LB

Lab Name: ETC, INC.

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Prep Batch: V2091001

Sample wt/vol: 10.00 (g/mL) ML

Lab File ID: 0302003

Level: (low/med) LOW

Date Analyzed: 09/10/98

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
67-64-1-----	Acetone	50.0	U
71-43-2-----	Benzene	1.00	U
75-27-4-----	Bromodichloromethane	1.00	U
75-25-2-----	Bromoform	1.00	U
74-83-9-----	Bromomethane	1.00	U
78-93-3-----	Methyl-Ethyl Ketone	20.0	U
75-15-0-----	Carbon Disulfide	1.00	U
56-23-5-----	Carbon Tetrachloride	1.00	U
108-90-7-----	Chlorobenzene	1.00	U
124-48-1-----	Chlorodibromomethane	1.00	U
75-00-3-----	Chloroethane	1.00	U
67-66-3-----	Chloroform	1.00	U
74-87-3-----	Chloromethane	1.00	U
75-34-3-----	1,1-Dichloroethane	1.00	U
107-06-2-----	1,2-Dichloroethane	1.00	U
75-35-4-----	1,1-Dichloroethene	1.00	U
156-59-4-----	cis-1,2-Dichloroethene	1.00	U
156-60-5-----	trans-1,2-Dichloroethene	1.00	U
78-87-5-----	1,2-Dichloropropane	1.00	U
10061-01-5-----	cis-1,3-Dichloropropene	1.00	U
10061-02-6-----	trans-1,3-Dichloropropene	1.00	U
100-41-4-----	Ethylbenzene	1.00	U
591-78-6-----	2-Hexanone	5.00	U
75-09-2-----	Methylene Chloride	20.0	U
108-10-1-----	4-Methyl-2-Pentanone	5.00	U
100-42-5-----	Styrene	1.00	U
79-34-5-----	1,1,2,2-Tetrachloroethane	1.00	U
127-18-4-----	Tetrachloroethene	1.00	U
108-88-3-----	Toluene	1.00	U
71-55-6-----	1,1,1-Trichloroethane	1.00	U
79-00-5-----	1,1,2-Trichloroethane	1.00	U
79-01-6-----	Trichloroethene	1.00	U
108-05-4-----	Vinyl Acetate	20.0	U

FORM I VOA-GCMS

000042

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V209101LB

Lab Name: ETC, INC.

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Prep Batch: V2091001

Sample wt/vol: 10.00 (g/mL) ML

Lab File ID: 0302003

Level: (low/med) LOW

Date Analyzed: 09/10/98

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
75-01-4-----	Vinyl Chloride	1.00	U
1330-20-7-----	Xylene-mp	1.00	U
95-47-6-----	Xylene-o	1.00	U

FORM I VOA-GCMS

000043

FORM 3
WATER VOA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: V2091001

SDG No.: 9809-154

Matrix Spike - Sample No.: V209101BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acetone	100		99.2	99	59-151
Acetonitrile	1000		1050	105	57-143
Benzene	100		104	104	72-124
Bromobenzene	100		105	105	77-120
Bromochloromethane	100		110	110	74-120
Bromodichloromethane	100		108	108	68-119
Bromoform	100		80.8	81	66-136
Bromomethane	100		97.1	97	40-134
Methyl-Ethyl Ketone	100		93.3	93	55-151
n-Butylbenzene	100		97.5	98	69-129
sec-Butylbenzene	100		111	111	72-127
tert-Butylbenzene	100		109	109	73-126
Carbon Disulfide	100		114	114	60-133
Carbon Tetrachloride	100		115	115	64-123
Chlorobenzene	100		99.0	99	77-112
Chlorodibromomethane	100		107	107	72-118
Chloroethane	100		106	106	64-142
2-Chloroethyl vinyl Eth	100		165	165	22-165
Chloroform	100		111	111	70-115
Chloromethane	100		93.4	93	58-139
2-Chlorotoluene	100		101	101	65-132
4-Chlorotoluene	100		101	101	67-127
1,2-Dibromo-3-chloropro	100		94.0	94	56-134
1,2-Dibromoethane	100		101	101	74-118
Dibromomethane	100		104	104	75-114
1,2-Dichlorobenzene	100		94.5	94	80-113
1,3-Dichlorobenzene	100		97.3	97	77-119
1,4-Dichlorobenzene	100		93.7	94	78-116

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS:

FORM 3
WATER VOA-GCMS LABORATORY CONTROL SAMPLE

379 297

Lab Name: ETC, INC.

Lab Prep Batch: V2091001

SDG No.: 9809-154

Matrix Spike - Sample No.: V209101BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Dichlorodifluoromethane	100		104	104	48-145
1,1-Dichloroethane	100		109	109	76-118
1,2-Dichloroethane	100		115	115	62-124
1,1-Dichloroethene	100		108	108	69-121
cis-1,2-Dichloroethene	100		116	116*	76-114
trans-1,2-Dichloroethene	100		111	111	72-121
1,2-Dichloropropane	100		95.8	96	64-133
1,3-Dichloropropane	100		98.4	98	68-128
2,2-Dichloropropane	100		111	111	67-132
1,1-Dichloropropene	100		113	113	76-117
cis-1,3-Dichloropropene	100		104	104	77-120
trans-1,3-Dichloropropene	100		102	102	73-124
Ethylbenzene	100		98.6	99	77-111
Hexachlorobutadiene	100		99.0	99	69-137
2-Hexanone	100		89.6	90	53-144
Isopropylbenzene	100		104	104	74-125
4-Isopropyltoluene	100		107	107	72-127
Methylene Chloride	100		98.7	99	67-115
4-Methyl-2-Pentanone	100		90.6	91	42-144
Naphthalene	100		89.0	89	53-124
n-Propylbenzene	100		101	101	75-125
Styrene	100		101	101	77-117
1,1,1,2-Tetrachloroethane	100		108	108	79-113
1,1,2,2-Tetrachloroethane	100		80.2	80	67-126
Tetrachloroethene	100		110	110	77-115
Toluene	100		92.6	93	77-115
1,2,3-Trichlorobenzene	100		94.8	95	62-132
1,2,4-Trichlorobenzene	100		94.0	94	68-132

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS:

379 298

FORM 3
WATER VOA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: V2091001

SDG No.: 9809-154

Matrix Spike - Sample No.: V209101BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,1,1-Trichloroethane	100		118	118	63-122
1,1,2-Trichloroethane	100		99.5	100	69-117
Trichloroethene	100		107	107	75-113
Trichlorofluoromethane	100		106	106	55-130
1,2,3-Trichloropropane	100		93.5	94	62-130
1,2,4-Trimethylbenzene	100		109	109	69-126
1,3,5-Trimethylbenzene	100		104	104	69-128
Vinyl Acetate	100		125	125	28-146
Vinyl Chloride	100		99.6	100	65-134
Xylene-mp	200		201	100	77-115
Xylene-o	100		100	100	77-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS:

FORM 3
WATER VOA-GCMS LABORATORY CONTROL SAMPLE

379 299

Lab Name: ETC, INC.

Lab Prep Batch: V2091001

SDG No.: 9809-154

Matrix Spike - Sample No.: V209101BD

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Acetone	100	96.8	97	2	20	59-151
Acetonitrile	1000	1090	109	4	20	57-143
Benzene	100	110	110	6	20	72-124
Bromobenzene	100	109	109	4	20	77-120
Bromochloromethane	100	106	106	4	20	74-120
Bromodichloromethane	100	111	111	3	20	68-119
Bromoform	100	89.0	89	9	20	66-136
Bromomethane	100	105	105	8	20	40-134
Methyl-Ethyl Ketone	100	96.5	96	3	20	55-151
n-Butylbenzene	100	102	102	4	20	69-129
sec-Butylbenzene	100	110	110	1	20	72-127
tert-Butylbenzene	100	110	110	1	20	73-126
Carbon Disulfide	100	117	117	2	20	60-133
Carbon Tetrachloride	100	114	114	1	20	64-123
Chlorobenzene	100	101	101	2	20	77-112
Chlorodibromomethane	100	111	111	4	20	72-118
Chloroethane	100	111	111	5	20	64-142
2-Chloroethyl vinyl Eth	100	171	171*	4	20	22-165
Chloroform	100	111	111	0	20	70-115
Chloromethane	100	99.9	100	7	20	58-139
2-Chlorotoluene	100	106	106	5	20	65-132
4-Chlorotoluene	100	106	106	5	20	67-127
1,2-Dibromo-3-chloropro	100	98.9	99	5	20	56-134
1,2-Dibromoethane	100	110	110	8	20	74-118
Dibromomethane	100	106	106	2	20	75-114
1,2-Dichlorobenzene	100	100	100	6	20	80-113
1,3-Dichlorobenzene	100	103	103	6	20	77-119
1,4-Dichlorobenzene	100	99.6	100	6	20	78-116

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS:

379 300

FORM 3
WATER VOA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: V2091001

SDG No.: 9809-154

Matrix Spike - Sample No.: V209101BD

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Dichlorodifluoromethane	100	105	105	1	20	48-145
1,1-Dichloroethane	100	107	107	2	20	76-118
1,2-Dichloroethane	100	114	114	1	20	62-124
1,1-Dichloroethene	100	107	107	1	20	69-121
cis-1,2-Dichloroethene	100	113	113	3	20	76-114
trans-1,2-Dichloroethen	100	112	112	1	20	72-121
1,2-Dichloropropane	100	104	104	8	20	64-133
1,3-Dichloropropane	100	107	107	9	20	68-128
2,2-Dichloropropane	100	109	109	2	20	67-132
1,1-Dichloropropene	100	113	113	0	20	76-117
cis-1,3-Dichloropropene	100	108	108	4	20	77-120
trans-1,3-Dichloroprope	100	108	108	6	20	73-124
Ethylbenzene	100	104	104	5	20	77-111
Hexachlorobutadiene	100	108	108	9	20	69-137
2-Hexanone	100	101	101	12	20	53-144
Isopropylbenzene	100	112	112	7	20	74-125
4-Isopropyltoluene	100	105	105	2	20	72-127
Methylene Chloride	100	98.5	98	1	20	67-115
4-Methyl-2-Pentanone	100	99.0	99	8	20	42-144
Naphthalene	100	96.9	97	9	20	53-124
n-Propylbenzene	100	106	106	5	20	75-125
Styrene	100	107	107	6	20	77-117
1,1,1,2-Tetrachloroetha	100	112	112	4	20	79-113
1,1,2,2-Tetrachloroetha	100	94.8	95	17	20	67-126
Tetrachloroethene	100	120	120*	9	20	77-115
Toluene	100	101	101	8	20	77-115
1,2,3-Trichlorobenzene	100	103	103	8	20	62-132
1,2,4-Trichlorobenzene	100	101	101	7	20	68-132

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS:

FORM 3
WATER VOA-GCMS LABORATORY CONTROL SAMPLE

379 301

Lab Name: ETC, INC.

Lab Prep Batch: V2091001

SDG No.: 9809-154

Matrix Spike - Sample No.: V209101BD

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1,1-Trichloroethane	100	119	119	1	20	63-122
1,1,2-Trichloroethane	100	105	105	5	20	69-117
Trichloroethene	100	110	110	3	20	75-113
Trichlorofluoromethane	100	102	102	4	20	55-130
1,2,3-Trichloropropane	100	99.3	99	5	20	62-130
1,2,4-Trimethylbenzene	100	106	106	3	20	69-126
1,3,5-Trimethylbenzene	100	109	109	5	20	69-128
Vinyl Acetate	100	122	122	2	20	28-146
Vinyl Chloride	100	105	105	5	20	65-134
Xylene-mp	200	210	105	5	20	77-115
Xylene-o	100	108	108	8	20	77-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 67 outside limits

Spike Recovery: 3 out of 134 outside limits

COMMENTS:

379 302

FORM 3
WATER VOA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: V2091001

SDG No.: 9809-154

Matrix Spike - Sample No.: 9809-154-3T

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Benzene	100	0.000	119	119	72-124
Methyl-Ethyl Ketone	100	0.000	112	112	55-151
Carbon Tetrachloride	100	0.000	120	120	64-123
Chlorobenzene	100	0.000	108	108	77-112
Chloroform	100	0.000	118	118*	70-115
1,4-Dichlorobenzene	100	0.000	104	104	78-116
1,2-Dichloroethane	100	0.000	121	121	62-124
1,1-Dichloroethene	100	0.000	114	114	69-121
Tetrachloroethene	100	0.000	104	104	77-115
Trichloroethene	100	0.000	115	115*	75-113
Vinyl Chloride	100	0.000	112	112	65-134

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
Benzene	100	120	120	1	20	72-124
Methyl-Ethyl Ketone	100	103	103	8	20	55-151
Carbon Tetrachloride	100	112	112	7	20	64-123
Chlorobenzene	100	106	106	2	20	77-112
Chloroform	100	112	112	5	20	70-115
1,4-Dichlorobenzene	100	98.2	98	6	20	78-116
1,2-Dichloroethane	100	114	114	6	20	62-124
1,1-Dichloroethene	100	109	109	4	20	69-121
Tetrachloroethene	100	95.8	96	8	20	77-115
Trichloroethene	100	110	110	4	20	75-113
Vinyl Chloride	100	102	102	9	20	65-134

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 11 outside limits

Spike Recovery: 2 out of 22 outside limits

COMMENTS:

FORM III VOA-GCMS

000050

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC/MS Semi-Volatiles

000051

379 304

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - TCLP

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-154
Method (SW-846) : 1311/8270C

HOLDING TIMES

TCLP Extraction : All samples extracted within 14 days.
Sample Extraction : All TCLP leachate/filtrates extracted within 7 days.
Sample Analysis : All Non-VOC extracts analyzed within 40 days.

QUALITY CONTROL

QC Batch Form 4 Summary
P05039 P05039LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*

*
Surrogate recovery for 2-Fluorobiphenyl was flagged for high recovery in sample 9809-154-03MS(RA-A-037-DS). Review of the raw data showed no obvious matrix interference.

Laboratory Control Sample FORM 3
P05039TBS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3

9809-154-03 RPD : All analytes within QC limits.*
RA-A-037-DS Spike Recovery : All analytes within QC limits.

*
RPDs for multiple analytes were flagged outside QC Limits due to lower recovery in the Matrix Spike Duplicate. MS/MSD recoveries were within QC Limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P05039LB

No Target Analytes detected above Practical Quantitation Limit.
Trace level is considered to be less than 2 times the detection limit.

CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Calibration Verification : All criteria met. FORM 6
Daily Calibration : All criteria met. FORM 7A

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

000052

ENVIRONMENTAL TESTING AND CONSULTING, INC.

MEMPHIS, TN

CASE NARRATIVE

GC/MS SEMI-VOLATILE COMPOUNDS - TCLP

379 305

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-154
Method (SW-846) : 1311/8270C

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.


Laboratory Manager

000053

379 306

FORM 2
WATER BNA-GCMS SURROGATE RECOVERY

Lab Nam : ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-154

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	P05039LB	43	32	60	72	81	82			0
02	P05039TBS	50	36	65	73	88	84			0
03	9809-154-1T	47	34	72	80	90	84			0
04	9809-154-2T	48	36	71	84	97	96			0
05	9809-154-3T	42	33	65	74	84	83			0
06	9809-154-3TM	56	43	72	86*	100	98			1
07	9809-154-3TS	50	38	61	68	85	75			0
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09										
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S1 (2FP)	= 2-Fluorophenol	QC LIMITS
S2 (PHL)	= Phenol-d6	(21- 73)
S3 (NBZ)	= Nitrobenzene-d5	(12- 48)
S4 (FBP)	= 2-Fluorobiphenyl	(35- 85)
S5 (TBP)	= 2,4,6-Tribromophenol	(46- 84)
S6 (TPH)	= Terphenyl-d14	(10-100)
		(33-113)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

000054

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

379 307

CLIENT SAMPLE NO

P05039LB

Lab Name: ETC, INC.

Lab Prep Batch: P05039

Lab File ID: 1101009

Matrix: (soil/water) WATER

Level:(low/med) LOW

SDG No.: 9809-154

Instrument ID: BNA2

Date Analyzed: 09/10/98

Time Analyzed: 2021

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P05039TBS		1201010	09/10/98
02	9809-154-1T		1501013	09/10/98
03	9809-154-2T		1601014	09/10/98
04	9809-154-3T		1701015	09/10/98
05	9809-154-3TM		1801016	09/10/98
06	9809-154-3TS		1901017	09/11/98
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COMMENTS:

379 308

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

Lab Name: ETC, INC.

P05039LB

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Prep Batch: P05039

Sample wt/vol: 250.0 (g/mL) ML

Lab File ID: 1101009

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1 (mL)

Date Analyzed: 09/10/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
106-46-7-----	1,4-Dichlorobenzene	8.0	U
121-14-2-----	2,4-Dinitrotoluene	8.0	U
118-74-1-----	Hexachlorobenzene	8.0	U
87-68-3-----	Hexachlorobutadiene	8.0	U
67-72-1-----	Hexachloroethane	8.0	U
95-48-7-----	2-Methylphenol	8.0	U
106-44-5-----	3&4-Methylphenol	8.0	U
98-95-3-----	Nitrobenzene	8.0	U
87-86-5-----	Pentachlorophenol	20.0	U
110-86-1-----	Pyridine	8.0	U
95-95-4-----	2,4,5-Trichlorophenol	8.0	U
88-06-2-----	2,4,6-Trichlorophenol	8.0	U

FORM I BNA-GCMS

000056

FORM 3
WATER BNA-GCMS LABORATORY CONTROL SAMPLE

379 309

Lab Name: ETC, INC.

Lab Prep Batch: P05039

SDG No.: 9809-154

Matrix Spike - Sample No.: P05039TBS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
1,4-Dichlorobenzene	400		266	66	31- 97
2,4-Dinitrotoluene	400		289	72	34-130
Hexachlorobenzene	400		374	94	65-133
Hexachlorobutadiene	400		292	73	50-112
Hexachloroethane	400		254	64	37-100
2-Methylphenol	640		414	65	40-117
3&4-Methylphenol	640		382	60	46- 99
Nitrobenzene	400		298	74	57-120
Pentachlorophenol	640		497	78	22-171
Pyridine	400		186	46	10- 82
2,4,5-Trichlorophenol	640		463	72	31-147
2,4,6-Trichlorophenol	640		512	80	30-163

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS:

FORM III BNA-GCMS

000057

379 310

FORM 3
WATER BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P05039

SDG No.: 9809-154

Matrix Spike - Sample No.: 9809-154-3TM

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,4-Dichlorobenzene	400	0.00	313	78	31- 97
2,4-Dinitrotoluene	400	0.00	345	86	34-130
Hexachlorobenzene	400	0.00	450	112	65-133
Hexachlorobutadiene	400	0.00	332	83	50-112
Hexachloroethane	400	0.00	306	76	37-100
2-Methylphenol	640	0.00	504	79	40-117
3&4-Methylphenol	640	0.00	398	62	46- 99
Nitrobenzene	400	0.00	341	85	57-120
Pentachlorophenol	640	0.00	616	96	22-171
Pyridine	400	0.00	240	60	10- 82
2,4,5-Trichlorophenol	640	0.00	554	86	31-147
2,4,6-Trichlorophenol	640	0.00	611	95	30-163

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,4-Dichlorobenzene	400	250	62	23*	20	31- 97
2,4-Dinitrotoluene	400	272	68	23*	20	34-130
Hexachlorobenzene	400	326	82	31*	20	65-133
Hexachlorobutadiene	400	269	67	21*	20	50-112
Hexachloroethane	400	248	62	20	20	37-100
2-Methylphenol	640	433	68	15	20	40-117
3&4-Methylphenol	640	344	54	14	20	46- 99
Nitrobenzene	400	284	71	18	20	57-120
Pentachlorophenol	640	470	73	27*	20	22-171
Pyridine	400	185	46	26*	20	10- 82
2,4,5-Trichlorophenol	640	436	68	23*	20	31-147
2,4,6-Trichlorophenol	640	481	75	24*	20	30-163

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 8 out of 12 outside limits

Spike Recovery: 0 out of 24 outside limits

COMMENTS:

FORM III BNA-GCMS

000058

379 311

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC Pesticides

000059

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
PESTICIDE - TCLP

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-154
Method (SW-846) : 1311/8081A

HOLDING TIMES

TCLP Extraction : All samples extracted within 14 days.
Sample Extraction : All TCLP leachate/filtrates extracted within 7 days.
Sample Analysis : All Non-VOC extracts analyzed within 40 days.

QUALITY CONTROL

QC Batch Form 4 Summary
P07016 P07016LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*

*
Surrogate recovery for Decachlorobiphenyl was flagged as outside QC Limits in sample 9809-154-03MS(RA-A-035-DS). Surrogate recovery for Tetrachloro-m-xylene was within QC Limits. Surrogate recoveries for 9809-154-03MD were within QC Limits.

Laboratory Control Sample FORM 3
P07016BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3 - Water
9809-154-03 RPD : All analytes within QC limits.
RA-A-035-DS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Samples for system verification.

Method Blank FORM 4
P07016LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*

*
Calibration Verification(CV) : P309101B.37R (Primary)

Analyte	%Diff(15% Max)	Response
Endrin	20.0	Low
Tetrachloro-m-xylene	17.0	Low
Decachlorobiphenyl	19.0	Low

Low responses indicate that reported levels for these analytes may be biased low. Recoveries for Endrin were within QC Limits in P07016BS and 9809-154-03MS/MSD associated with this CV. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits for all samples associated with this project. The data was not affected.

000060

ENVIRONMENTAL TESTING AND CONSULTING, INC.

MEMPHIS, TN
CASE NARRATIVE
PESTICIDE - TCLP

379 313

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-154
Method (SW-846) : 1311/8081A

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000061

FORM 2
WATER PESTICIDE SURROGATE RECOVERY

Contract:

SDG No.: 9809-154

	QC LIMITS
S1 (TMX) = Tetrachloro-m-xylene	(31- 96)
S2 (DBC) = Decachlorobiphenyl	(34-115)

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# Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out
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000062

FORM 4
PESTICIDE METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

P07016LB

Lab Name: ETC, INC.

Lab Prep Batch: P07016

SDG No.: 9809-154

Lab File ID: P309101B-27R

Instrument ID: PEST3B

Matrix: (soil/water) WATER

Date Analyzed: 09/11/98

Level:(low/med) LOW

Time Analyzed: 1447

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	9809-154-1		P309101B-16R	09/11/98
02	9809-154-2		P309101B-17R	09/11/98
03	9809-154-3		P309101B-18R	09/11/98
04	9809-154-3M		P309101B-19R	09/11/98
05	9809-154-3S		P309101B-20R	09/11/98
06	P07016BS		P309101B-33R	09/11/98
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COMMENTS:

379 316

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P07016LB

Lab Name: ETC, INC.

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Prep Batch: P07016

Sample wt/vol: 250.0 (g/mL) ML

Lab File ID: P309101B-27R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10 (mL)

Date Analyzed: 09/11/98

Injection Volume: 1.0 (uL)

Dilution Factor: 10.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
58-89-9-----	gamma-BHC	1.60	U
5103-71-9-----	alpha-chlordane	1.60	U
5103-74-2-----	gamma-chlordane	1.60	U
72-20-8-----	Endrin	1.60	U
76-44-8-----	Heptachlor	1.60	U
72-43-5-----	Methoxychlor	1.60	U

FORM I PESTICIDE

000064

FORM 3
WATER PESTICIDE LABORATORY CONTROL SAMPLE

379 317

Lab Name: ETC, INC.

Lab Prep Batch: P07016

SDG No.: 9809-154

Matrix Spike - Sample No.: P07016BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aldrin	1.00		0.690	69	34-105
alpha-BHC	1.00		0.684	68	41-102
beta-BHC	1.00		0.839	84	26-151
delta-BHC	1.00		0.589	59	21- 92
gamma-BHC	1.00		0.712	71	41-102
alpha-chlordane	1.00		0.822	82	48-117
gamma-chlordane	1.00		0.809	81	50-108
4,4'-DDD	1.00		0.856	86	39-124
4,4'-DDE	1.00		0.856	86	41-111
4,4'-DDT	1.00		0.911	91	39-123
Dieldrin	1.00		0.822	82	42-111
Endosulfan I	1.00		0.826	83	48-117
Endosulfan II	1.00		0.896	90	52-114
Endosulfan sulfate	1.00		0.852	85	46-111
Endrin	1.00		0.808	81	45-117
Endrin aldehyde	1.00		0.925	92	48-125
Endrin ketone	1.00		1.11	111	51-112
Heptachlor	1.00		0.737	74	43-114
Heptachlor epoxide	1.00		0.790	79	42-115
Methoxychlor	1.00		0.937	94	39-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 20 outside limits

COMMENTS:

379 318

FORM 3

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P07016

SDG No.: 9809-154

Matrix Spike - Sample No.: 9809-154-3

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Aldrin	4.00		2.76	69	34-105
alpha-BHC	4.00		2.69	67	41-102
beta-BHC	4.00		3.24	81	26-151
delta-BHC	4.00		2.39	60	21- 92
gamma-BHC	4.00	0.000	2.82	70	41-102
alpha-chlordane	4.00	0.000	3.15	79	48-117
gamma-chlordane	4.00	0.410	3.36	74	50-108
4,4'-DDD	4.00		3.22	80	39-124
4,4'-DDE	4.00		3.16	79	41-111
4,4'-DDT	4.00		3.32	83	39-123
Dieldrin	4.00		3.16	79	42-111
Endosulfan I	4.00		3.13	78	48-117
Endosulfan II	4.00		3.35	84	52-114
Endosulfan sulfate	4.00		3.13	78	46-111
Endrin	4.00	0.000	3.29	82	45-117
Endrin aldehyde	4.00		3.98	100	48-125
Endrin ketone	4.00		3.59	90	51-112
Heptachlor	4.00	0.000	2.88	72	43-114
Heptachlor epoxide	4.00		3.03	76	42-115
Methoxychlor	4.00	0.000	3.19	80	39-140

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

COMMENTS:

000066

FORM 3
WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

379 319

Lab Name: ETC, INC.

Lab Prep Batch: P07016

SDG No.: 9809-154

Matrix Spike - Sample No.: 9809-154-3

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Aldrin	4.00	2.60	65	6	20	34-105
alpha-BHC	4.00	2.50	62	8	20	41-102
beta-BHC	4.00	3.15	79	2	20	26-151
delta-BHC	4.00	2.30	58	3	20	21- 92
gamma-BHC	4.00	2.66	66	6	20	41-102
alpha-chlordane	4.00	3.21	80	1	20	48-117
gamma-chlordane	4.00	3.36	74	0	20	50-108
4,4'-DDD	4.00	3.33	83	4	20	39-124
4,4'-DDE	4.00	3.16	79	0	20	41-111
4,4'-DDT	4.00	3.40	85	2	20	39-123
Dieldrin	4.00	3.23	81	2	20	42-111
Endosulfan I	4.00	3.07	77	1	20	48-117
Endosulfan II	4.00	3.41	85	1	20	52-114
Endosulfan sulfate	4.00	3.24	81	4	20	46-111
Endrin	4.00	3.25	81	1	20	45-117
Endrin aldehyde	4.00	3.69	92	8	20	48-125
Endrin ketone	4.00	3.84	96	6	20	51-112
Heptachlor	4.00	2.76	69	4	20	43-114
Heptachlor epoxide	4.00	2.98	74	3	20	42-115
Methoxychlor	4.00	3.50	88	10	20	39-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 20 outside limits

Spike Recovery: 0 out of 40 outside limits

COMMENTS:

379 320

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC Herbicides

000068

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
HERBICIDE - TCLP

379 321

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-154
Method (SW-846) : 1311/8151A

HOLDING TIMES

TCLP Extraction : All samples extracted within 14 days.
Sample Extraction : All TCLP leachate/filtrates extracted within 7 days.
Sample Analysis : All Non-VOC extracts analyzed within 40 days.

QUALITY CONTROL

QC Batch Form 4 Summary
P11006 P11006LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P11006BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9809-154-03 RPD : All analytes within QC limits.*
RA-A-037-DS Spike Recovery : All analytes within QC limits.
*
RPD for Silvex was flagged as outside QC Limits due to higher recovery in the Matrix Spike. MS/MSD recoveries were within QC Limits.

Refer to Laboratory Control Samples for system verification.

Method Blank FORM 4
P11006LB

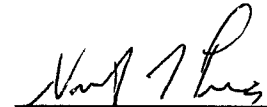
No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000069

379 322

FORM 2
WATER HERBICIDE SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-154

	EPA GC SAMPLE NO.	S1 #	S2 #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P11006LB	66								0
02	P11006BS	73								0
03	9809-154-1	78								0
04	9809-154-2	68								0
05	9809-154-3	72								0
06	9809-154-3M	80								0
07	9809-154-3S	73								0
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
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24										
25										
26										
27										
28										
29										
30										

S1 = 2,4,5-T

QC LIMITS
(25-125)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

000070

FORM 4
HERBICIDE METHOD BLANK SUMMARY

379 323
EPA GC SAMPLE NO.

P11006LB

Lab Name: ETC, INC.

Lab Prep Batch: P11006

Lab File ID: T209101A-08R

Matrix: (soil/water) WATER

Level: (low/med) LOW

SDG No.: 9809-154

Instrument ID: PEST2A

Date Analyzed: 09/10/98

Time Analyzed: 1223

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P11006BS		T209101A-09R	09/10/98
02	9809-154-1		T209101A-10R	09/10/98
03	9809-154-2		T209101A-11R	09/10/98
04	9809-154-3		T209121A-09R	09/12/98
05	9809-154-3M		T209121A-10R	09/12/98
06	9809-154-3S		T209121A-11R	09/12/98
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
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21				
22				
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24				
25				
26				
27				
28				
29				
30				

COMMENTS:

379 324

FORM 1
HERBICIDE ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P11006LB

Lab Name: ETC, INC.

SDG No.: 9809-154

Matrix: (soil/water) WATER

Lab Prep Batch: P11006

Sample wt/vol: _____ (g/mL) ML

Lab File ID: T209101A-08R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 5 (mL)

Date Analyzed: 09/10/98

Injection Volume: 1.0 (uL)

Dilution Factor: 5.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
94-75-7-----	2,4-D	1.00	U
93-72-1-----	Silvex	1.00	U

FORM I HERBICIDE

000072

FORM 3
WATER HERBICIDE LABORATORY CONTROL SAMPLE

379 325

Lab Name: ETC, INC.

Lab Prep Batch: P11006

SDG No.: 9809-154

Matrix Spike - Sample No.: P11006BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
2,4-D	2.50		2.12	85	25-125
Silvex	2.50		1.23	49	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III HERBICIDE

000073

379 326

FORM 3

WATER HERBICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P11006

SDG No.: 9809-154

Matrix Spike - Sample No.: 9809-154-3

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	M CONCENTRATION (ug/L)	M % REC #	QC. LIMITS REC.
2,4-D	10.00	0.000	9.15	92	25-125
Silvex	10.00	0.000	5.87	59	25-125

COMPOUND	SPIKE ADDED (ug/L)	S CONCENTRATION (ug/L)	S % REC #	% RPD #	QC LIMITS RPD	REC.
2,4-D	10.00	8.68	87	6	20	25-125
Silvex	10.00	4.62	46	25*	20	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS:

FORM III HERBICIDE

000074

**COMPOSITE CONFIRMATION SAMPLES COLLECTED
FOLLOWING EXCAVATION IN AREA A**

Date Collected 09/03/98

RA-A-013 (Composite of Grids A6, A7, A18 & A20)

RA-A-014 (Composite of Grids A11, A22 & A23)

RA-A-EQ-005-CS (Equip. Blank)



379 328

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334

Founded 1972

September 9, 1998

Ms. Elena Rodriguez
OHM Remediation Services
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Ref: Analytical Testing
ETC Order # 9809153
Project Description DDMT

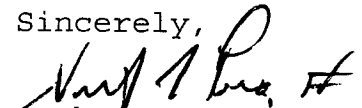
Project # 20560 Defense Depot - Memphis, TN

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,


Nathan A. Pera, IV
Chief Executive Officer

rt
Attachment

OHM_DDMT

379 329

Chemical Analytical Data
Review/Evaluation/Validation

SOUTHERN REGION

Report Type: ☐ Preliminary ☒ Final

Date Received:

9/24/98

Project Number: 920560

Project Name: DDMT

Analysis/Method: ^(Sp) TCL P/PCB, PAH, metals TAL

Laboratory: ETC

Lab Project/Case Number: 9809153

Sample Number(s): RA-A-013, 014, RA-A-EQ-005-CS

Evaluated By: S. Parajon

Date Evaluated: 9/25/98

Data Package Deliverables Requirement: ☐ OHM Minimum☒ OHM Standard☐ OHM Maximum☐ Other, please describe

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs		✓	✓	
Comment:				
Holding Times			✓	
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X	✓	✓	
Comment:				
Surrogate Recoveries	X	✓	✓	
Comment:				
Lab Control Sample Recoveries	X	✓	✓	
Comment:				
Lab Control Sample Duplicate or Other Spike Recoveries	X	✓	✓	
Comment:				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X	✓	✓	
Comment:				
Matrix Spike Recoveries	X	✓	✓	
Comment:				
Matrix Spike Duplicate Recoveries	X	✓	✓	
Comment:				
Matrix Spike / Matrix Spike Duplicate RPD	X	✓	✓	
Comment:				
Laboratory Blanks (daily, method, instrument)	X	✓	✓	
Comment:				
Field Blanks (trip, eqpt rinsate, ambient, matrix)	X	✓	✓	
Comment:				

Quality Control Deliverables	Required	Received	Passed	Failed	
Field Duplicates RPD	X				
Comment:					
Second Source Check					
Comment:					
Second Column Confirmation	✓	✓	✓		
Comment:					
Percent Moisture/Solids		✓	✓		
Comment:					
Initial / Continuing Calibrations	✓	✓	✓		
Comment:					
Internal Standard Areas and Retention Times (Organics Only)	✓	✓	✓		
Comment:					
Chromatograms	✓	✓	✓		
Comment:					
Sample Prep Worksheets					
Comment:					
Raw Data Calculations					
Comment:					
Laboratory Duplicates					
Comment:					
Instrument Performance Checks (Organics Only)	✓	✓	✓		
Comment:					
Tentatively Identified Compounds (TICs)	✓	✓	✓		
Comment:					
Completeness	# Samples	# Analyses	Tot # Analyses	Tot # Accept Analyses	% Complete
Completeness = (Tot # Analyses / Tot # Accepted Analyses) x 100	3	5	15	15	100
General Comments:					

Summary: [] See attached pages

Check Applicable:

- ☐ Lab contacted—Corrective actions in process Date Contacted: _____
☐ Corrective actions received and accepted Date Received/Accepted: _____
☒ The data, as reported by the laboratory, are acceptable.
☐ The data, with qualifiers as described in the "Summary" portion of this report, are acceptable.
☐ The data are unacceptable.
☐ Other _____

Evaluator's Signature

Date

Environmental Testing & Consulting, Inc.
Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
NC	Result reported from Primary Column. Result did not confirm.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

379 332 **ENVIRONMENTAL TESTING & CONSULTING, INC.**
 2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ANALYTICAL SUMMARY TABLE

Client Name **OHM Remediation Services**
 Site ID **DDMT**
Memphis, TN

ETC					
<u>Sample ID</u>	<u>Field ID</u>	<u>Matrix</u>	<u>Method</u>	<u>Method Description</u>	
980915301	RA-A-013	SOIL	6010B	Silver	
980915301	RA-A-013	SOIL	6010B	Aluminum	
980915301	RA-A-013	SOIL	7060A	Arsenic	
980915301	RA-A-013	SOIL	8270C	GC/MS PAH	
980915301	RA-A-013	SOIL	6010B	Barium	
980915301	RA-A-013	SOIL	6010B	Beryllium	
980915301	RA-A-013	SOIL	6010B	Calcium	
980915301	RA-A-013	SOIL	6010B	Cadmium	
980915301	RA-A-013	SOIL	9010A	Cyanide	
980915301	RA-A-013	SOIL	6010B	Cobalt	
980915301	RA-A-013	SOIL	6010B	Chromium	
980915301	RA-A-013	SOIL	6010B	Copper	
980915301	RA-A-013	SOIL	6010B	Iron	
980915301	RA-A-013	SOIL	7471A	Mercury	
980915301	RA-A-013	SOIL	6010B	Potassium	
980915301	RA-A-013	SOIL	6010B	Magnesium	
980915301	RA-A-013	SOIL	6010B	Manganese	
980915301	RA-A-013	SOIL	6010B	Sodium	
980915301	RA-A-013	SOIL	6010B	Nickel	
980915301	RA-A-013	SOIL	8081A	Organochlorine Pesticides	
980915301	RA-A-013	SOIL	7421	Lead	
980915301	RA-A-013	SOIL	8082	PCBs	
980915301	RA-A-013	SOIL	6010B	Antimony	
980915301	RA-A-013	SOIL	7740	Selenium	
980915301	RA-A-013	SOIL	7841	Thallium	
980915301	RA-A-013	SOIL	6010B	Vanadium	
980915301	RA-A-013	SOIL	6010B	Zinc	
980915302	RA-A-014	SOIL	6010B	Silver	
980915302	RA-A-014	SOIL	6010B	Aluminum	
980915302	RA-A-014	SOIL	7060A	Arsenic	
980915302	RA-A-014	SOIL	8270C	GC/MS PAH	
980915302	RA-A-014	SOIL	6010B	Barium	
980915302	RA-A-014	SOIL	6010B	Beryllium	
980915302	RA-A-014	SOIL	6010B	Calcium	
980915302	RA-A-014	SOIL	6010B	Cadmium	
980915302	RA-A-014	SOIL	9010A	Cyanide	
980915302	RA-A-014	SOIL	6010B	Cobalt	
980915302	RA-A-014	SOIL	6010B	Chromium	
980915302	RA-A-014	SOIL	6010B	Copper	
980915302	RA-A-014	SOIL	6010B	Iron	
980915302	RA-A-014	SOIL	7471A	Mercury	
980915302	RA-A-014	SOIL	6010B	Potassium	
980915302	RA-A-014	SOIL	6010B	Magnesium	
980915302	RA-A-014	SOIL	6010B	Manganese	
980915302	RA-A-014	SOIL	6010B	Sodium	
980915302	RA-A-014	SOIL	6010B	Nickel	
980915302	RA-A-014	SOIL	8081A	Organochlorine Pesticides	
980915302	RA-A-014	SOIL	7421	Lead	
980915302	RA-A-014	SOIL	8082	PCBs	
980915302	RA-A-014	SOIL	6010B	Antimony	
980915302	RA-A-014	SOIL	7740	Selenium	
980915302	RA-A-014	SOIL	7841	Thallium	
980915302	RA-A-014	SOIL	6010B	Vanadium	
980915302	RA-A-014	SOIL	6010B	Zinc	
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Silver	

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ANALYTICAL SUMMARY TABLE

379 333

Client Name OHM Remediation Services
Site ID DDMT
Memphis, TN

ETC

<u>Sample ID</u>	<u>Field ID</u>	<u>Matrix</u>	<u>Method</u>	<u>Method Description</u>
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Aluminum
980915303	RA-A-EQ-005-CS	AQUEOUS	7060A	Arsenic
980915303	RA-A-EQ-005-CS	AQUEOUS	8270C	GC/MS PAH
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Barium
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Beryllium
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Calcium
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Cadmium
980915303	RA-A-EQ-005-CS	AQUEOUS	9010A	Cyanide
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Cobalt
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Chromium
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Copper
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Iron
980915303	RA-A-EQ-005-CS	AQUEOUS	7470A	Mercury
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Potassium
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Magnesium
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Manganese
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Sodium
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Nickel
980915303	RA-A-EQ-005-CS	AQUEOUS	8081A	Organochlorine Pesticides
980915303	RA-A-EQ-005-CS	AQUEOUS	7421	Lead
980915303	RA-A-EQ-005-CS	AQUEOUS	8082	PCBs
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Antimony
980915303	RA-A-EQ-005-CS	AQUEOUS	7740	Selenium
980915303	RA-A-EQ-005-CS	AQUEOUS	7841	Thallium
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Vanadium
980915303	RA-A-EQ-005-CS	AQUEOUS	6010B	Zinc

379 334

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

000004



**OHM Remediation
Services Corp**

Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, OH 44830

U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526
 Subsidiary of OHM Corporation

CHAIN-OF-CUSTODY RECORD

14 NOV 1969 10 00 PM

218021

FORM 0019 REV 07-07

OHM's LAB COORDINATOR		LAB COORDINATOR'S PHONE		LAB COORDINATOR'S FAX		LABORATORY SERVICE ID		LABORATORY CONTACT		MAIL REPORT (COMPANY NAME)	
Elena Rodriguez		770-734-8060		770-453-7716		ETC		Nathan Pera		OHM Remediation Services Corp	
PROJECT NAME		PROJECT LOCATION		PROJECT PHONE NUMBER		LABORATORY PHONE		LABORATORY FAX		RECIPIENT NAME	
DDMT		Memphis, TN		20560		901-327-2750		901-327-6334		Elena Rodriguez	
PROJECT CONTACT		PROJECT PHONE NUMBER		PROJECT FAX		LABORATORY ADDRESS		ADDRESS			
Steve Offner		901-743-1117		901-743-1048		2924 Walnut Grove Road		5445 Triangle Pkwy, #400			
PROJECT ADDRESS		CITY, STATE AND ZIP CODE		CLIENT		CITY, STATE AND ZIP CODE		CITY, STATE AND ZIP CODE			
1708 Dunn Ave		Memphis, TN 38114		USACE		Memphis, TN 38111		Memphis, TN 38111			
PROJECT MANAGER		PROJECT MANAGER'S PHONE		PROJECT MANAGER'S FAX							
Steve Offner		770-326-2571		770-453-7716							
Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont	QC Level	T.A.T	Analyses	Comments	
1	RA-A-013		30/1	9-30	1030	NA	4x202	3day	✓	✓	
2	RA-A-013	014	30/1	9-30	1030	NA	4x202	3day	✓	✓	
3	RA-A-013	005-CS	30/1	9-30	1030	NA	4x202	3day	✓	✓	
4	18-9-03-978		11/04/98	9-30	1030	NA	4x202	3day	✓	✓	
5											
6											
7											
8											
9											
10											

SAMPLES COLLECTED BY: Steve Offner

REINQUISHED BY: Steve Offner

COOLER TEMPERATURE UPON RECEIPT: 4°C

COOLER AND AIR BILL NUMBER: Refused

DELIVERED BY: Person

SAMPLE'S CONDITION UPON RECEIPT: Good

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

COOLER RECEIPT FORM

Cooler Receipt Form
9809153.CRF p. 1

LIMS #: 9809153 Number of Coolers: 1
Date Received: 9/3/98
PROJECT: DDMT VDTSR: 9/3/98, 1640

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS

- A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 9/3/98
by (print): Rebekah Barger (sign): RB
1. Did cooler come with a shipping slip (airbill, etc.)? NO
If YES, enter carrier name & airbill number: _____
- 2a. Were custody seals on outside of cooler? NO
2b. Were custody seals on sample containers? NO
3. Were custody seals unbroken and intact at the date and time of arrival? NA
4. Did you screen samples for radioactivity using a Geiger Counter? NO
5. Were custody papers sealed in a plastic bag & taped inside to the lid? NO
6. Were custody papers filled out properly (ink, signed, etc.)? YES
7. Did you sign custody papers in the appropriate place? YES
8. Was project identifiable from custody papers? If YES, enter project name at top of this form. YES
9. If required, was enough ice used? cooler temp: <4° c, Type of ice: Loose Cubes YES
10. Have designated person initial here to acknowledge receipt of cooler: RB date: 9/3/98
- B. LOG-IN PHASE. Date samples were logged-in: 9/3/98
by (print): Rebekah Barger (sign): RB
11. Describe type of packing in cooler: Loose Ice Cubes, Baggies, Bubble Wrap
12. Were all bottles sealed in separate plastic bags? YES
13. Did all bottles arrive unbroken and were labels in good condition? YES
14. Were all bottle labels complete (ID, date, time, signature, preserved, etc.)? YES
15. Did all bottle labels agree with custody papers? YES
16. Were correct containers used for the tests indicated? YES
17. Were correct preservatives added to samples? YES
18. Was a sufficient amount of sample sent for tests indicated? YES
19. Were bubbles absent in VOA samples? If NO, list by sample#: YES
20. Was the project manager called and status discussed? If YES, give details on the back of this form. NO
21. Who was called? NA By whom? NA (date) NA
- VDTSR - Validated Date/Time of Sample Receipt (Date sample is logged into LIMS system)

000006

379 337

Environmental Testing & Consulting, Inc.

Sample Reports

000007

379 338

ENVIRONMENTAL TESTING & CONSULTING, INC.
Memphis, TN
INORGANIC ANALYSIS DATA SHEET
PERCENT SOLIDS

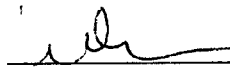
Client Name :OHM Remediation Services
Project Name :DDMT
Memphis, TN

Matrix :SOIL

Date Sample Received :09/03/98

Contract Laboratory Order Number :9809-153

<u>Contract Lab</u> <u>Sample No</u>	<u>Client Sample</u> <u>ID</u>	<u>Date</u> <u>Sampled</u>	<u>Result</u> <u>Units : (%)</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u>	<u>By</u>
9809-153-01	RA-A-013	09/03/98	85	09/04/98	160.3	MC
9809-153-02	RA-A-014	09/03/98	88	09/04/98	160.3	MC


LABORATORY MANAGER

000008

ENVIRONMENTAL TESTING & CONSULTING, INC. 379 339
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
INORGANIC ANALYSIS DATA SHEET

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

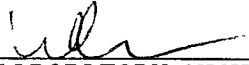
Site ID DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID 9809153-01
Sample ID: RA-A-013

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/Kg	1.00	09/08/98	9010A	CY090898


LABORATORY MANAGER

000009

379 340

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # **20560**

Site ID **DDMT**
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID **9809153-02**
Sample ID: RA-A-014

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/Kg	1.00	09/08/98	9010A	CY090898


LABORATORY MANAGER

000010

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

379 341

Client Name OHM Remediation Services
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID 9809153-03
Sample ID: RA-A-EQ-005-CS

Matrix :AQUEOUS
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE ANALYZED	ANALYSIS METHOD	QC BATCH
Cyanide	ND	mg/L	0.010	09/04/98	9010A	CY090498


LABORATORY MANAGER

C00011

379 342

ENVIRONMENTAL TESTING & CONSULTING, INC.
 2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560

Date Arrived 09/03/98
 ETC Order Number 9809153

ETC Lab ID **9809153-01**
Sample ID: RA-A-013

Matrix :SOIL
 Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
GF Metals Digestion Batch	V8-SO-09					
ICP Metals Digestion Batch	V8-SO-11					
Mercury Digestion Batch	V4-SO-31					
Silver	ND	mg/Kg	0.700	19:18	09/08/98	JB 3051
Aluminum	11,500	mg/Kg	4.00	19:52	09/08/98	TD 6010B
Arsenic	13.7	mg/Kg	0.200	15:47	09/04/98	TD 6010B
Barium	207	mg/Kg	0.200	19:18	09/10/98	TD 7060A
Beryllium	0.629	mg/Kg	0.100	19:18	09/08/98	TD 6010B
Calcium	2,540	mg/Kg	1.00	19:18	09/08/98	TD 6010B
Cadmium	ND	mg/Kg	0.400	19:18	09/08/98	TD 6010B
Cobalt	9.92	mg/Kg	0.700	19:18	09/08/98	TD 6010B
Chromium	14.0	mg/Kg	0.700	19:18	09/08/98	TD 6010B
Copper	20.7	mg/Kg	0.600	19:18	09/08/98	TD 6010B
Iron	23,600	mg/Kg	0.700	19:52	09/08/98	TD 6010B
Mercury	0.038	mg/Kg	0.020	14:09	09/04/98	RM 7471A
Potassium	916	mg/Kg	20.0	19:18	09/08/98	TD 6010B
Magnesium	2,660	mg/Kg	3.00	19:18	09/08/98	TD 6010B
Manganese	1,000	mg/Kg	0.200	19:18	09/08/98	TD 6010B
Sodium	76.0	mg/Kg	20.0	19:18	09/08/98	TD 6010B
Nickel	21.9	mg/Kg	1.50	19:18	09/08/98	TD 6010B
Lead	16.8	mg/Kg	0.100	14:17	09/08/98	JF 7421
Antimony	ND	mg/Kg	3.20	19:18	09/08/98	TD 6010B
Selenium	ND	mg/Kg	0.200	09:56	09/08/98	TD 7740
Thallium	0.298	mg/Kg	0.100	11:04	09/08/98	JF 7841
Vanadium	22.8	mg/Kg	0.800	19:18	09/08/98	TD 6010B
Zinc	79.1	mg/Kg	1.00	19:18	09/08/98	TD 6010B


 LABORATORY MANAGER

000012

379 343

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID **DDMT**
Memphis, TN

Date Arrived 09/03/98
 ETC Order Number 9809153

ETC Lab ID **9809153-02**
Sample ID: RA-A-014

Matrix :SOIL
 Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
GF Metals Digestion Batch	V8-SO-09					JB 3051
ICP Metals Digestion Batch	V8-SO-11					JB 3051
Mercury Digestion Batch	V4-SO-31					RM 7471A
Silver	ND	mg/Kg	0.700	19:25	09/08/98	TD 6010B
Aluminum	12,600	mg/Kg	4.00	19:58	09/08/98	TD 6010B
Arsenic	10.8	mg/Kg	0.200	15:05	09/04/98	TD 7060A
Barium	155	mg/Kg	0.200	19:25	09/10/98	TD 6010B
Beryllium	0.543	mg/Kg	0.100	19:25	09/08/98	TD 6010B
Calcium	1,850	mg/Kg	1.00	19:25	09/08/98	TD 6010B
Cadmium	ND	mg/Kg	0.400	19:25	09/08/98	TD 6010B
Cobalt	9.01	mg/Kg	0.700	19:25	09/08/98	TD 6010B
Chromium	14.9	mg/Kg	0.700	19:25	09/08/98	TD 6010B
Copper	19.5	mg/Kg	0.600	19:25	09/08/98	TD 6010B
Iron	23,100	mg/Kg	0.700	19:58	09/08/98	TD 6010B
Mercury	0.041	mg/Kg	0.020	14:10	09/04/98	RM 7471A
Potassium	995	mg/Kg	20.0	19:25	09/08/98	TD 6010B
Magnesium	2,710	mg/Kg	3.00	19:25	09/08/98	TD 6010B
Manganese	687	mg/Kg	0.200	19:25	09/08/98	TD 6010B
Sodium	75.5	mg/Kg	20.0	19:25	09/08/98	TD 6010B
Nickel	18.9	mg/Kg	1.50	19:25	09/08/98	TD 6010B
Lead	14.0	mg/Kg	0.100	14:10	09/08/98	JF 7421
Antimony	ND	mg/Kg	3.20	19:25	09/08/98	TD 6010B
Selenium	ND	mg/Kg	0.200	10:03	09/08/98	TD 7740
Thallium	0.300	mg/Kg	0.100	10:39	09/08/98	JF 7841
Vanadium	23.8	mg/Kg	0.800	19:25	09/08/98	TD 6010B
Zinc	71.6	mg/Kg	1.00	19:25	09/08/98	TD 6010B


 LABORATORY MANAGER

000013

379 344

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400

Project # 20560

Site ID **DDMT**
Memphis, TN

Date Arrived 09/03/98
 ETC Order Number 9809153

ETC Lab ID **9809153-03**
Sample ID: RA-A-EQ-005-CS

Matrix :AQUEOUS
 Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V11-AQ-62				NR	3015
Mercury Digestion Batch	V4-AQ-36				JB	7470A
Silver	ND	mg/L	0.009	12:13	09/08/98	TD 6010B
Aluminum	ND	mg/L	0.060	12:13	09/08/98	TD 6010B
Arsenic	ND	mg/L	0.003	14:57	09/04/98	TD 7060A
Barium	ND	mg/L	0.003	12:13	09/08/98	TD 6010B
Beryllium	ND	mg/L	0.002	12:13	09/08/98	TD 6010B
Calcium	ND	mg/L	0.015	12:13	09/08/98	TD 6010B
Cadmium	ND	mg/L	0.005	12:13	09/08/98	TD 6010B
Cobalt	ND	mg/L	0.009	12:13	09/08/98	TD 6010B
Chromium	ND	mg/L	0.009	12:13	09/08/98	TD 6010B
Copper	0.009	mg/L	0.008	12:13	09/08/98	TD 6010B
Iron	0.011	mg/L	0.009	12:13	09/08/98	TD 6010B
Mercury	ND	mg/L	0.0002	14:08	09/08/98	RM 7470A
Potassium	ND	mg/L	0.250	12:13	09/08/98	TD 6010B
Magnesium	ND	mg/L	0.040	12:13	09/08/98	TD 6010B
Manganese	ND	mg/L	0.003	12:13	09/08/98	TD 6010B
Sodium	ND	mg/L	0.050	12:13	09/08/98	TD 6010B
Nickel	ND	mg/L	0.020	12:13	09/08/98	TD 6010B
Lead	ND	mg/L	0.002	12:30	09/08/98	JF 7421
Antimony	ND	mg/L	0.040	12:13	09/08/98	TD 6010B
Selenium	ND	mg/L	0.003	14:57	09/04/98	TD 7740
Thallium	ND	mg/L	0.002	10:31	09/08/98	JF 7841
Vanadium	ND	mg/L	0.010	12:13	09/08/98	TD 6010B
Zinc	ND	mg/L	0.010	12:13	09/08/98	TD 6010B


 LABORATORY MANAGER

C00014

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET**379 345**

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID
DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID 9809153-01
Sample ID: RA-A-013

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				09/04/98	09/06/98	RR	8270C
QC Batch	P04031	ug/Kg					
Acenaphthene	ND	ug/Kg	67.0				
Acenaphthylene	ND	ug/Kg	67.0				
Anthracene	ND	ug/Kg	67.0				
Benzo(a)anthracene	ND	ug/Kg	67.0				
Benzo(b)fluoranthene	ND	ug/Kg	67.0				
Benzo(k)fluoranthene	ND	ug/Kg	67.0				
Benzo(g,h,i)perylene	ND	ug/Kg	67.0				
Benzo(a)pyrene	ND	ug/Kg	67.0				
Chrysene	ND	ug/Kg	67.0				
Dibenzo(a,h)anthracene	ND	ug/Kg	67.0				
Fluoranthene	52J	ug/Kg	67.0				
Fluorene	ND	ug/Kg	67.0				
Indeno(1,2,3-cd)pyrene	ND	ug/Kg	67.0				
Naphthalene	ND	ug/Kg	67.0				
Phenanthrene	ND	ug/Kg	67.0				
Pyrene	40J	ug/Kg	67.0				
Surrogate Standard	% Recovery	QC Limits					
S1 - Nitrobenzene-d5	65	39	80				
S2 - 2-Fluorobiphenyl	71	43	84				
S3 - 4-Terphenyl-d14	55	40	121				


LABORATORY MANAGER

ND - Not Detected

000015

379 346

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9809-153-1

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-153

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.5 (g/mL) G

Lab File ID: 1601016

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1 (mL)

Date Analyzed: 09/06/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
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26.				
27.				
28.				
29.				
30.				

FORM I BNA-GCMS-TIC

000016

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 347

Client Name **OHM Rem diation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID **DDMT**
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID **9809153-02**
Sample ID: RA-A-014

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH				09/04/98	09/06/98	RR	8270C
QC Batch	P04031	ug/Kg					
Acenaphthene	ND	ug/Kg	67.0				
Acenaphthylene	ND	ug/Kg	67.0				
Anthracene	ND	ug/Kg	67.0				
Benzo(a)anthracene	ND	ug/Kg	67.0				
Benzo(b)fluoranthene	ND	ug/Kg	67.0				
Benzo(k)fluoranthene	ND	ug/Kg	67.0				
Benzo(g,h,i)perylene	ND	ug/Kg	67.0				
Benzo(a)pyrene	ND	ug/Kg	67.0				
Chrysene	ND	ug/Kg	67.0				
Dibenzo(a,h)anthracene	ND	ug/Kg	67.0				
Fluoranthene	ND	ug/Kg	67.0				
Fluorene	ND	ug/Kg	67.0				
Indeno(1,2,3-cd)pyrene	ND	ug/Kg	67.0				
Naphthalene	ND	ug/Kg	67.0				
Phenanthrene	ND	ug/Kg	67.0				
Pyrene	ND	ug/Kg	67.0				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	81 Q		39 80				
S2 - 2-Fluorobiphenyl	88 Q		43 84				
S3 - 4-Terphenyl-d14	74		40 121				


LABORATORY MANAGER

ND - Not Detected

000017

379 348

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9809-153-2

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-153

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: 1701017

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/06/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
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26.				
27.				
28.				
29.				
30.				

FORM I BNA-GCMS-TIC

000018

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

379 349

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
FID # DACA45-96-D-0014

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID **9809153-03**
Sample ID: RA-A-EQ-005-CS

Matrix :AQUEOUS
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS PAH							8270C
QC Batch	P05037	ug/L		09/04/98	09/06/98	RR	
Acenaphthene	ND	ug/L	2.00				
Acenaphthylene	ND	ug/L	2.00				
Anthracene	ND	ug/L	2.00				
Benzo(a)anthracene	ND	ug/L	2.00				
Benzo(b)fluoranthene	ND	ug/L	2.00				
Benzo(k)fluoranthene	ND	ug/L	2.00				
Benzo(g,h,i)perylene	ND	ug/L	2.00				
Benzo(a)pyrene	ND	ug/L	2.00				
Chrysene	ND	ug/L	2.00				
Dibenzo(a,h)anthracene	ND	ug/L	2.00				
Fluoranthene	ND	ug/L	2.00				
Fluorene	ND	ug/L	2.00				
Indeno(1,2,3-cd)pyrene	ND	ug/L	2.00				
Naphthalene	ND	ug/L	2.00				
Phenanthrene	ND	ug/L	2.00				
Pyrene	ND	ug/L	2.00				
Surrogate Standard	% Recovery		QC Limits				
S1 - Nitrobenzene-d5	58		35 85				
S2 - 2-Fluorobiphenyl	57		46 84				
S3 - 4-Terphenyl-d14	69		33 113				


LABORATORY MANAGER

ND - Not Detected

000019

379 350

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9809-153-3

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-153

Matrix: (soil/water) WATER

Lab Sample ID:

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 1801018

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N)___

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/06/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
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20.				
21.				
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27.				
28.				
29.				
30.				

FORM I BNA-GCMS-TIC

000020

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET**379 351**

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

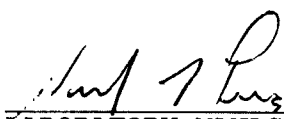
Project # **20560**
FID # **DACA45-96-D-0014**

Date Arrived **09/03/98**
ETC Order Number **9809153**

ETC Lab ID **9809153-01**
Sample ID: RA-A-013

Matrix : **SOIL**
Sample Date : **09/03/98**

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides							
				09/04/98	09/11/98	RG	8081A
QC Batch	P06015	ug/Kg					
Aldrin	ND	ug/Kg	2.00				
Alpha-BHC	ND	ug/Kg	2.00				
Beta-BHC	ND	ug/Kg	2.00				
Delta-BHC	ND	ug/Kg	2.00				
Gamma-BHC (Lindane)	ND	ug/Kg	2.00				
Alpha-Chlordane	ND	ug/Kg	2.00				
Gamma-Chlordane	ND	ug/Kg	2.00				
Chlordane	ND	ug/Kg	20.0				
4,4'-DDD	ND	ug/Kg	2.00				
4,4'-DDE	40.4	ug/Kg	2.00				
4,4'-DDT	34.0	ug/Kg	2.00				
Dieldrin	40.0	ug/Kg	2.00				
Endosulfan I	ND	ug/Kg	2.00				
Endosulfan II	ND	ug/Kg	2.00				
Endosulfan Sulfate	ND	ug/Kg	2.00				
Endrin	ND	ug/Kg	2.00				
Endrin Aldehyde	ND	ug/Kg	2.00				
Endrin Ketone	ND	ug/Kg	2.00				
Heptachlor	ND	ug/Kg	2.00				
Heptachlor Epoxide	ND	ug/Kg	2.00				
Methoxychlor	ND	ug/Kg	2.00				
Toxaphene	ND	ug/Kg	200				
Surrogate Standard							
		% Recovery	QC Limits				
S1 - Decachlorobiphenyl	51	Q	64 154				
S2 - Tetrachloro-m-xylene	49		39 130				


LABORATORY MANAGER

ND - Not Detected

000021

379 352

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
FID # DACA45-96-D-0014

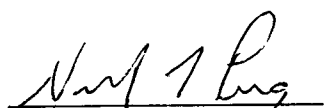
Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID **9809153-02**
Sample ID: RA-A-014

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides				09/04/98	09/11/98	RG	8081A
QC Batch	P06015	ug/Kg					
Aldrin	ND	ug/Kg	2.00				
Alpha-BHC	ND	ug/Kg	2.00				
Beta-BHC	ND	ug/Kg	2.00				
Delta-BHC	ND	ug/Kg	2.00				
Gamma-BHC (Lindane)	ND	ug/Kg	2.00				
Alpha-Chlordane	ND	ug/Kg	2.00				
Gamma-Chlordane	ND	ug/Kg	2.00				
Chlordane	ND	ug/Kg	20.0				
4,4'-DDD	ND	ug/Kg	2.00				
4,4'-DDE	ND	ug/Kg	2.00				
4,4'-DDT	10.3	ug/Kg	2.00				
Dieldrin	ND	ug/Kg	2.00				
Endosulfan I	ND	ug/Kg	2.00				
Endosulfan II	ND	ug/Kg	2.00				
Endosulfan Sulfate	ND	ug/Kg	2.00				
Endrin	ND	ug/Kg	2.00				
Endrin Aldehyde	ND	ug/Kg	2.00				
Endrin Ketone	ND	ug/Kg	2.00				
Heptachlor	ND	ug/Kg	2.00				
Heptachlor Epoxide	ND	ug/Kg	2.00				
Methoxychlor	ND	ug/Kg	2.00				
Toxaphene	ND	ug/Kg	200				

Surrogate Standard	% Recovery	QC Limits	
S1 - Decachlorobiphenyl	62 Q	64	154
S2 - Tetrachloro-m-xylene	54	39	130


LABORATORY MANAGER

ND - Not Detected

000022

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

379 353

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
FID # DACA45-96-D-0014

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID 9809153-03
Sample ID: RA-A-EQ-005-CS

Matrix :AQUEOUS
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides							
				09/04/98	09/11/98	RG	8081A
QC Batch	P07015	ug/L					
Aldrin	ND	ug/L	0.040				
Alpha-BHC	ND	ug/L	0.040				
Beta-BHC	ND	ug/L	0.040				
Delta-BHC	ND	ug/L	0.040				
Gamma-BHC (Lindane)	ND	ug/L	0.040				
Alpha-Chlordane	ND	ug/L	0.040				
Gamma-Chlordane	ND	ug/L	0.040				
Chlordane	ND	ug/L	0.250				
4,4'-DDD	ND	ug/L	0.040				
4,4'-DDE	ND	ug/L	0.040				
4,4'-DDT	ND	ug/L	0.040				
Dieldrin	ND	ug/L	0.040				
Endosulfan I	ND	ug/L	0.040				
Endosulfan II	ND	ug/L	0.040				
Endosulfan Sulfate	ND	ug/L	0.040				
Endrin	ND	ug/L	0.040				
Endrin Aldehyde	ND	ug/L	0.040				
Endrin Ketone	ND	ug/L	0.040				
Heptachlor	ND	ug/L	0.040				
Heptachlor Epoxide	ND	ug/L	0.040				
Methoxychlor	ND	ug/L	0.040				
Toxaphene	ND	ug/L	3.00				
Surrogate Standard							
		% Recovery	QC Limits				
S1 - Decachlorobiphenyl	84		34 115				
S2 - Tetrachloro-m-xylene	77		31 96				


LABORATORY MANAGER

ND - Not Detected

C00023

379 354

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
FID # DACA45-96-D-0014

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID 9809153-01
Sample ID: RA-A-013

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs				09/04/98	09/07/98	RG	8082
QC Batch	P06015	ug/Kg					
PCB-1016	ND	ug/Kg	35.0				
PCB-1221	ND	ug/Kg	35.0				
PCB-1232	ND	ug/Kg	35.0				
PCB-1242	ND	ug/Kg	35.0				
PCB-1248	ND	ug/Kg	35.0				
PCB-1254	ND	ug/Kg	35.0				
PCB-1260	ND	ug/Kg	35.0				
Surrogate Standard	% Recovery		QC Limits				
S1 - Tetrachloro-m-xylene	62		39	130			
S2 - Decachlorobiphenyl	80		64	154			


LABORATORY MANAGER

ND - Not Detected

000024

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

379 355

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DACA45-96-D-0014

Site ID
DDMT
Memphis, TN

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID **9809153-02**
Sample ID: RA-A-014

Matrix :SOIL
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs							8082
QC Batch	P06015	ug/Kg		09/04/98	09/07/98	RG	
PCB-1016	ND	ug/Kg	35.0				
PCB-1221	ND	ug/Kg	35.0				
PCB-1232	ND	ug/Kg	35.0				
PCB-1242	ND	ug/Kg	35.0				
PCB-1248	ND	ug/Kg	35.0				
PCB-1254	ND	ug/Kg	35.0				
PCB-1260	ND	ug/Kg	35.0				
Surrogate Standard	% Recovery		QC Limits				
S1 - Tetrachloro-m-xylene	70		39 130				
S2 - Decachlorobiphenyl	78		64 154				


LABORATORY MANAGER

ND - Not Detected

C00025

379 356

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
FID # DACA45-96-D-0014

Date Arrived 09/03/98
ETC Order Number 9809153

ETC Lab ID 9809153-03
Sample ID: RA-A-EQ-005-CS

Matrix :AQUEOUS
Sample Date :09/03/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs				09/04/98	09/07/98	RG	8082
QC Batch	P09009	ug/L					
PCB-1016	ND	ug/L	0.500				
PCB-1221	ND	ug/L	0.500				
PCB-1232	ND	ug/L	0.500				
PCB-1242	ND	ug/L	0.500				
PCB-1248	ND	ug/L	0.500				
PCB-1254	ND	ug/L	0.500				
PCB-1260	ND	ug/L	0.500				

Surrogate Standard	% Recovery	QC Limits
S1 - Tetrachloro-m-xylene	62	31 96
S2 - Decachlorobiphenyl	58	34 115



LABORATORY MANAGER

ND - Not Detected

000026

379 357

Environmental Testing & Consulting, Inc.

**Quality Control Reports
Inorganics**

000027

379 358

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
INORGANICS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153

HOLDING TIMES

Sample Analysis : All samples analyzed within Method Specified
Holding Times.

CALIBRATION

Laboratory Control Sample : All criteria met.

QUALITY CONTROL

Matrix Spike

Spike Recovery : All analytes within QC limits

Method Blank

No Target Analytes detected above Detection Limit.


Laboratory Manager

000028

Environmental Testing & Consulting, Inc.
Inorganic QC Data Summary

379 359

Client Name OHM Remediation Services
Project DDMT-Memphis, TN

ETC Order Number 9809-153
File Name 9809-153.1

Method Blank

Analyte	Date Analyzed	Blank Concentration mg/L	QC Batch
Cyanide	09/04/98	<0.010	CY090498

Calibration Verification (CV)

Analyte	Date Analyzed	CV Conc mg/L	CV Conc Found	% Difference
Cyanide	09/04/98	0.200	0.210	5.0

Laboratory Control Sample (LCS)

Analyte	Date Analyzed	LCS Conc mg/L	LCS Conc Found	% Recovery
Cyanide	09/04/98	0.200	0.198	99.0

Matrix Spike/Matrix Spike Duplicate

Sample ID	Analyte	Spike mg/L	Sample mg/L	MS Conc Found	MS % Recovery	QC Limits	RPD
9809-153-03 MS	Cyanide	0.200	<0.010	0.191	96	68-114	
9809-153-03 MSD	Cyanide	0.200	<0.010	0.183	92	68-114	4

000029

379 360

Environmental Testing & Consulting, Inc.
Inorganic QC Data Summary

Client Name OHM Remediation Services
Project DDMT-Memphis, TN

ETC Order Number 9809-153
File Name 9809-153.2

Method Blank

Analyte	Date Analyzed	Blank Concentration mg/Kg	QC Batch
Cyanide	09/08/98	<1.00	CY090898

Calibration Verification (CV)

Analyte	Date Analyzed	CV Conc mg/L	CV Conc Found	% Difference
Cyanide	09/08/98	0.200	0.213	7.0

Laboratory Control Sample (LCS)

Analyte	Date Analyzed	LCS Conc mg/Kg	LCS Conc Found	% Recovery
Cyanide	09/08/98	20.0	19.4	97.0

Matrix Spike/Matrix Spike Duplicate

Sample ID	Analyte	Spike mg/Kg	Sample mg/Kg	MS Conc Found	MS % Recovery	QC Limits	RPD
9809-153-02 MS	Cyanide	20.0	<1.00	18.3	92	70-130	
9809-153-02 MSD	Cyanide	20.0	<1.00	19.2	96	70-130	4

Quality Control Reports

Metals (ICP/GFAA/CV)

000031

379 362

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153

HOLDING TIMES

QC Batch(s) for this order : ICP Metals V8-SO-11
GFAA Metals V8-SO-09
Mercury V4-SO-31

Sample Analysis : All samples digested and analyzed within 180 days of collection.
Mercury Analysis : All samples analyzed within 28 days of collection.

CALIBRATION

Initial Calibration : All criteria met.
Continuing Calibration : All criteria met.

SAMPLE ANALYSIS

Instrumentation : Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer

Dilutions Required : No dilutions required.*

*
Dilutions were performed on several samples to bring the Target Analyte(s) within calibration range (C) or to remove spectral interference (I) as indicated.

Sample ID	Dilution		Sample ID	Dilution	
	Metal	Factor		Metal	Factor
9809-153-01	Arsenic	1:2 (C)	9809-153-02	Aluminum	1:5 (C)
9809-153-01	Aluminum	1:5 (C)	9809-153-02	Iron	1:5 (C)
9809-153-01	Iron	1:5 (C)	9809-153-02	Lead	1:3 (C)
9809-153-01	Lead	1:4 (C)			

Due to low recoveries and failing Post Digestion Spike, all Selenium data was reported based on the Method of Standard Additions.

QUALITY CONTROL**9809-153.MQCBLANK**Method Blank

V8-SO-11BLK - ICP Metals
V8-SO-09BLK - GFAA Metals
V4-SO-31BLK - Mercury

Calcium identified in V8-SO-11BLK at 2.20 mg/Kg.
Iron identified in V8-SO-11BLK at 0.90 mg/Kg.

000032

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

379 363

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153

QUALITY CONTROL

9712-153.MQCLCS

Laboratory Control Sample(s)

V8-SO-11LCS - ICP Metals
V8-SO-09LCS - GFAA Metals
V4-SO-31LCS - Mercury

All criteria met.

9809-153.MQCMSMSD

Matrix Spike / Matrix Spike Dup - ICP Metals

9809-153-02 RPD : All analytes within QC limits.*
RA-A-014 Spike Recovery : All analytes within QC limits.*
*

Recoveries for Antimony were flagged as outside QC Limits in the Matrix Spike and Matrix Spike Duplicate. A Post Digestion Spike was performed for verification :

	mg/L	mg/L	%	QA
<u>Analyte</u>	<u>Expected</u>	<u>Found</u>	<u>Recovery</u>	<u>Evaluation</u>
Antimony	0.500	0.471	94	Pass

Recoveries for multiple analytes were flagged as outside QC Limits due to the level of these analytes present in the sample relative to the spike amounts. In addition, concentrations of other analytes were high relative to the spike amounts. RPD for Potassium was flagged as outside QC Limits. Dilution Tests were performed for verification :

<u>Analyte</u>	No <u>Dilution</u>	1:5 <u>Dilution</u>	1:25 <u>Dilution</u>	% <u>Difference</u>	QA <u>Evaluation</u>
Aluminum	----	12600 mg/Kg	12400 mg/Kg	2	Pass
Calcium	1850	1910	-----	3	Pass
Iron	----	23100	23100	0	Pass
Manganese	687	685	-----	0	Pass
Potassium	995	939	-----	6	Pass
Magnesium	2710	2680	-----	1	Pass
Zinc	71.6	70.6	-----	1	Pass

Refer to Laboratory Control Sample(s) for system verification.

000033

379 364

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Graphite Metals

9809-153-02

RPD : All analytes within QC limits.

RA-A-014

Spike Recovery : All analytes within QC limits.*

*

Recoveries for Lead were flagged as outside QC Limits due to the level of these analytes present in the sample relative to the spike amounts. In addition, concentration of Arsenic was high relative to the spike amount. Dilution Tests were performed for verification :

<u>Analyte</u>	<u>No</u>	<u>1:5</u>	<u>%</u>	<u>QA</u>
<u>Dilution</u>	<u>Dilution</u>	<u>Difference</u>	<u>Evaluation</u>	
Arsenic	10.8 mg/Kg	11.0 mg/Kg	2	Pass

<u>Analyte</u>	<u>1:3</u>	<u>1:15</u>	<u>%</u>	<u>QA</u>
<u>Dilution</u>	<u>Dilution</u>	<u>Difference</u>	<u>Evaluation</u>	
Lead	14.0 mg/Kg	13.9 mg/Kg	1	Pass

Recoveries for Selenium were flagged as outside QC Limits in the Matrix Spike and Matrix Spike Duplicate. The Post Digestion Spike failed evaluation criteria. All data was reported based on MSA.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Hg

9809-153-02

RPD : All analytes within QC limits.

RA-A-014

Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Dilution Test - Dilution result must agree within 10% of original result when sample is diluted by a factor of 5.

Post Digestion Spike - Recovery must be +/-15% of expected value.


Laboratory Manager

000034

SOLID METHOD BLANK
METALS

379 365

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID ICP Metals
Laboratory ID GFAA Metals
Laboratory ID Mercury

V8-SO-11 BLK
V8-SO-09 BLK
V4-SO-31 BLK

V8-SO-11
V8-SO-09
V4-SO-31

Date Sample Prepared

09/08/98
09/04/98
09/04/98

ICP Metals
GFAA Metals
Mercury

Metals	Concentration mg/Kg	Detection Limit mg/Kg	Date Analyzed	Method
Silver	<0.700	0.700	09/08/98	6010B
Aluminum	<4.00	4.00	09/08/98	6010B
Arsenic	<0.200	0.200	09/04/98	7060A
Barium	<0.200	0.200	09/08/98	6010B
Beryllium	<0.100	0.100	09/08/98	6010B
Calcium	2.20	1.00	09/08/98	6010B
Cadmium	<0.400	0.400	09/08/98	6010B
Cobalt	<0.700	0.700	09/08/98	6010B
Chromium	<0.700	0.700	09/08/98	6010B
Copper	<0.600	0.600	09/08/98	6010B
Iron	0.900	0.700	09/08/98	6010B
Potassium	<20.0	20.0	09/08/98	6010B
Magnesium	<3.00	3.00	09/08/98	6010B
Manganese	<0.200	0.200	09/08/98	6010B
Sodium	<20.0	20.0	09/08/98	6010B
Nickel	<1.50	1.50	09/08/98	6010B
Lead	<0.100	0.100	09/08/98	7421
Antimony	<3.20	3.20	09/08/98	6010B
Selenium	<0.200	0.200	09/04/98	7740
Thallium	<0.100	0.100	09/08/98	7841
Vanadium	<0.800	0.800	09/08/98	6010B
Zinc	<1.00	1.00	09/08/98	6010B
Mercury	<0.020	0.020	09/04/98	7471A

Metals Blank

000035
9809-153.MQ1BLANK

379 366

SOLID LABORATORY CONTROL SAMPLE
METALS

Lab Name

Environmental Testing and Consulting, Inc

Laboratory ID ICP Metals

V8-SO-11 LCSV8-SO-11

Laboratory ID GFAA Metals

V8-SO-09 LCSV8-SO-09

Laboratory ID Mercury

V4-SO-31 LCSV4-SO-31

Date Prepared

09/04/98

ICP Metals

09/04/98

GFAA Metals

09/04/98

Mercury

Metals	Spike Added mg/Kg	Found mg/Kg	% R	#	QC Limits	
Silver	20.0	20.0	100		80	120
Aluminum	200	206	103		80	120
Arsenic	5.00	4.63	93		85	115
Barium	200	209	105		80	120
Beryllium	20.0	19.5	98		80	120
Calcium	400	398	100		80	120
Cadmium	20.0	19.7	99		80	120
Cobalt	100	99.3	99		80	120
Chromium	40.0	39.3	98		80	120
Copper	40.0	41.3	103		80	120
Iron	200	204	102		80	120
Potassium	400	414	104		80	120
Magnesium	400	392	98		80	120
Manganese	20.0	20.3	102		80	120
Sodium	400	411	103		80	120
Nickel	100	100	100		80	120
Lead	2.00	1.84	92		85	115
Antimony	200	205	103		80	120
Selenium	5.00	4.59	92		85	115
Thallium	2.00	1.91	96		85	115
Vanadium	100	101	101		80	120
Zinc	20.0	20.2	101		80	120
Mercury	0.167	0.156	93		80	120

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Metals Laboratory Control Sample

000036

9809-153.MQ1LCS

SOLID MATRIX SPIKE
METALS

379 367

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MS ICP Metals	9809-153-02	V8-SO-11
Laboratory ID MS GFAA Metals	9809-153-02	V8-SO-09
Laboratory ID MS Mercury	9809-153-02	V4-SO-31

Date Sample Prepared	09/08/98	ICP Metals
	09/04/98	GFAA Metals
	09/04/98	Mercury

Metals	SPIKE Added mg/Kg	SAMPLE Conc mg/Kg	MS Conc mg/Kg	RPD <20% #	MS % Rec #	QC Limits	
Silver	21.4	ND	20.9	4	98	75	125
Aluminum	214	12600	14000	19	654 *	75	125
Arsenic	5.26	10.8	16.5	5	108	70	130
Barium	214	155	391	8	110	75	125
Beryllium	21.4	0.543	22.3	6	102	75	125
Calcium	429	1850	2300	8	105	75	125
Cadmium	21.4	ND	22.0	7	103	75	125
Cobalt	107	9.01	117	5	101	75	125
Chromium	42.9	14.9	58.8	9	102	75	125
Copper	42.9	19.5	66.0	5	108	75	125
Iron	214	23100	23700	6	280 *	75	125
Potassium	429	995	1660	21 *	155 *	75	125
Magnesium	429	2710	3350	10	149 *	75	125
Manganese	21.4	687	787	8	467 *	75	125
Sodium	429	75.5	540	7	108	75	125
Nickel	107	18.9	128	5	102	75	125
Lead	2.10	14.0	15.0	7	48 *	70	130
Antimony	214	ND	3.49	2	2 *	75	125
Selenium	5.26	ND	3.23	1	61 *	70	130
Thallium	2.10	0.300	2.02	6	82	70	130
Vanadium	107	23.8	126	9	96	75	125
Zinc	21.4	71.6	96.9	6	118	75	125
Mercury	0.183	0.041	0.213	1	94	75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

ND - Not Detected

000037

9809-153.mq1MSMSD

379 368

Metals Matrix Spike

SOLID MATRIX SPIKE DUPLICATE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MSD ICP Metals	9809-153-02	V8-SO-11
Laboratory ID MSD GFAA Metals	9809-153-02	V8-SO-09
Laboratory ID MSD Mercury	9809-153-02	V4-SO-31

Date Sample Prepared	09/08/98	ICP Metals
	09/04/98	GFAA Metals
	09/04/98	Mercury

Metals	SPIKE Added mg/Kg	SAMPLE Conc mg/Kg	MSD Conc mg/Kg		MSD % Rec	#	QC Limits	
Silver	21.4	ND	20.0		94		75	125
Aluminum	214	12600	11600		-467	*	75	125
Arsenic	5.46	10.8	17.3		119		70	130
Barium	214	155	361		96		75	125
Beryllium	21.4	0.543	21.1		96		75	125
Calcium	429	1850	2130		65	*	75	125
Cadmium	21.4	ND	20.5		96		75	125
Cobalt	107	9.01	111		95		75	125
Chromium	42.9	14.9	53.5		90		75	125
Copper	42.9	19.5	62.7		101		75	125
Iron	214	23100	22400		-327	*	75	125
Potassium	429	995	1350		83		75	125
Magnesium	429	2710	3030		75	*	75	125
Manganese	21.4	687	854		780	*	75	125
Sodium	429	75.5	505		100		75	125
Nickel	107	18.9	122		96		75	125
Lead	2.19	14.0	16.1		96		70	130
Antimony	214	ND	0		0	*	75	125
Selenium	5.46	ND	3.20		59	*	70	130
Thallium	2.19	0.300	2.15		85		70	130
Vanadium	107	23.8	115		85		75	125
Zinc	21.4	71.6	91.7		94		75	125
Mercury	0.179	0.041	0.210		94		75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

ND - Not Detected

000038

9809-153.mq1MSMSD

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - AQUEOUS

379 369

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153

HOLDING TIMES

QC Batch(s) for this order : ICP/GFAA V11-AQ-62
Mercury V4-AQ-36

Sample Analysis : All samples digested and analyzed within 180
days of collection.
Mercury Analysis : All samples analyzed within 28 days of
collection.

CALIBRATION

Initial Calibration : All criteria met.
Continuing Calibration : All criteria met.

SAMPLE ANALYSIS

Instrumentation : Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer
Dilutions Required : No dilutions required.

QUALITY CONTROL

9809-153.MQCBLANK

Method Blank

V11-AQ-62BLK - ICP/GFAA Metals
V4-AQ-36BLK - Mercury

No analytes detected in the Method Blank.

9809-153.MQCLCS

Laboratory Control Sample(s)

V11-AQ-62LCS - ICP/GFAA Metals
V4-AQ-36LCS - Mercury

All criteria met.

9809-153.MQCMSMSD

Matrix Spike / Matrix Spike Dup - ICP Metals

9809-153-03 RPD : All analytes within QC limits.
RA-A-EQ-005-CS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

000039

379 370

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Graphite Metals

9809-153-03 RPD : All analytes within QC limits.
RA-A-EQ-005-CS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Hg

9809-153-03 RPD : All analytes within QC limits.
RA-A-EQ-005-CS Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Dilution Test - Dilution result must agree within 10% of original
result when sample is diluted by a factor of 5.

Post Digestion Spike - Recovery must be +/-15% of expected value.


Laboratory Manager

000040

SOLID METHOD BLANK
METALS

379 371

Lab Name	Environmental Testing and Consulting, Inc		
Laboratory ID ICP/GFAA Metals	<u>V11-AQ-62</u> BLK	QC Batch <u>V11-AQ-62</u>	
Laboratory ID Mercury	<u>V4-AQ-36</u> BLK	<u>V4-AQ-36</u>	
Date Sample Prepared	<u>09/04/98</u> <u>09/08/98</u>	ICP/GFAA Metals Mercury	

Metals	Concentration mg/L	Detection Limit mg/L	Date Analyzed	Method
Silver	<0.009	0.009	09/08/98	6010B
Aluminum	<0.060	0.060	09/08/98	6010B
Arsenic	<0.003	0.003	09/04/98	7060A
Barium	<0.003	0.003	09/08/98	6010B
Beryllium	<0.002	0.002	09/08/98	6010B
Calcium	<0.015	0.015	09/08/98	6010B
Cadmium	<0.005	0.005	09/08/98	6010B
Cobalt	<0.009	0.009	09/08/98	6010B
Chromium	<0.009	0.009	09/08/98	6010B
Copper	<0.008	0.008	09/08/98	6010B
Iron	<0.009	0.009	09/08/98	6010B
Potassium	<0.250	0.250	09/08/98	6010B
Magnesium	<0.040	0.040	09/08/98	6010B
Manganese	<0.003	0.003	09/08/98	6010B
Sodium	<0.050	0.050	09/08/98	6010B
Nickel	<0.020	0.020	09/08/98	6010B
Lead	<0.002	0.002	09/08/98	7421
Antimony	<0.040	0.040	09/08/98	6010B
Selenium	<0.003	0.003	09/04/98	7740
Thallium	<0.002	0.002	09/08/98	7841
Vanadium	<0.010	0.010	09/08/98	6010B
Zinc	<0.010	0.010	09/08/98	6010B
Mercury	<0.0002	0.0002	09/08/98	7470A

Metals Blank

000041

9809-153.MQCBLANK

379 372

SOLID LABORATORY CONTROL SAMPLE
METALS

Lab Name

Environmental Testing and Consulting, Inc

Laboratory Control ID

ICP/GFAA Metals V11-AQ-62 LCS
Mercury V4-AQ-36 LCS

QC Batch

V11-AQ-62V4-AQ-36

Date Prepared

ICP/GFAA Metals 09/04/98
Mercury 09/08/98

Metals	Spike Added mg/L	Found mg/L	% R	#	QC Limits	
Silver	0.250	0.265	106		80	120
Aluminum	2.50	2.62	105		80	120
Arsenic	0.063	0.062	98		85	115
Barium	2.50	2.66	106		80	120
Beryllium	0.250	0.256	102		80	120
Calcium	5.00	5.32	106		80	120
Cadmium	0.250	0.268	107		80	120
Cobalt	1.25	1.30	104		80	120
Chromium	0.500	0.522	104		80	120
Copper	0.500	0.545	109		80	120
Iron	2.50	2.69	108		80	120
Potassium	5.00	5.28	106		80	120
Magnesium	5.00	5.20	104		80	120
Manganese	0.250	0.266	106		80	120
Sodium	5.00	5.36	107		80	120
Nickel	1.25	1.32	106		80	120
Lead	0.025	0.026	104		85	115
Antimony	2.50	2.73	109		80	120
Selenium	0.063	0.060	95		85	115
Thallium	0.025	0.026	104		85	115
Vanadium	1.25	1.33	106		80	120
Zinc	0.250	0.271	108		80	120
Mercury	0.0050	0.0053	106		80	120

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Metals Laboratory Control Sample

000042
9809-153.MQCLCS

SOLID MATRIX SPIKE METALS

Lab Name Environmental Testing and Consulting, Inc

		QC Batch
Laboratory ID MS ICP/GFAA Metals	9809-153-03	V11-AQ-62
Laboratory ID MS Mercury	9809-153-03	V4-AQ-36

Date Sample Prepared	09/04/98	ICP/GFAA Metals
	09/08/98	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MS Conc mg/L	RPD <20% #	MS % Rec #	QC Limits	
Silver	0.250	ND	0.271	1	108	75	125
Aluminum	2.50	ND	2.71	0	108	75	125
Arsenic	0.063	ND	0.060	2	95	85	115
Barium	2.50	ND	2.74	1	110	75	125
Beryllium	0.250	ND	0.263	1	105	75	125
Calcium	5.00	ND	5.43	1	109	75	125
Cadmium	0.250	ND	0.274	0	110	75	125
Cobalt	1.25	ND	1.33	1	106	75	125
Chromium	0.500	ND	0.532	0	106	75	125
Copper	0.500	0.009	0.557	1	110	75	125
Iron	2.50	0.011	2.75	0	110	75	125
Potassium	5.00	ND	5.41	1	108	75	125
Magnesium	5.00	ND	5.31	0	106	75	125
Manganese	0.250	ND	0.272	1	109	75	125
Sodium	5.00	ND	5.41	0	108	75	125
Nickel	1.25	ND	1.35	1	108	75	125
Lead	0.025	ND	0.026	8	104	85	115
Antimony	2.50	ND	2.69	0	108	75	125
Selenium	0.063	ND	0.061	3	97	85	115
Thallium	0.025	ND	0.027	4	108	85	115
Vanadium	1.25	ND	1.36	0	109	75	125
Zinc	0.250	ND	0.285	4	114	75	125
Mercury	0.0050	ND	0.0052	0	104	75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits ND - Not Detected

Metals Matrix Spike

000043
9809-153.mqcMSMSD

379 374

SOLID MATRIX SPIKE DUPLICATE
METALS

Lab Name Environmental Testing and Consulting, Inc

Laboratory ID MS ICP/GFAA Metals	9809-153-03	QC Batch	V11-AQ-62
Laboratory ID MS Mercury	9809-153-03		V4-AQ-36

Date Sample Prepared	09/04/98	ICP/GFAA Metals
	09/08/98	Mercury

Metals	SPIKE Added mg/L	SAMPLE Conc mg/L	MSD Conc mg/L		MSD % Rec	#	QC Limits	
Silver	0.250	ND	0.268		107		75	125
Aluminum	2.50	ND	2.70		108		75	125
Arsenic	0.063	ND	0.061		97		85	115
Barium	2.50	ND	2.71		108		75	125
Beryllium	0.250	ND	0.265		106		75	125
Calcium	5.00	ND	5.46		109		75	125
Cadmium	0.250	ND	0.275		110		75	125
Cobalt	1.25	ND	1.35		108		75	125
Chromium	0.500	ND	0.531		106		75	125
Copper	0.500	0.009	0.552		109		75	125
Iron	2.50	0.011	2.75		110		75	125
Potassium	5.00	ND	5.45		109		75	125
Magnesium	5.00	ND	5.30		106		75	125
Manganese	0.250	ND	0.274		110		75	125
Sodium	5.00	ND	5.43		109		75	125
Nickel	1.25	ND	1.36		109		75	125
Lead	0.025	ND	0.024		96		85	115
Antimony	2.50	ND	2.78		111		75	125
Selenium	0.063	ND	0.059		94		85	115
Thallium	0.025	ND	0.026		104		85	115
Vanadium	1.25	ND	1.36		109		75	125
Zinc	0.250	ND	0.275		110		75	125
Mercury	0.0050	ND	0.0052		104		75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits ND - Not Detected

Metals Matrix Spike Duplicate

000044

9809-153.mqcMSMSD

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC/MS Semi-Volatiles

000045

379 376

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8270C/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P04031 P04031LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recoveries for Nitrobenzene-d5 and 2-Fluorobiphenyl were
flagged for high recovery in samples 9809-153-02 (RA-A-013), P04031LB,
and P04031BS associated with this project.

Laboratory Control Sample FORM 3
P04031BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9809-153-02 RPD : All analytes within QC limits.
RA-A-013 Spike Recovery : All analytes within QC limits.*
*
Recoveries for Fluoranthene were flagged outside QC Limits in the
Matrix Spike and Matrix Spike Duplicate.

Recoveries for Anthracene and Naphthalene were flagged as outside QC
Limits in the Matrix Spike. MSD recoveries were within QC Limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P04031LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times
within QC limits.

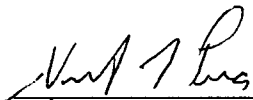
000046

ENVIRONMENTAL TESTING AND CONSULTING, INC. 379 377
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8270C/3550B

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.


Laboratory Manager

000047

379 378

FORM 2
SOIL BNA-GCMS SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-153

Level: (low/med) LOW

	CLIENT SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P04031LB	87*	91*	73						2
02	P04031BS	86*	96*	72						2
03	9809-153-1	65	71	55						0
04	9809-153-2	81*	88*	74						2
05	9809-153-2M	57	69	57						0
06	9809-153-2S	62	79	64						0
07	P04031LB	85*	93*	86						2
08	P04031BS	87*	101*	86						2
09										
10										
11										
12										
13										
14										
15										
16										
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26										
27										
28										
29										
30										

QC LIMITS

S1 (NBZ) = Nitrobenzene-d5 (39- 80)
 S2 (FBP) = 2-Fluorobiphenyl (43- 84)
 S3 (TPH) = Terphenyl-d14 (40-121)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

000048

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

379 379

CLIENT SAMPLE NO

P04031LB

Lab Name: ETC, INC.

Lab Prep Batch: P04031

Lab File ID: 1401014

Matrix: (soil/water) SOIL

Level:(low/med) LOW

SDG No.: 9809-153

Instrument ID: BNA2

Date Analyzed: 09/05/98

Time Analyzed: 2326

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P04031BS		1501015	09/05/98
02	9809-153-1		1601016	09/06/98
03	9809-153-2		1701017	09/06/98
04	9809-153-2M		1901019	09/06/98
05	9809-153-2S		2001020	09/06/98
06	P04031BS		1601016	09/09/98
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
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29				
30				

COMMENTS:

379 380

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

Lab Name: ETC, INC.

P04031LB

SDG No.: 9809-153

Matrix: (soil/water) SOIL

Lab Prep Batch: P04031

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 1401014

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1 (mL)

Date Analyzed: 09/05/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
83-32-9-----	Acenaphthene	66.7	U	
208-96-8-----	Acenaphthylene	66.7	U	
120-12-7-----	Anthracene	66.7	U	
56-55-3-----	Benzo(a) Anthracene	66.7	U	
205-99-2-----	Benzo(b) fluoranthene	66.7	U	
207-08-9-----	Benzo(k) fluoranthene	66.7	U	
191-24-2-----	Benzo(g,h,i) perylene	66.7	U	
50-32-8-----	Benzo(a) pyrene	66.7	U	
218-01-9-----	Chrysene	66.7	U	
53-70-3-----	Dibenzo(a,h) anthracene	66.7	U	
206-44-0-----	Fluoranthene	66.7	U	
86-73-7-----	Fluorene	66.7	U	
193-39-5-----	Indeno(1,2,3-cd) pyrene	66.7	U	
91-57-6-----	2-Methylnaphthalene	66.7	U	
91-20-3-----	Naphthalene	66.7	U	
85-01-8-----	Phenanthrene	66.7	U	
129-00-0-----	Pyrene	66.7	U	

FORM I BNA-GCMS

000050

FORM 3
SOIL BNA-GCMS LABORATORY CONTROL SAMPLE

379 381

Lab Name: ETC, INC.

Lab Prep Batch: P04031

SDG No.: 9809-153

Matrix Spike - Sample No.: P04031BS

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	1670		1460	87	34-126
Acenaphthylene	1670		1620	97	62-123
Anthracene	1670		1380	83	68-124
Benzo(a)Anthracene	1670		1350	81	60-133
Benzo(b)fluoranthene	1670		1490	89	67-126
Benzo(k)fluoranthene	1670		1820	109	75-131
Benzo(g,h,i)perylene	1670		1360	81	53-137
Benzo(a)pyrene	1670		1540	92	68-129
Chrysene	1670		1350	81	67-131
Dibenzo(a,h)anthracene	1670		1430	86	51-138
Fluoranthene	1670		1490	89	71-132
Fluorene	1670		1540	92	65-126
Indeno(1,2,3-cd)pyrene	1670		1280	77	34-170
Naphthalene	1670		1270	76	62-113
Phenanthrene	1670		1470	88	66-128
Pyrene	1670		1400	84	33-155

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 16 outside limits

COMMENTS:

FORM 3
SOIL BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P04031

SDG No.: 9809-153

Matrix Spike - Sample No.: 9809-153-2

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Acenaphthene	1640	0.00	1140	70	34-126
Acenaphthylene	1640	0.00	1200	73	62-123
Anthracene	1640	0.00	1090	66*	68-124
Benzo(a)Anthracene	1640	0.00	1310	80	60-133
Benzo(b)fluoranthene	1640	0.00	1200	73	67-126
Benzo(k)fluoranthene	1640	0.00	1590	97	75-131
Benzo(g,h,i)perylene	1640	0.00	1060	65	53-137
Benzo(a)pyrene	1640	0.00	1330	81	68-129
Chrysene	1640	0.00	1200	73	67-131
Dibenzo(a,h)anthracene	1640	0.00	1010	62	51-138
Fluoranthene	1640	0.00	1050	64*	71-132
Fluorene	1640	0.00	1130	69	65-126
Indeno(1,2,3-cd)pyrene	1640	0.00	1020	62	34-170
Naphthalene	1640	0.00	948	58*	62-113
Phenanthrene	1640	0.00	1150	70	66-128
Pyrene	1640	0.00	1010	62	33-155

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

COMMENTS:

FORM 3
SOIL BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY 379 383

Lab Name: ETC, INC.

Lab Prep Batch: P04031

SDG No.: 9809-153

Matrix Spike - Sample No.: 9809-153-2

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Acenaphthene	1640	1210	74	6	20	34-126
Acenaphthylene	1640	1280	78	7	20	62-123
Anthracene	1640	1180	72	9	20	68-124
Benzo(a)Anthracene	1640	1380	84	5	20	60-133
Benzo(b)fluoranthene	1640	1220	74	1	20	67-126
Benzo(k)fluoranthene	1640	1580	96	1	20	75-131
Benzo(g,h,i)perylene	1640	1260	77	17	20	53-137
Benzo(a)pyrene	1640	1410	86	6	20	68-129
Chrysene	1640	1290	79	8	20	67-131
Dibenzo(a,h)anthracene	1640	1190	72	15	20	51-138
Fluoranthene	1640	1110	68*	6	20	71-132
Fluorene	1640	1250	76	10	20	65-126
Indeno(1,2,3-cd)pyrene	1640	1020	62	0	20	34-170
Naphthalene	1640	1030	63	8	20	62-113
Phenanthrene	1640	1220	74	6	20	66-128
Pyrene	1640	1070	65	5	20	33-155

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 16 outside limits
Spike Recovery: 4 out of 32 outside limits

COMMENTS:

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8270C/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P05037 P05037LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*

*
Surrogate recoveries for Nitrobenzene-d5 and 2-Fluorobiphenyl were
flagged for high recovery in P05037BS/BD associated with this
project. These samples were re-analyzed for verification with
similiar recoveries.

Laboratory Control Sample FORM 3
P05037BS/BD

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*
Due to the limited amount of sample available, no MS/MSD were
extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P05037LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times
within QC limits.

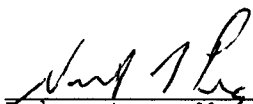
000054

ENVIRONMENTAL TESTING AND CONSULTING, INC. 379 385
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8270C/3510C

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.


Laboratory Manager

000055

379 386

FORM 2
WATER BNA-GCMS SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-153

	CLIENT SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P05037LB	82	76	70						0
02	P05037BS	80	88*	70						1
03	P05037BD	85*	90*	72						2
04	9809-153-3	58	57	69						0
05	P05037BS	85*	94*	84						2
06	P05037BD	87*	96*	85						2
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QC LIMITS

S1 (NBZ) = Nitrobenzene-d5 (35- 85)
 S2 (FBP) = 2-Fluorobiphenyl (46- 84)
 S3 (TPH) = Terphenyl-d14 (33-113)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

000056

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

379 387

CLIENT SAMPLE NO

P05037LB

Lab Name: ETC, INC.

Lab Prep Batch: P05037

Lab File ID: 1101011

Matrix: (soil/water) WATER

Level:(low/med) LOW

SDG No.: 9809-153

Instrument ID: BNA2

Date Analyzed: 09/05/98

Time Analyzed: 2153

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P05037BS		1201012	09/05/98
02	P05037BD		1301013	09/05/98
03	9809-153-3		1801018	09/06/98
04	P05037BS		1301013	09/09/98
05	P05037BD		1401014	09/09/98
06				
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COMMENTS:

379 388

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

P05037LB

Lab Name: ETC, INC.

SDG No.: 9809-153

Matrix: (soil/water) WATER

Lab Prep Batch: P05037

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 1101011

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1 (mL)

Date Analyzed: 09/05/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) UG/L	Q
83-32-9-----	Acenaphthene	2.0	U
208-96-8-----	Acenaphthylene	2.0	U
120-12-7-----	Anthracene	2.0	U
56-55-3-----	Benzo(a) Anthracene	2.0	U
205-99-2-----	Benzo(b) fluoranthene	2.0	U
207-08-9-----	Benzo(k) fluoranthene	2.0	U
191-24-2-----	Benzo(g,h,i) perylene	2.0	U
50-32-8-----	Benzo(a) pyrene	2.0	U
218-01-9-----	Chrysene	2.0	U
53-70-3-----	Dibenzo(a,h) anthracene	2.0	U
206-44-0-----	Fluoranthene	2.0	U
86-73-7-----	Fluorene	2.0	U
193-39-5-----	Indeno(1,2,3-cd) pyrene	2.0	U
91-57-6-----	2-Methylnaphthalene	2.0	U
91-20-3-----	Naphthalene	2.0	U
85-01-8-----	Phenanthrene	2.0	U
129-00-0-----	Pyrene	2.0	U

FORM I BNA-GCMS

000058

FORM 3
WATER BNA-GCMS LABORATORY CONTROL SAMPLE

379 389

Lab Name: ETC, INC.

Lab Prep Batch: P05037

SDG No.: 9809-153

Matrix Spike - Sample No.: P05037BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	50.0		40.3	81	37-123
Acenaphthylene	50.0		45.1	90	67-118
Anthracene	50.0		39.8	80	68-124
Benzo(a)Anthracene	50.0		39.9	80	69-125
Benzo(b)fluoranthene	50.0		44.4	89	68-127
Benzo(k)fluoranthene	50.0		51.8	104	73-128
Benzo(g,h,i)perylene	50.0		47.1	94	53-138
Benzo(a)pyrene	50.0		47.6	95	73-125
Chrysene	50.0		39.9	80	70-124
Dibenzo(a,h)anthracene	50.0		48.7	97	57-136
Fluoranthene	50.0		43.0	86	55-135
Fluorene	50.0		44.2	88	66-121
Indeno(1,2,3-cd)pyrene	50.0		44.1	88	57-140
Naphthalene	50.0		33.5	67	55-113
Phenanthrene	50.0		42.6	85	65-126
Pyrene	50.0		41.2	82	40-149

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS:

379 390

FORM 3
WATER BNA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P05037

SDG No.: 9809-153

Matrix Spike - Sample No.: P05037BD

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Acenaphthene	50.0	41.3	83	2	20	37-123
Acenaphthylene	50.0	46.0	92	2	20	67-118
Anthracene	50.0	40.8	82	2	20	68-124
Benzo(a)Anthracene	50.0	42.3	85	6	20	69-125
Benzo(b)fluoranthene	50.0	46.4	93	4	20	68-127
Benzo(k)fluoranthene	50.0	51.1	102	2	20	73-128
Benzo(g,h,i)perylene	50.0	40.5	81	15	20	53-138
Benzo(a)pyrene	50.0	49.2	98	3	20	73-125
Chrysene	50.0	42.3	85	6	20	70-124
Dibenzo(a,h)anthracene	50.0	43.3	87	11	20	57-136
Fluoranthene	50.0	44.8	90	4	20	55-135
Fluorene	50.0	45.7	91	3	20	66-121
Indeno(1,2,3-cd)pyrene	50.0	42.8	86	2	20	57-140
Naphthalene	50.0	32.2	64	4	20	55-113
Phenanthrene	50.0	44.1	88	3	20	65-126
Pyrene	50.0	42.2	84	2	20	40-149

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

RPD: 0 out of 16 outside limits

Spike Recovery: 0 out of 32 outside limits

COMMENTS:

379 391

Environmental Testing & Consulting, Inc.

**Quality Control Reports
GC Pesticides**

000061

379 392

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8081A/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P06015 P06015LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recoveries for Decachlorobiphenyl were flagged as outside QC Limits in samples 9809-153-01(RA-A-013), 9809-153-02(RA-A-014), and MS/MSD associated with this project due to required dilutions. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits for all samples associated with this project.

Laboratory Control Sample FORM 3
P06015BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9809-153-02 RPD : All analytes within QC limits.*
RA-A-014 Spike Recovery : All analytes within QC limits.
*
RPD for 4,4'-DDT was flagged as outside QC Limits due to higher recovery in the Matrix Spike.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P06015LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*
Endrin/Breakdown : All criteria met. FORM 7
*

Calibration Verification(CV) : P309101B.37R (Primary)

Analyte	%Diff(15% Max)	Response
Endrin	20.0	Low
Tetrachloro-m-xylene	17.0	Low
Decachlorobiphenyl	19.0	Low

000062

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - SOIL

379 393

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8081A/3550B

CALIBRATION

Low responses indicates that reported levels for these analytes may be biased low. Recoveries for Endrin were within QC Limits in P06015BS and 9809-153-02MS/MSD. Surrogate recoveries for Tetrachloro-m-xylene were within QC Limits for all samples associated with this CV. The data was not affected.

Calibration Verification(CV) : P109071A.20R (Primary)

Analyte	%Diff(15% Max)	Response
delta-BHC	16.4	High
4,4'-DDT	22.6	High
Endrin aldehyde	21.4	High
Endrin Ketone	38.0	High
Methoxychlor	25.0	High

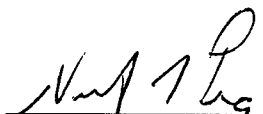
High responses indicate that reported levels for these analytes may be biased high. Method Blank P06015LB was the only project sample associated with this CV. No Target Analytes were identified in this sample. The data was not affected.

Initial Calibration (ICAL) : P309101B (Primary)

Initial calibration level 1 (0.0004 ng/ul) for Endrin Ketone was removed due to poor response. The reporting limit for this analyte was not affected.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.*


Laboratory Manager

000063

379 394

FORM 2
SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-153

Level: (low/med) LOW

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P06015LB	94	96							0
02	9809-153-2	54	62D							0
03	9809-153-1	49	51D							0
04	9809-153-2M	72	52D							0
05	9809-153-2S	64	53D							0
06	P06015BS	78	72							0
07										
08										
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QC LIMITS

S1 (TMX) = Tetrachloro-m-xylene (39-130)

S2 (DBC) = Decachlorobiphenyl (64-154)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

000064

379 395

FORM 4
PESTICIDE METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

P06015LB

Lab Name: ETC, INC.

Lab Prep Batch: P06015

Lab File ID: P109071A-19R

Matrix: (soil/water) SOIL

Level: (low/med) LOW

SDG No.: 9809-153

Instrument ID: PEST1A

Date Analyzed: 09/07/98

Time Analyzed: 2231

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	9808-153-2		P309101B-13R	09/11/98
02	9808-153-1		P309101B-14R	09/11/98
03	9808-153-2M		P309101B-21R	09/11/98
04	9808-153-2S		P309101B-22R	09/11/98
05	P06015BS		P309101B-34R	09/11/98
06				
07				
08				
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COMMENTS:

379 396

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P06015LB

Lab Name: ETC, INC.

SDG No.: 9809-153

Matrix: (soil/water) SOIL

Lab Prep Batch: P06015

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P109071A-19R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10 (mL)

Date Analyzed: 09/07/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/KG
			Q
309-00-2-----	Aldrin	1.33333	U
319-84-6-----	alpha-BHC	1.33333	U
319-85-7-----	beta-BHC	1.33333	U
319-86-8-----	delta-BHC	1.33333	U
58-89-9-----	gamma-BHC (Lindane)	1.33333	U
5103-71-9-----	alpha-chlordane	1.33333	U
5103-74-2-----	gamma-chlordane	1.33333	U
72-54-8-----	4,4'-DDD	1.33333	U
72-55-9-----	4,4'-DDE	1.33333	U
50-29-3-----	4,4'-DDT	1.33333	U
60-57-1-----	Dieldrin	1.33333	U
959-98-8-----	Endosulfan I	1.33333	U
33213-65-9-----	Endosulfan II	1.33333	U
1031-07-8-----	Endosulfan sulfate	1.33333	U
72-20-8-----	Endrin	1.33333	U
7421-93-4-----	Endrin aldehyde	1.33333	U
53494-70-5-----	Endrin Ketone	1.33333	U
76-44-8-----	Heptachlor	1.33333	U
1024-57-3-----	Heptachlor epoxide	1.33333	U
72-43-5-----	Methoxychlor	1.33333	U

FORM I PESTICIDE

000066

FORM 3
SOIL PESTICIDE LABORATORY CONTROL SAMPLE

379 397

Lab Name: ETC, INC.

Lab Prep Batch: P06015

SDG No.: 9809-153

Matrix Spike - Sample No.: P06015BS

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Aldrin	33.33		31.43	94	34-105
alpha-BHC	33.33		29.30	88	41-102
beta-BHC	33.33		33.25	100	26-151
delta-BHC	33.33		23.97	72	21- 92
gamma-BHC	33.33		30.31	91	41-102
alpha-chlordane	33.33		33.98	102	48-117
gamma-chlordane	33.33		33.55	101	50-108
4,4'-DDD	33.33		33.93	102	39-124
4,4'-DDE	33.33		34.42	103	41-111
4,4'-DDT	33.33		36.58	110	39-123
Dieldrin	33.33		33.36	100	42-111
Endosulfan I	33.33		34.47	103	48-117
Endosulfan II	33.33		35.39	106	52-114
Endosulfan sulfate	33.33		33.31	100	46-111
Endrin	33.33		34.85	104	45-117
Endrin aldehyde	33.33		38.97	117	48-125
Endrin ketone	33.33		35.20	106	51-112
Heptachlor	33.33		32.76	98	43-114
Heptachlor epoxide	33.33		32.33	97	42-115
Methoxychlor	33.33		37.03	111	39-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 20 outside limits

COMMENTS:

379 398

FORM 3

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P06015

SDG No.: 9809-153

Matrix Spike - Sample No.: 9809-153-2

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Aldrin	32.57	0.000	27.36	84	31-111
alpha-BHC	32.57	0.000	25.92	80	22-112
beta-BHC	32.57	0.000	28.93	89	54-120
delta-BHC	32.57	0.000	21.15	65	10- 96
gamma-BHC	32.57	0.000	26.75	82	26-113
alpha-chlordane	32.57	0.000	30.91	95	49-103
gamma-chlordane	32.57	0.000	30.03	92	50-106
4,4'-DDD	32.57	0.000	28.87	89	47-112
4,4'-DDE	32.57	0.000	31.65	97	36-117
4,4'-DDT	32.57	9.08	44.68	109	49-124
Dieldrin	32.57	0.000	30.42	93	44-108
Endosulfan I	32.57	0.000	28.98	89	49-103
Endosulfan II	32.57	0.000	29.64	91	53-115
Endosulfan sulfate	32.57	0.000	27.26	84	51-110
Endrin	32.57	0.000	29.77	91	44-118
Endrin aldehyde	32.57	3.42	32.23	88	48-128
Endrin ketone	32.57	0.000	29.67	91	38-130
Heptachlor	32.57	0.000	28.65	88	47-113
Heptachlor epoxide	32.57	0.000	28.06	86	47-112
Methoxychlor	32.57	0.000	29.81	92	39-147

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

COMMENTS:

000068

FORM 3
SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

379 399

Lab Name: ETC, INC.

Lab Prep Batch: P06015

SDG No.: 9809-153

Matrix Spike - Sample No.: 9809-153-2

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Aldrin	32.79	24.97	76	10	20	31-111
alpha-BHC	32.79	23.46	72	10	20	22-112
beta-BHC	32.79	26.62	81	9	20	54-120
delta-BHC	32.79	19.13	58	11	20	10- 96
gamma-BHC	32.79	24.51	75	9	20	26-113
alpha-chlordane	32.79	27.29	83	13	20	49-103
gamma-chlordane	32.79	27.39	84	9	20	50-106
4,4'-DDD	32.79	27.16	83	7	20	47-112
4,4'-DDE	32.79	27.89	85	13	20	36-117
4,4'-DDT	32.79	34.05	76	36*	20	49-124
Dieldrin	32.79	26.97	82	12	20	44-108
Endosulfan I	32.79	26.60	81	9	20	49-103
Endosulfan II	32.79	27.56	84	8	20	53-115
Endosulfan sulfate	32.79	25.80	79	6	20	51-110
Endrin	32.79	27.32	83	9	20	44-118
Endrin aldehyde	32.79	28.72	77	13	20	48-128
Endrin ketone	32.79	27.45	84	8	20	38-130
Heptachlor	32.79	26.49	81	8	20	47-113
Heptachlor epoxide	32.79	26.10	80	7	20	47-112
Methoxychlor	32.79	28.33	86	7	20	39-147

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 20 outside limits

Spike Recovery: 0 out of 40 outside limits

COMMENTS:

379 400

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8081A/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P07015 P07015LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P07015BS/BD

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*

Due to the limited amount of sample available, no MS/MSD were
extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P07015LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6*
Calibration Verification : All criteria met. FORM 7**
Endrin/Breakdown : All criteria met. FORM 7***

*

Calibration Verification(CV) : P309101B.37R (Primary)

Analyte	%Diff(15% Max)	Response
Endrin	20.0	Low
Tetrachloro-m-xylene	17.0	Low
Decachlorobiphenyl	19.0	Low

Low responses indicates that reported levels for these analytes
may be biased low. Recoveries for Endrin were within QC Limits in
P06015BS and 9809-153-02MS/MSD. Surrogate recoveries for
Tetrachloro-m-xylene were within QC Limits for all samples
associated with this CV. The data was not affected.

C00070

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - AQUEOUS

379 401

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8081A/3510C

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000071

379 402

FORM 2
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-153

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	9809-153-3	77	84							0
02	P07015LB	39	67							0
03	P07015BS	48	37							0
04	P07015BD	46	35							0
05										
06										
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QC LIMITS
S1 (TMX) = Tetrachloro-m-xylene (31- 96)
S2 (DBC) = Decachlorobiphenyl (34-115)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

000072

379 403

FORM 4
PESTICIDE METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

P07015LB

Lab Name: ETC, INC.

Lab Prep Batch: P07015

Lab File ID: P309101B-26R

Matrix: (soil/water) WATER

Level:(low/med) LOW

SDG No.: 9809-153

Instrument ID: PEST3B

Date Analyzed: 09/11/98

Time Analyzed: 1416

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	9808-153-3		P309101B-15R	09/11/98
02	P07015BS		P309101B-29R	09/11/98
03	P07015BD		P309101B-30R	09/11/98
04				
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COMMENTS:

379 404

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P07015LB

Lab Name: ETC, INC.

SDG No.: 9809-153

Matrix: (soil/water) WATER

Lab Prep Batch: P07015

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: P309101B-26R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10(mL)

Date Analyzed: 09/11/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
309-00-2-----	Aldrin	0.0400	U
319-84-6-----	alpha-BHC	0.0400	U
319-85-7-----	beta-BHC	0.0400	U
319-86-8-----	delta-BHC	0.0400	U
58-89-9-----	gamma-BHC	0.0400	U
5103-71-9-----	alpha-chlordane	0.0400	U
5103-74-2-----	gamma-chlordane	0.0400	U
72-54-8-----	4,4'-DDD	0.0400	U
72-55-9-----	4,4'-DDE	0.0400	U
50-29-3-----	4,4'-DDT	0.0400	U
60-57-1-----	Dieldrin	0.0400	U
959-98-8-----	Endosulfan I	0.0400	U
33213-65-9-----	Endosulfan II	0.0400	U
1031-07-8-----	Endosulfan sulfate	0.0400	U
72-20-8-----	Endrin	0.0400	U
7421-93-4-----	Endrin aldehyde	0.0400	U
53494-70-5-----	Endrin ketone	0.0400	U
76-44-8-----	Heptachlor	0.0400	U
1024-57-3-----	Heptachlor epoxide	0.0400	U
72-43-5-----	Methoxychlor	0.0400	U

FORM I PESTICIDE

000074

FORM 3
WATER PESTICIDE LABORATORY CONTROL SAMPLE

379 405

Lab Name: ETC, INC.

Lab Prep Batch: P07015

SDG No.: 9809-153

Matrix Spike - Sample No.: P07015BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
Aldrin	1.00		0.671	67	34-105
alpha-BHC	1.00		0.704	70	41-102
beta-BHC	1.00		0.823	82	26-151
delta-BHC	1.00		0.589	59	21- 92
gamma-BHC	1.00		0.724	72	41-102
alpha-chlordane	1.00		0.809	81	48-117
gamma-chlordane	1.00		0.808	81	50-108
4,4'-DDD	1.00		0.844	84	39-124
4,4'-DDE	1.00		0.837	84	41-111
4,4'-DDT	1.00		0.869	87	39-123
Dieldrin	1.00		0.805	80	42-111
Endosulfan I	1.00		0.813	81	48-117
Endosulfan II	1.00		0.876	88	52-114
Endosulfan sulfate	1.00		0.805	80	46-111
Endrin	1.00		0.781	78	45-117
Endrin aldehyde	1.00		0.919	92	48-125
Endrin ketone	1.00		0.899	90	51-112
Heptachlor	1.00		0.731	73	43-114
Heptachlor epoxide	1.00		0.781	78	42-115
Methoxychlor	1.00		0.875	88	39-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

379 406

FORM 3
WATER PESTICIDE LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P07015

SDG No.: 9809-153

Matrix Spike - Sample No.: P07015BS

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Aldrin	1.00	0.634	63	6	20	34-105
alpha-BHC	1.00	0.726	73	4	20	41-102
beta-BHC	1.00	0.828	83	1	20	26-151
delta-BHC	1.00	0.590	59	0	20	21- 92
gamma-BHC	1.00	0.753	75	4	20	41-102
alpha-chlordane	1.00	0.784	78	4	20	48-117
gamma-chlordane	1.00	0.772	77	5	20	50-108
4,4'-DDD	1.00	0.805	80	5	20	39-124
4,4'-DDE	1.00	0.788	79	6	20	41-111
4,4'-DDT	1.00	0.826	83	5	20	39-123
Dieldrin	1.00	0.806	81	1	20	42-111
Endosulfan I	1.00	0.806	81	0	20	48-117
Endosulfan II	1.00	0.840	84	5	20	52-114
Endosulfan sulfate	1.00	0.774	77	4	20	46-111
Endrin	1.00	0.750	75	4	20	45-117
Endrin aldehyde	1.00	0.845	84	9	20	48-125
Endrin ketone	1.00	0.832	83	8	20	51-112
Heptachlor	1.00	0.688	69	6	20	43-114
Heptachlor epoxide	1.00	0.778	78	0	20	42-115
Methoxychlor	1.00	0.799	80	10	20	39-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 20 outside limits

Spike Recovery: 0 out of 40 outside limits

COMMENTS:

000076

379 407

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC PCBs

000077

379 408

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PCBs - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8082/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P06015 P06015LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P06015BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9809-153-02 RPD : All analytes within QC limits.
RA-A-014 Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P06015LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*

* Calibration Verification(CV) : C209061.52R

Analyte	%Diff(15% Max)	Response
Decachlorobiphenyl	21.2	Low

Low response indicates that reported levels for this analyte may be biased low. Surrogates recoveries for all samples associated with this project were within QC Limits. The data was not affected.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000078

379 409

Contract:

SDG No.: 9809-153

Level: (low/med) LOW

	QC LIMITS
S1 (TMX) = Tetrachloro-m-xylene	(39-130)
S2 (DBC) = Decachlorobiphenyl	(64-154)

```
# Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out
```

379 410

FORM 4
PCB METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

P06015LB

Lab Name: ETC, INC.

Lab Prep Batch: P06015

SDG No.: 9809-153

Lab File ID: C209061A-11R

Instrument ID: PEST2A

Matrix: (soil/water) SOIL

Date Analyzed: 09/06/98

Level: (low/med) LOW

Time Analyzed: 1654

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P06015BS		C209061A-16R	09/06/98
02	9809-153-1		C209061A-40R	09/07/98
03	9809-153-2		C209061A-41R	09/07/98
04	9809-153-2M		C209061A-50R	09/07/98
05	9809-153-2S		C209061A-51R	09/07/98
06				
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COMMENTS:

000080

FORM 1
PCB ORGANICS ANALYSIS DATA SHEET

379 411
EPA GC SAMPLE NO.

P06015LB

Lab Name: ETC, INC.

SDG No.: 9809-153

Matrix: (soil/water) SOIL

Lab Prep Batch: P06015

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: C209061A-11R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10(mL)

Date Analyzed: 09/06/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2-----	Aroclor 1016	16.67	U
11104-28-2-----	Aroclor 1221	16.67	U
11141-16-5-----	Aroclor 1232	16.67	U
53469-21-9-----	Aroclor 1242	16.67	U
11097-69-1-----	Aroclor 1254	16.67	U
11096-82-5-----	Aroclor 1260	16.67	U
12672-29-6-----	Aroclor 1248	16.67	U

FORM I PCB

000081

379 412

FORM 3
SOIL PCB LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P06015

SDG No.: 9809-153

Matrix Spike - Sample No.: P06015BS

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
Aroclor 1242	333.3		344.1	103	25-125
Aroclor 1260	333.3		321.6	96	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS: _____

FORM III PCB

000082

FORM 3
SOIL PCB MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

379 413

Lab Name: ETC, INC.

Lab Prep Batch: P06015

SDG No.: 9809-153

Matrix Spike - Sample No.: 9809-153-2

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	M CONCENTRATION (ug/Kg)	M % REC #	QC. LIMITS REC.
Aroclor 1242	331.1	0.000	255.5	77	25-125
Aroclor 1260	331.1	0.000	243.5	74	25-125

COMPOUND	SPIKE ADDED (ug/Kg)	S CONCENTRATION (ug/Kg)	S % REC #	% RPD #	QC LIMITS RPD	REC.
Aroclor 1242	325.7	255.6	78	1	20	25-125
Aroclor 1260	325.7	250.6	77	4	20	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 2 outside limits

Spike Recovery: 0 out of 4 outside limits

COMMENTS:

FORM III PCB

000083

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PCBs - AQUEOUS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-153
Method (SW-846) : 8082/3510C

HOLDING TIMES

Sample Extraction : All aqueous samples extracted within 7 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P09009 P09009LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P09009BS/BD

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
RPD : NA*
Spike Recovery : NA*

*
Due to the limited amount of sample available, no MS/MSD were
extracted.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P09009LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7

*

Calibration Verification(CV) : C209061.52R

Analyte	%Diff(15% Max)	Response
Decachlorobiphenyl	21.2	Low

Low response indicates that reported levels for this analyte may be
biased low. Surrogates recoveries for all samples associated with
this project were within QC Limits. The data was not affected.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000084

FORM 2
WATER PCB SURROGATE RECOVERY

379 415

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-153

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P09009LB	68	72							0
02	P09009BS	56	78							0
03	P09009BD	62	55							0
04	9809-153-3	62	58							0
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QC LIMITS

S1 (TMX) = Tetrachloro-m-xylene (31- 96)
S2 (DBC) = Decachlorobiphenyl (34-115)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

000085

379 416

FORM 4
PCB METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

Lab Name: ETC, INC.

P09009LB

Lab Prep Batch: P09009

SDG No.: 9809-153

Lab File ID: C209061A-10R

Instrument ID: PEST2A

Matrix: (soil/water) WATER

Date Analyzed: 09/06/98

Level: (low/med) LOW

Time Analyzed: 1615

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P09009BS		C209061A-14R	09/06/98
02	P09009BD		C209061A-15R	09/06/98
03	9809-153-3		C209061A-42R	09/07/98
04				
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COMMENTS:

FORM 1
PCB ORGANICS ANALYSIS DATA SHEET

379 417
EPA GC SAMPLE NO.

P09009LB

Lab Name: ETC, INC.

SDG No.: 9809-153

Matrix: (soil/water) WATER

Lab Prep Batch: P09009

Sample wt/vol: _____ (g/mL) ML

Lab File ID: C209061A-10R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10 (mL)

Date Analyzed: 09/06/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

12674-11-2-----Aroclor 1016	0.500	U
11104-28-2-----Aroclor 1221	0.500	U
11141-16-5-----Aroclor 1232	0.500	U
53469-21-9-----Aroclor 1242	0.500	U
11097-69-1-----Aroclor 1254	0.500	U
11096-82-5-----Aroclor 1260	0.500	U
12672-29-6-----Aroclor 1248	0.500	U

FORM I PCB

000087

379 418

FORM 3
WATER PCB LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P09009

SDG No.: 9809-153

Matrix Spike - Sample No.: P09009BS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC. LIMITS REC.
Aroclor 1242	10.00		7.25	72	25-125
Aroclor 1260	10.00		8.44	84	25-125

COMPOUND	SPIKE ADDED (ug/L)	BD CONCENTRATION (ug/L)	BD % REC #	% RPD #	QC LIMITS RPD	REC.
Aroclor 1242	10.00	8.08	81	12	20	25-125
Aroclor 1260	10.00	8.98	90	7	20	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limitsRPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits.

COMMENTS:

FORM III PCB

C00088

379 419

**IMPORTED CLEAN BACKFILL (TOP SOIL)
CONFIRMATION SAMPLE**

Date Collected 09/08/98

RA-TS-005



September 11, 1998

Ms. Elena Rodriguez
OHM Remediation Services
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Ref: Analytical Testing
ETC Order # 9809235
Project Description DDMT

Project # 20560 Defense Depot - Memphis, TN

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th/18th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact our office if you have any questions.

Sincerely,

A handwritten signature in dark ink, appearing to read 'N. Pera'.

Nathan A. Pera, IV
Chief Executive Officer

rt
Attachment

OHM_DDMT

379 421

Chemical Analytical Data Review/Evaluation/Validation

SOUTHERN REGION

Report Type: ☐ Preliminary ☒ Final Date Received: _____ Project Number: 920560
 Project Name: DDMT Analysis/Method: TAL metals, TCL VOA, P, PCB, PH, OR, etc.
 Laboratory: ETC Lab Project/Case Number: 9809235
 Sample Number(s): RA-TS-005

Evaluated By: S. Pagan-Jorge Date Evaluated: 1/15/99
 Data Package Deliverables Requirement: ☐ OHM Minimum ☐ OHM Standard ☒ OHM Maximum
☐ Other, please describe _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL, MDL, RL, etc meets DQOs		✓	✓	✓
Comment: <u>Some RLS are higher for VOA, BNA, Pest, PCB compounds</u>				
Holding Times			✓	
Comment:				
Sample Condition (preservatives, containers, temperature, etc) / Case Narrative	X		✓	
Comment:				
Surrogate Recoveries	X		✓	✓
Comment: <u>some failed, matrix effect demonstrated.</u>				
Lab Control Sample Recoveries	X		✓	✓
Comment: <u>some high on Pest, sample results N.D. Data accepted</u>				
Lab Control Sample Duplicate or Other Spike Recoveries	X			
Comment:				
Lab Control Sample Duplicate or Other Laboratory Duplicate RPD	X			
Comment:				
Matrix Spike Recoveries	X		✓	✓
Comment: <u>some failed, rest LCS OK. data accepted</u>				
Matrix Spike Duplicate Recoveries	X		✓	✓
Comment: <u>see note in ms Recoveries</u>				
Matrix Spike / Matrix Spike Duplicate RPD	X		✓	✓
Comment:				
Laboratory Blanks (daily, method, instrument)	X		✓	
Comment:				
Field Blanks (trip, eqpt rinsate, ambient, matrix)	X			
Comment: <u>N/A</u>				

Quality Control Deliverables		Required	Received	Passed	Failed
Field Duplicates RPD		X			
Comment:	<i>no 1A</i>				
Second Source Check					
Comment:					
Second Column Confirmation		X		✓	
Comment:					
Percent Moisture/Solids		X		✓	
Comment:					
Initial / Continuing Calibrations		X		✓	
Comment:	<i>some failed, data flagged 'J' and accepted.</i>				
Internal Standard Areas and Retention Times (Organics Only)		X		✓	
Comment:					
Chromatograms		X		✓	
Comment:					
Sample Prep Worksheets		X		✓	
Comment:					
Raw Data Calculations		X		✓	
Comment:					
Laboratory Duplicates		X		✓	
Comment:					
Instrument Performance Checks (Organics Only)		X		✓	
Comment:					
Tentatively Identified Compounds (TICs)		X		✓	
Comment:					
Completeness	# Samples	# Analyses	Tot # Analyses	Tot # Accept Analyses	% Complete
Completeness = (Tot # Analyses / Tot # Accepted Analyses) x 100	1	7	7	7	100

General Comments:

Summary: ☐ See attached pages*Results flagged J for calib. failure (out of control) and accepted*

Check Applicable:

- ☐ Lab contacted—Corrective actions in process Date Contacted: _____
☐ Corrective actions received and accepted Date Received/Accepted: _____
☐ The data, as reported by the laboratory, are acceptable.
☒ The data, with qualifiers as described in the "Summary" portion of this report, are acceptable.
☐ The data are unacceptable.
☐ Other _____

S. Pasamunope
 Evaluator's Signature

1/15/79
 Date

Environmental Testing & Consulting, Inc.
Data Qualifiers for Organic Reporting

Within the attached report, some analytical data may be reported as "Qualified Data" as indicated by a "Data Qualifier" next to the result. This table summarizes the possible "Data Qualifiers" that may be associated with this report.

Q	Surrogate Recovery Outside QC Limits
J	Estimated Value. Presence of the compound was confirmed but less than the reported detection limit.
E	Concentration exceeds the established method calibration range but is within the working range of the instrument.
B	Analyte detected in the associated Method Blank.
U	Reported result was unconfirmed. Refer to Case Narrative.
N	Non-Compliance Report associated with this sample or project.
C	Result reported from GC/MS confirmation analysis.
*	QC Data (percent recovery/RPD for a particular analyte was outside QC Limits)

ENVIRONMENTAL TESTING & CONSULTING, INC.
 2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ANALYTICAL SUMMARY TABLE

379 424

Client Name OHM Remediation Services
 Site ID DDMT
 Memphis, TN

<u>ETC</u> <u>Sample ID</u>	<u>Field ID</u>	<u>Matrix</u>	<u>Method</u>	<u>Method Description</u>
980923501	RA-TS-005	SOIL	6010B	Silver
980923501	RA-TS-005	SOIL	6010B	Aluminum
980923501	RA-TS-005	SOIL	7060A	Arsenic
980923501	RA-TS-005	SOIL	8270C	GC/MS Base/Neutral & Acid
980923501	RA-TS-005	SOIL	6010B	Barium
980923501	RA-TS-005	SOIL	6010B	Beryllium
980923501	RA-TS-005	SOIL	6010B	Calcium
980923501	RA-TS-005	SOIL	6010B	Cadmium
980923501	RA-TS-005	SOIL	9010A	Cyanide
980923501	RA-TS-005	SOIL	6010B	Cobalt
980923501	RA-TS-005	SOIL	6010B	Chromium
980923501	RA-TS-005	SOIL	6010B	Copper
980923501	RA-TS-005	SOIL	6010B	Iron
980923501	RA-TS-005	SOIL	7471A	Mercury
980923501	RA-TS-005	SOIL	6010B	Potassium
980923501	RA-TS-005	SOIL	6010B	Magnesium
980923501	RA-TS-005	SOIL	6010B	Manganese
980923501	RA-TS-005	SOIL	6010B	Sodium
980923501	RA-TS-005	SOIL	6010B	Nickel
980923501	RA-TS-005	SOIL	D2974-87	Fractional Organic Matter
980923501	RA-TS-005	SOIL	8081A	Organochlorine Pesticides
980923501	RA-TS-005	SOIL	7421	Lead
980923501	RA-TS-005	SOIL	8082	PCBs
980923501	RA-TS-005	SOIL	9045C	pH - Corrosivity
980923501	RA-TS-005	SOIL	6010B	Antimony
980923501	RA-TS-005	SOIL	7740	Selenium
980923501	RA-TS-005	SOIL	7841	Thallium
980923501	RA-TS-005	SOIL	8260B	GC/MS Volatile Organics
980923501	RA-TS-005	SOIL	6010B	Vanadium
980923501	RA-TS-005	SOIL	6010B	Zinc

379 425

Environmental Testing & Consulting, Inc.

Login
Chain-of-Custody

000003



OHM Remediation Services Corp
 Subsidiary of OHM Corporation
 U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

LABORATORY COPY
 21802300004

FORM 0019 REV 3/97

OHM LAB COORDINATOR Elena Rodriguez		LAB COORDINATOR'S PHONE 770-734-8060		LAB COORDINATOR'S FAX 770-453-7716		LABORATORY SERVICE ID ETC		LABORATORY CONTACT Nathan Pera		MAIL REPORT (COMPANY NAME) OHM Remediation Services Corp	
PROJECT NAME DDMT		PROJECT LOCATION Memphis, TN		PROJECT NUMBER 20560		LABORATORY PHONE 901-327-2750		LABORATORY FAX 901-327-6334		RECIPIENT NAME Elena Rodriguez	
PROJECT CONTACT Steve Offner		PROJECT PHONE NUMBER 901-743-1117		PROJECT FAX 901-743-1048		LABORATORY ADDRESS 2924 Walnut Grove Road Memphis, TN 38111		ADDRESS 5445 Triangle Pkwy, #400 Morgans, CA 30092			
PROJECT ADDRESS 1708 Dunn Ave.		CITY STATE AND ZIP CODE Memphis, TN 38114		CLIENT USACE		CITY STATE AND ZIP CODE Memphis, TN 38111		CITY STATE AND ZIP CODE Morgans, CA 30092			
PROJECT MANAGER Steve Offner		PROJECT MANAGER'S PHONE 770-326-2571		PROJECT MANAGER'S FAX 770-453-7716							

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont	OC Level	T.A.T	Analyses	Comments
1	RA-15-005		5/1	9-38	14/15	NA	4/28/07	5/2/07	Offn	3/24/07
2										
3										
4										
5										
6										
7										
8										
9										
10										

SAMPLES COLLECTED BY Steve Offner/Steve Offner		COURIER AND AIR BILL NUMBER Delivered in Person		COOLER TEMPERATURE UPON RECEIPT	
REINFORSED BY michael m. davis		RECEIVED BY michael m. davis		SAMPLE'S CONDITION UPON RECEIPT	
DATE 5/15/07		TIME 11:00			

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

379 427

COOLER RECEIPT FORM

Cooler Receipt Form

9808235.CRF p. 1

LIMS # 9809-235 Number of Coolers: 1
Date Received: 09/08/98
VDTSR 09/08/98 16:40
PROJECT: DDMT

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS

A PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 09/08/98
by (print): Lynette Bugg (sign): [Signature]

1. Did cooler come with a shipping slip (airbill, etc.)?..... NO
If YES, enter carrier name & airbill number: _____

2a. Were custody seals on outside of cooler?..... NO

2b. Were custody seals on sample containers?..... NO

3. Were custody seals unbroken and intact at the date and time of arrival?..... NA

4. Did you screen samples for radioactivity using a Geiger Counter?..... NO

5. Were custody papers sealed in a plastic bag & taped inside to the lid?..... NO

6. Were custody papers filled out properly (ink, signed, etc.)?..... YES

7. Did you sign custody papers in the appropriate place?..... YES

8. Was project identifiable from custody papers? If YES, enter project name at top of this form.... YES

9. If required, was enough ice used? cooler temp: <40C , Type of ice: Crushed YES

10. Have designated person initial here to acknowledge receipt of cooler: LB date: 09/08/98

B. LOG-IN PHASE: Date samples were logged-in: 09/08/98
by (print): Lynette Bugg (sign) [Signature]

11. Describe type of packing in cooler: Bubble Wrap, Baggies and Ice

12. Were all bottles sealed in separate plastic bags?..... YES

13. Did all bottles arrive unbroken and were labels in good condition?..... YES

14. Were all bottle labels complete (ID, date, time, signature, preserved, etc.)?..... YES

15. Did all bottle labels agree with custody papers?..... YES

16. Were correct containers used for the tests indicated?..... YES

17. Were correct preservatives added to samples?..... YES

18. Was a sufficient amount of sample sent for tests indicated?..... YES

19. Were bubbles absent in VOA samples? If NO, list by sample#: _____ NA

20. Was the project manager called and status discussed? If YES, give details on the back of this form.... NO

21. Who was called? _____ By whom? _____ (date) _____

VDTSR - Validated Date/Time of Sample Receipt (Date sample is logged into LIMS system)

000005

Environmental Testing & Consulting, Inc.

Sample Reports

379 429

ENVIRONMENTAL TESTING & CONSULTING, INC.
Memphis, TN
INORGANIC ANALYSIS DATA SHEET
PERCENT SOLIDS

Client Name :OHM Remediation Services
Project Name :DDMT

Date Sample Received :09/08/98
Contract Laboratory Order Number :9809-235

<u>Contract Lab</u> <u>Sample No</u>	<u>Field</u> <u>ID</u>	<u>Date</u> <u>Sampled</u>	<u>Result</u> <u>Units : (%)</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u>	<u>By</u>
9809-235-01	RA-TS-005	09/08/98	87	09/09/98	160.3	MC


LABORATORY MANAGER

000007

379 430

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID **DDMT**
Memphis, TN

Date Arrived 09/08/98

ETC Order Number 9809235

ETC Lab ID 9809235-01

Sample ID: RA-TS-005

Matrix :SOIL

Sample Date :09/08/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Cyanide	ND	mg/Kg	1.00		09/10/98 GD	9010A
Fractional Organic Matter	1.45	%	0		09/10/98 BA	D2974-87
pH - Corrosivity	5.9	SU			09/10/98 TL	9045C


LABORATORY MANAGER

000008

379 431

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

INORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560

Site ID **DDMT**
Memphis, TN

Date Arrived 09/08/98
 ETC Order Number 9809235

ETC Lab ID **9809235-01**
Sample ID: RA-TS-005

Matrix :SOIL
 Sample Date :09/08/98

TEST	RESULT	UNITS	DETECTION LIMIT	TIME ANALYZED	DATE ANALYZED BY	METHOD
Metals Digestion Batch	V8-SO-12				NR	3051
Mercury Digestion Batch	V4-SO-32				RM	7471A
Silver	ND	mg/Kg	0.700	14:23	09/10/98	TD 6010B
Aluminum	12,700	mg/Kg	4.00	14:50	09/10/98	TD 6010B
Arsenic	10.4	mg/Kg	0.200	13:45	09/10/98	JF 7060A
Barium	107	mg/Kg	0.200	14:23	09/10/98	TD 6010B
Beryllium	0.502	mg/Kg	0.100	14:23	09/10/98	TD 6010B
Calcium	1,090	mg/Kg	1.00	14:23	09/10/98	TD 6010B
Cadmium	ND	mg/Kg	0.400	14:23	09/10/98	TD 6010B
Cobalt	7.10	mg/Kg	0.700	14:23	09/10/98	TD 6010B
Chromium	15.9	mg/Kg	0.700	14:23	09/10/98	TD 6010B
Copper	17.3	mg/Kg	0.600	14:23	09/10/98	TD 6010B
Iron	21,900	mg/Kg	0.700	14:50	09/10/98	TD 6010B
Mercury	0.026	mg/Kg	0.020	13:07	09/11/98	RM 7471A
Potassium	916	mg/Kg	20.0	14:23	09/10/98	TD 6010B
Magnesium	2,690	mg/Kg	3.00	14:23	09/10/98	TD 6010B
Manganese	570	mg/Kg	0.200	14:23	09/10/98	TD 6010B
Sodium	227	mg/Kg	20.0	14:23	09/10/98	TD 6010B
Nickel	16.7	mg/Kg	1.50	14:23	09/10/98	TD 6010B
Lead	11.0	mg/Kg	0.100	14:04	09/10/98	TD 7421
Antimony	ND	mg/Kg	3.20	14:23	09/10/98	TD 6010B
Selenium	ND	mg/Kg	0.200	09:43	09/11/98	JF 7740
Thallium	0.222	mg/Kg	0.100	12:42	09/11/98	JF 7841
Vanadium	24.3	mg/Kg	0.800	14:23	09/10/98	TD 6010B
Zinc	57.3	mg/Kg	1.00	14:23	09/10/98	TD 6010B


 LABORATORY MANAGER

000009

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

379 432

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Project # 20560
FID # DAC45-96-D-0014

Site ID DDMT
Memphis, TN

Date Arrived 09/08/98
ETC Order Number 9809235

ETC Lab ID 9809235-01
Sample ID: RA-TS-005

Matrix :SOIL
Sample Date :09/08/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Volatile Organics				09/09/98	09/09/98	LS	8260B
QC Batch	V1090901	ug/Kg					
Acetone	ND	ug/Kg	50.0				
Benzene	ND	ug/Kg	2.00				
Bromodichloromethane	ND	ug/Kg	2.00				
Bromoform	ND	ug/Kg	2.00				
Bromomethane	ND	ug/Kg	2.00				
Carbon Disulfide	ND	ug/Kg	25.0				
Carbon Tetrachloride	ND	ug/Kg	2.00				
Chlorobenzene	ND	ug/Kg	2.00				
Chlorodibromomethane	ND	ug/Kg	2.00				
Chloroethane	ND	ug/Kg	2.00				
Chloroform	ND	ug/Kg	2.00				
Chloromethane	ND	ug/Kg	2.00				
1,1-Dichloroethane	ND	ug/Kg	2.00				
1,2-Dichloroethane	ND	ug/Kg	2.00				
1,1-Dichloroethene	ND	ug/Kg	2.00				
trans-1,2-Dichloroethene	ND	ug/Kg	2.00				
1,2-Dichloropropane	ND	ug/Kg	2.00				
cis-1,3-Dichloropropene	ND	ug/Kg	2.00				
trans-1,3-Dichloropropene	ND	ug/Kg	2.00				
Ethylbenzene	ND	ug/Kg	2.00				
2-Hexanone (MBK)	ND	ug/Kg	50.0				
4-Methyl-2-pentanone (MIBK)	ND	ug/Kg	50.0				
2-Butanone (MEK)	ND	ug/Kg	50.0				
Methylene Chloride	ND	ug/Kg	50.0				
Styrene	ND	ug/Kg	2.00				
1,1,2,2-Tetrachloroethane	ND	ug/Kg	2.00				
Tetrachloroethene	ND	ug/Kg	2.00				
Toluene	ND	ug/Kg	2.00				
1,1,1-Trichloroethane	ND	ug/Kg	2.00				
1,1,2-Trichloroethane	ND	ug/Kg	2.00				
Trichloroethene	ND	ug/Kg	2.00				
Vinyl Acetate	ND	ug/Kg	25.0				
Vinyl Chloride	ND	ug/Kg	2.00				
o-Xylenes	ND	ug/Kg	2.00				
m-Xylenes	ND	ug/Kg	2.00				
p-Xylenes	ND	ug/Kg	2.00				
cis-1,2-Dichloroethene	ND	ug/Kg	2.00				

Surrogate Standard	% Recovery	QC Limits	
S1 - Dibromofluoromethane	102	85	119
S2 - Toluene-d8	98	87	114
S3 - 4-Bromofluorobenzene	108	75	111


LABORATORY MANAGER

ND - Not Detected

000010

379 433

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9809-235-1

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-235

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 4.4 (g/mL) G

Lab File ID: 1001010

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/09/98

GC Column: ID: 2.00 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 54725-17-6	BENZENE, 2-HEPTYNYL-	21.82	12.5	NJ
2. 21693-54-9	NAPHTHALENE, 1,2,3,4-TETRAHY	22.28	16.6	NJ
3. 575-43-9	NAPHTHALENE, 1,6-DIMETHYL-	26.00	21.7	NJ
4.				
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30.				

FORM I VOA-GCMS-TIC

000011

ENVIRONMENTAL TESTING & CONSULTING, INC. 379 434

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750
ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
 FID # DACA45-96-D-0014

Date Arrived 09/08/98
 ETC Order Number 9809235

ETC Lab ID 9809235-01
Sample ID: RA-TS-005

Matrix :SOIL
 Sample Date :09/08/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid				09/10/98	09/11/98	RR	8270C
QC Batch	P04032	ug/Kg					
Acenaphthene	ND	ug/Kg	170				
Acenaphthylene	ND	ug/Kg	170				
Anthracene	ND	ug/Kg	170				
Benzo(a)anthracene	ND	ug/Kg	170				
Benzo(b)fluoranthene	ND	ug/Kg	170				
Benzo(k)fluoranthene	ND	ug/Kg	170				
Benzo(g,h,i)perylene	ND	ug/Kg	170				
Benzo(a)pyrene	ND	ug/Kg	170				
Benzoic Acid	ND	ug/Kg	1670				
Benzyl Alcohol	ND	ug/Kg	170				
Bis(2-chloroethoxy)methane	ND	ug/Kg	170				
Bis(2-chloroethyl)ether	ND	ug/Kg	170				
Bis(2-chloroisopropyl)ether	ND	ug/Kg	170				
Bis(2-ethylhexyl)phthalate	ND	ug/Kg	170				
4-Bromophenyl phenyl ether	ND	ug/Kg	170				
Butyl benzyl phthalate	ND	ug/Kg	170				
4-Chloroaniline	ND	ug/Kg	170				
2-Chloronaphthalene	ND	ug/Kg	170				
4-Chloro-3-methylphenol	ND	ug/Kg	170				
2-Chlorophenol	ND	ug/Kg	170				
4-Chlorophenyl phenyl ether	ND	ug/Kg	170				
Chrysene	ND	ug/Kg	170				
Dibenzo(a,h)anthracene	ND	ug/Kg	170				
Dibenzofuran	ND	ug/Kg	170				
Di-n-butyl phthalate	ND	ug/Kg	170				
1,2-Dichlorobenzene	ND	ug/Kg	170				
1,3-Dichlorobenzene	ND	ug/Kg	170				
1,4-Dichlorobenzene	ND	ug/Kg	170				
3,3'-Dichlorobenzidine	ND	ug/Kg	170				
2,4-Dichlorophenol	ND	ug/Kg	170				
2,6-Dichlorophenol	ND	ug/Kg	170				
Diethyl phthalate	ND	ug/Kg	170				
2,4-Dimethylphenol	ND	ug/Kg	170				
Dimethyl phthalate	ND	ug/Kg	170				
4,6-Dinitro-2-methylphenol	ND	ug/Kg	170				
2,4-Dinitrophenol	ND	ug/Kg	330				
2,4-Dinitrotoluene	ND	ug/Kg	170				
2,6-Dinitrotoluene	ND	ug/Kg	170				
Di-n-octyl phthalate	ND	ug/Kg	170				
Fluoranthene	ND	ug/Kg	170				
Fluorene	ND	ug/Kg	170				
Hexachlorobenzene	ND	ug/Kg	170				


 LABORATORY MANAGER

ND - Not Detected

000012

379 435

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
 FID # DACA45-96-D-0014

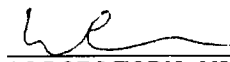
Date Arrived 09/08/98
 ETC Order Number 9809235

ETC Lab ID 9809235-01
Sample ID: RA-TS-005

Matrix :SOIL
 Sample Date :09/08/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
GC/MS Base/Neutral & Acid				09/10/98	09/11/98	RR	8270C
Hexachlorobutadiene	ND	ug/Kg	170				
Hexachlorocyclopentadiene	ND	ug/Kg	170				
Hexachloroethane	ND	ug/Kg	170				
Indeno(1,2,3-cd)pyrene	ND	ug/Kg	170				
Isophorone	ND	ug/Kg	170				
2-Methylnaphthalene	ND	ug/Kg	170				
2-Methylphenol (o-cresol)	ND	ug/Kg	170				
3-Methylphenol (m-cresol)	ND	ug/Kg	170				
4-Methylphenol (p-cresol)	ND	ug/Kg	170				
Naphthalene	ND	ug/Kg	170				
Nitrobenzene	ND	ug/Kg	170				
2-Nitroaniline	ND	ug/Kg	170				
3-Nitroaniline	ND	ug/Kg	170				
4-Nitroaniline	ND	ug/Kg	170				
2-Nitrophenol	ND	ug/Kg	170				
4-Nitrophenol	ND	ug/Kg	170				
N-Nitrosodiphenylamine	ND	ug/Kg	170				
N-Nitrosodipropylamine	ND	ug/Kg	170				
Pentachlorophenol	ND	ug/Kg	170				
Phenanthrene	ND	ug/Kg	170				
Phenol	ND	ug/Kg	170				
Pyrene	ND	ug/Kg	170				
1,2,4-Trichlorobenzene	ND	ug/Kg	170				
2,4,5-Trichlorophenol	ND	ug/Kg	170				
2,4,6-Trichlorophenol	ND	ug/Kg	170				

Surrogate Standard	% Recovery	QC Limits
S1 - Nitrobenzene-d5	67	39 80
S2 - 2-Fluorobiphenyl	74	43 84
S3 - 4-Terphenyl-d14	82	40 121
S4 - Phenol-d6	64	31 94
S5 - 2,4,6-Tribromophenol	65	17 91
S6 - 2-Fluorophenol	60	23 89


 LABORATORY MANAGER

ND - Not Detected

J00013

379 436

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9809-235-1

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-235

Matrix: (soil/water) SOIL

Lab Sample ID:

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: 2001018

Level: (low/med) LOW

Date Received: _____

% Moisture: _____ decanted: (Y/N) _____

Date Extracted:

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/11/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
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FORM I BNA-GCMS-TIC

000014

379 437

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
 FID # DACA45-96-D-0014

Date Arrived 09/08/98
 ETC Order Number 9809235

ETC Lab ID **9809235-01**
Sample ID: RA-TS-005

Matrix :SOIL
 Sample Date :09/08/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
Organochlorine Pesticides				09/10/98	09/17/98	RG	8081A
QC Batch	P06017	ug/Kg					
Aldrin	ND	ug/Kg	2.00				
Alpha-BHC	ND	ug/Kg	2.00				
Beta-BHC	ND	ug/Kg	2.00				
Delta-BHC	ND	ug/Kg	2.00				
Gamma-BHC (Lindane)	ND	ug/Kg	2.00				
Alpha-Chlordane	ND	ug/Kg	2.00				
Gamma-Chlordane	ND	ug/Kg	2.00				
Chlordane	ND	ug/Kg	20.0				
4,4'-DDD	ND	ug/Kg	2.00				
4,4'-DDE	ND	ug/Kg	2.00				
4,4'-DDT	ND	ug/Kg	2.00				
Dieldrin	ND	ug/Kg	2.00				
Endosulfan I	ND	ug/Kg	2.00				
Endosulfan II	ND	ug/Kg	2.00				
Endosulfan Sulfate	ND	ug/Kg	2.00				
Endrin	ND	ug/Kg	2.00				
Endrin Aldehyde	ND	ug/Kg	2.00				
Endrin Ketone	ND	ug/Kg	2.00				
Heptachlor	ND	ug/Kg	2.00				
Heptachlor Epoxide	ND	ug/Kg	2.00				
Methoxychlor	ND	ug/Kg	2.00				
Toxaphene	ND	ug/Kg	200				

Surrogate Standard	% Recovery	QC Limits
S1 - Decachlorobiphenyl	151	64 154
S2 - Tetrachloro-m-xylene	82	39 130


 LABORATORY MANAGER

ND - Not Detected

000015

ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

ORGANIC ANALYSIS DATA SHEET

Client Name **OHM Remediation Services**
Defense Depot - Memphis, TN
5445 Triangle Parkway
Suite 400
Norcross, GA 30092

Site ID **DDMT**
Memphis, TN

Project # 20560
 FID # DACA45-96-D-0014

Date Arrived 09/08/98
 ETC Order Number 9809235

ETC Lab ID **9809235-01**
Sample ID: RA-TS-005

Matrix :SOIL
 Sample Date :09/08/98

TEST	RESULT	UNITS	DETECTION LIMIT	DATE EXTRACTED	DATE ANALYZED	BY	METHOD
PCBs				09/10/98	09/14/98	RG	8082
QC Batch	P06017	ug/Kg					
PCB-1016	ND	ug/Kg	350				
PCB-1221	ND	ug/Kg	350				
PCB-1232	ND	ug/Kg	350				
PCB-1242	ND	ug/Kg	350				
PCB-1248	ND	ug/Kg	350				
PCB-1254	ND	ug/Kg	350				
PCB-1260	ND	ug/Kg	350				
Surrogate Standard			% Recovery	QC Limits			
S1 - Tetrachloro-m-xylene	69		39	130			
S2 - Decachlorobiphenyl	163 Q		64	154			


 LABORATORY MANAGER

ND - Not Detected

JC00016

379 439

Environmental Testing & Consulting, Inc.

**Quality Control Reports
Inorganics**

000017

ENVIRONMENTAL TESTING AND CONSULTING, INC. 379' 440
MEMPHIS, TN
CASE NARRATIVE
INORGANICS

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235

HOLDING TIMES

Sample Analysis : All samples analyzed within Method Specified
Holding Times.

CALIBRATION

Laboratory Control Sample : All criteria met.

QUALITY CONTROL

Matrix Spike

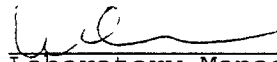
Spike Recovery : All analytes within QC limits

Duplicates

RPD : All analytes within QC limits

Method Blank

No Target Analytes detected above Detection Limit.


Laboratory Manager

000018

379 441

Environmental Testing & Consulting, Inc.
Inorganic QC Data Summary

Client Name OHM Remediation Services
Project DDMT-Memphis, TN

ETC Order Number 9809-235
File Name 9809-235.1

Method Blank

Analyte	Date Analyzed	Blank Concentration mg/Kg	QC Batch
Cyanide	09/10/98	<1.00	CY091098

Calibration Verification (CV)

Analyte	Date Analyzed	CV Conc mg/L	CV Conc Found	% Difference
Cyanide	09/10/98	0.200	0.207	3.5

Laboratory Control Sample (LCS)

Analyte	Date Analyzed	LCS Conc mg/Kg	LCS Conc Found	% Recovery
Cyanide	09/10/98	20.0	19.2	96.0

Matrix Spike/Matrix Spike Duplicate

Sample ID	Analyte	Spike mg/Kg	Sample mg/Kg	MS Conc Found	MS % Recovery	QC Limits	RPD
9809-235-01 MS	Cyanide	18.2	<1.00	18.2	100	70-130	
9809-235-01 MSD	Cyanide	20.0	<1.00	19.4	97	70-130	3

Duplicates

Sample ID	Analyte	Sample %	Duplicate %	RPD
9809-235-01	Fractional Organic Matter	1.45	1.67	14.1

000019

Environmental Testing & Consulting, Inc.

Quality Control Reports

Metals (ICP/GFAA/CV)

379 443

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235

HOLDING TIMES

QC Batch(s) for this order : ICP/GFAA V8-SO-12
Mercury V4-SO-32

Sample Analysis : All samples digested and analyzed within 180 days of collection.
Mercury Analysis : All samples analyzed within 28 days of collection.

CALIBRATION

Initial Calibration : All criteria met.
Continuing Calibration : All criteria met.

SAMPLE ANALYSIS

Instrumentation : Thermo Jarrell Ash Enviro-I ICP
Varian 640Z Zeeman Graphite Furnace
Perkin Elmer 5100ZL Graphite Furnace
Perkin Elmer 6000 Graphite Furnace
Thermo Jarrell Ash AA-Scan 4 Graphite Furnace
CETAC M-6000A Mercury Analyzer

Dilutions Required : No dilutions required.*

*
Dilutions were performed on several samples to bring the Target Analyte(s) within calibration range (C) or to remove spectral interference (I) as indicated.

Sample ID	Dilution	Metal	Factor	Sample ID	Dilution	Metal	Factor
9809-235-01	Aluminum	1:5 (C)		9809-235-01	Lead	1:3 (C)	
9809-235-01	Iron	1:5 (C)					

Due to low recoveries and failing Post Digestion Spike, all Selenium data was reported based on the Method of Standard Additions.

QUALITY CONTROL**9809-235.MQCBLANK**Method Blank

V8-SO-12BLK - ICP/GFAA Metals
V4-SO-32BLK - Mercury

Calcium identified in V8-SO-12BLK at 1.70 mg/Kg.
Iron identified in V8-SO-12BLK at 3.20 mg/Kg.

9809-235.MQCLCSLaboratory Control Sample(s)

V8-SO-12LCS - ICP/GFAA Metals
V4-SO-32LCS - Mercury

All criteria met.

000021

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

379 444

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235

QUALITY CONTROL

9809-235.MQCMSMSD

Matrix Spike / Matrix Spike Dup - ICP Metals

9809-235-01

RPD : All analytes within QC limits.

RA-TS-005

Spike Recovery : All analytes within QC limits.*

* Recoveries for Antimony were flagged as outside QC Limits in the Matrix Spike and Matrix Spike Duplicate. A Post Digestion Spike was performed for verification :

	mg/L	mg/L	%	QA
<u>Analyte</u>	<u>Expected</u>	<u>Found</u>	<u>Recovery</u>	<u>Evaluation</u>
Antimony	0.500	0.479	96	Pass

Recoveries for multiple analytes were flagged as outside QC Limits due to the level of these analytes present in the sample relative to the spike amounts. In addition, concentrations of other analytes were high relative to the spike amounts. RPD for Manganese was flagged as outside QC Limits. Dilution Tests were performed for verification :

<u>Analyte</u>	No <u>Dilution</u>	1:5 <u>Dilution</u>	1:25 <u>Dilution</u>	% <u>Difference</u>	QA <u>Evaluation</u>
Aluminum	-----	12700 mg/Kg	12700 mg/Kg	0	Pass
Calcium	1090	1080	-----	1	Pass
Iron	-----	21900	22200	1	Pass
Manganese	570	560	-----	2	Pass
Potassium	916	928	-----	1	Pass
Magnesium	2690	2620	-----	3	Pass

Refer to Laboratory Control Sample(s) for system verification.

Matrix Spike / Matrix Spike Dup - Graphite Metals

9809-235-01

RPD : All analytes within QC limits.

RA-TS-005

Spike Recovery : All analytes within QC limits.*

* Recovery for Lead was flagged as outside QC Limits due to the level of this analyte present relative to the spike amount, a Dilution Test was performed for both analytes for verification :

<u>Analyte</u>	1:3 <u>Dilution</u>	1:15 <u>Dilution</u>	% <u>Difference</u>	QA <u>Evaluation</u>
Lead	11.0 mg/Kg	10.2 mg/Kg	7	Pass

Recoveries for Selenium were flagged as outside QC Limits in the Matrix Spike and Matrix Spike Duplicate. The Post Digestion Spike failed evaluation criteria. All data was reported based on MSA.

Refer to Laboratory Control Sample(s) for system verification.

000022

379 445

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
METALS - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235

QUALITY CONTROL

Matrix Spike / Matrix Spike Dup - Hg
9809-235-01 RPD : All analytes within QC limits.
RA-TS-005 Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Dilution Test - Dilution result must agree within 10% of original
result when sample is diluted by a factor of 5.

Post Digestion Spike - Recovery must be +/-15% of expected value.


Laboratory Manager

JL0023

379 446

SOLID METHOD BLANK
METALS

Lab Name

Environmental Testing and Consulting, Inc

Laboratory ID ICP/GFAA Metals

V8-SO-12 BLK

QC Batch

V8-SO-12

Laboratory ID Mercury

V4-SO-32 BLK

V4-SO-32

Date Sample Prepared

09/09/98

ICP/GFAA Metals

09/11/98

Mercury

Metals	Concentration mg/Kg	Detection Limit mg/Kg	Date Analyzed	Method
Silver	<0.700	0.700	09/10/98	6010B
Aluminum	<4.00	4.00	09/10/98	6010B
Arsenic	<0.200	0.200	09/10/98	7060A
Barium	<0.200	0.200	09/10/98	6010B
Beryllium	<0.100	0.100	09/10/98	6010B
Calcium	1.70	1.00	09/10/98	6010B
Cadmium	<0.400	0.400	09/10/98	6010B
Cobalt	<0.700	0.700	09/10/98	6010B
Chromium	<0.700	0.700	09/10/98	6010B
Copper	<0.600	0.600	09/10/98	6010B
Iron	3.20	0.700	09/10/98	6010B
Potassium	<20.0	20.0	09/10/98	6010B
Magnesium	<3.00	3.00	09/10/98	6010B
Manganese	<0.200	0.200	09/10/98	6010B
Sodium	<20.0	20.0	09/10/98	6010B
Nickel	<1.50	1.50	09/10/98	6010B
Lead	<0.100	0.100	09/10/98	7421
Antimony	<3.20	3.20	09/10/98	6010B
Selenium	<0.200	0.200	09/10/98	7740
Thallium	<0.100	0.100	09/11/98	7841
Vanadium	<0.800	0.800	09/10/98	6010B
Zinc	<1.00	1.00	09/10/98	6010B
Mercury	<0.020	0.020	09/11/98	7471A

Metals Blank

9809-235.MQCBLANK

J00024

379 447

SOLID LABORATORY CONTROL SAMPLE
METALS

Lab Name

Environmental Testing and Consulting, Inc

Laboratory Control ID

ICP/GFAA Metals V8-SO-12 LCS
Mercury V4-SO-32 LCS

QC Batch

V8-SO-12V4-SO-32

Date Prepared

ICP/GFAA Metals 09/09/98
Mercury 09/11/98

Metals	Spike Added mg/Kg	Found mg/Kg	% R	#	QC Limits	
Silver	20.0	20.5	103		80	120
Aluminum	200	205	103		80	120
Arsenic	5.00	5.13	103		85	115
Barium	200	201	101		80	120
Beryllium	20.0	19.9	100		80	120
Calcium	400	414	104		80	120
Cadmium	20.0	21.0	105		80	120
Cobalt	100	101	101		80	120
Chromium	40.0	41.1	103		80	120
Copper	40.0	41.8	105		80	120
Iron	200	208	104		80	120
Potassium	400	409	102		80	120
Magnesium	400	407	102		80	120
Manganese	20.0	20.6	103		80	120
Sodium	400	412	103		80	120
Nickel	100	102	102		80	120
Lead	2.00	1.85	93		85	115
Antimony	200	199	100		80	120
Selenium	5.00	4.98	100		85	115
Thallium	2.00	1.95	98		85	115
Vanadium	100	103	103		80	120
Zinc	20.0	20.5	103		80	120
Mercury	0.167	0.158	95		80	120

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

Metals Laboratory Control Sample

9809-235.MQCLCS

000025

SOLID MATRIX SPIKE
METALS

Lab Name

Environmental Testing and Consulting, Inc

QC Batch

Laboratory ID MS ICP/GFAA Metals

9809-235-01

V8-SO-12

Laboratory ID MS Mercury

9809-235-01

V4-SO-32

Date Sample Prepared

09/09/98

ICP/GFAA Metals

09/11/98

Mercury

Metals	SPIKE Added mg/Kg	SAMPLE Conc mg/Kg	MS Conc mg/Kg	RPD < 20% #	MS % Rec #	QC Limits	
Silver	23.0	ND	23.0	7	100	75	125
Aluminum	230	12700	12900	5	87	75	125
Arsenic	5.63	10.4	15.1	5	84	70	130
Barium	230	107	352	6	107	75	125
Beryllium	23.0	0.502	24.2	6	103	75	125
Calcium	460	1090	1620	8	115	75	125
Cadmium	23.0	ND	23.6	5	103	75	125
Cobalt	115	7.10	123	5	101	75	125
Chromium	46.0	15.9	63.6	4	104	75	125
Copper	46.0	17.3	66.6	6	107	75	125
Iron	230	21900	20500	13	-609 *	75	125
Potassium	460	916	1440	1	114	75	125
Magnesium	460	2690	3190	0	109	75	125
Manganese	23.0	570	511	31 *	-257 *	75	125
Sodium	460	227	737	6	111	75	125
Nickel	115	16.7	133	5	101	75	125
Lead	2.25	11.0	11.7	8	31 *	70	130
Antimony	230	ND	ND	0	*	75	125
Selenium	5.63	ND	3.67	6	65 *	70	130
Thallium	2.25	0.222	2.06	3	82	70	130
Vanadium	115	24.3	135	4	96	75	125
Zinc	23.0	57.3	80.3	4	100	75	125
Mercury	0.176	0.026	0.192	1	94	75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

ND - Not Detected

Metals Matrix Spike

9809-235.MQCMSMSD

000026

379 440

SOLID MATRIX SPIKE DUPLICATE
METALS

Lab Name

Environmental Testing and Consulting, Inc

Laboratory ID MS ICP/GFAA Metals
Laboratory ID MS Mercury9809-235-01
9809-235-01QC Batch
V8-SO-12
V4-SO-32

Date Sample Prepared

09/09/98
09/11/98ICP/GFAA Metals
Mercury

Metals	SPIKE Added mg/Kg	SAMPLE Conc mg/Kg	MSD Conc mg/Kg		MSD % Rec	#	QC Limits	
Silver	21.7	ND	21.4		99		75	125
Aluminum	217	12700	13600		415	*	75	125
Arsenic	5.32	10.4	15.9		103		70	130
Barium	217	107	330		103		75	125
Beryllium	21.7	0.502	22.9		103		75	125
Calcium	434	1090	1500		95		75	125
Cadmium	21.7	ND	22.4		103		75	125
Cobalt	108	7.10	117		102		75	125
Chromium	43.4	15.9	61.4		105		75	125
Copper	43.4	17.3	62.9		105		75	125
Iron	217	21900	23300		645	*	75	125
Potassium	434	916	1420		116		75	125
Magnesium	434	2690	3190		115		75	125
Manganese	21.7	570	699		595	*	75	125
Sodium	434	227	691		107		75	125
Nickel	108	16.7	126		101		75	125
Lead	2.13	11.0	12.7		80		70	130
Antimony	217	ND	ND			*	75	125
Selenium	5.32	ND	3.44		65	*	70	130
Thallium	2.13	0.222	2.00		84		70	130
Vanadium	108	24.3	130		98		75	125
Zinc	21.7	57.3	83.7		122		75	125
Mercury	0.182	0.026	0.194		92		75	125

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

ND - Not Detected

Metals Matrix Spike Duplicate

9809-235.MQCMSMSD

J000027

379 450

Environmental Testing & Consulting, Inc.

Quality Control Reports
GC/MS Volatiles

JC0028

379 451

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS VOLATILE COMPOUNDS - SOIL

Client Name : OHM Remediation Services Corp.
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235
Method (SW-846) : 8260B/5030B

HOLDING TIMES

Sample Analysis : All samples analyzed within 14 days of collection.

QUALITY CONTROL

QC Batch Form 4 Summary
V1090901 V109091LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
V109091BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9809-235-01 RPD : All analytes within QC limits.
RA-TS-005 Spike Recovery : All analytes within QC limits.*
*

Recoveries for Toluene and Chlorobenzene were flagged outside QC Limits in the Matrix Spike and Matrix Spike Duplicate.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
V109091LB

No Target Analytes detected above the reporting limit.

CALIBRATION

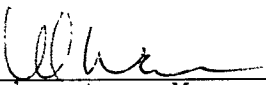
BFB Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7*
*

Pentachloroethane was flagged with a percent difference >30.0%.
This analyte was not a Target Analyte associated with this project. The data was not affected.

Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.


Laboratory Manager

JC0029

FORM 2
SOIL VOA-GCMS SYSTEM MONITORING COMPOUND RECOVERY

379 452

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-235

Level: (low/med) LOW

	CLIENT SAMPLE NO.	SMC1 (DBF) #	SMC2 (TOL) #	SMC3 (BFB) #	OTHER	TOT OUT
01	V109091BS	102	96	100		0
02	V109091LB	103	96	105		0
03	9809-235-1	102	98	108		0
04	9809-235-1M	100	100	102		0
05	9809-235-1S	105	96	105		0
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QC LIMITS

SMC1 (DBF) = Dibromofluoromethane (85-119)
 SMC2 (TOL) = Toluene-d8 (87-114)
 SMC3 (BFB) = Bromofluorobenzene (75-111)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

379 453

FORM 4
VOA-GCMS METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

V109091LB

Lab Name: ETC, INC.

Lab Prep Batch: V1090901

SDG No.: 9809-235

Lab File ID: 0302003

Lab Prep Batch: V1090901

Date Analyzed: 09/09/98

Time Analyzed: 1647

GC Column: ID: 2 (mm)

Heated Purge: (Y/N) Y

Instrument ID: VOC1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	V109091BS		0201002LCS	1503
02	9809-235-1		1001010	2144
03	9809-235-1M		1301013	2351
04	9809-235-1S		1401014	0034
05				
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COMMENTS:

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

V109091LB

Lab Name: ETC, INC.

SDG No.: 9809-235

Matrix: (soil/water) SOIL

Lab Prep Batch: V1090901

Sample wt/vol: 10.0 (g/mL) G

Lab File ID: 0302003

Level: (low/med) LOW

Date Analyzed: 09/09/98

Dilution Factor: 1.0

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	2.00	U
75-01-4-----	Vinyl Chloride	2.00	U
74-83-9-----	Bromomethane	2.00	U
75-00-3-----	Chloroethane	2.00	U
67-64-1-----	Acetone	50.0	U
75-35-4-----	1,1-Dichloroethene	2.00	U
75-15-0-----	Carbon Disulfide	25.0	U
75-09-2-----	Methylene Chloride	50.0	U
156-60-5-----	trans-1,2-Dichloroethene	2.00	U
108-05-4-----	Vinyl Acetate	25.0	U
75-34-3-----	1,1-Dichloroethane	2.00	U
78-93-3-----	Methyl-Ethyl Ketone	50.0	U
156-59-4-----	cis-1,2-Dichloroethene	2.00	U
67-66-3-----	Chloroform	2.00	U
71-55-6-----	1,1,1-Trichloroethane	2.00	U
56-23-5-----	Carbon Tetrachloride	2.00	U
71-43-2-----	Benzene	2.00	U
107-06-2-----	1,2-Dichloroethane	2.00	U
79-01-6-----	Trichloroethene	2.00	U
78-87-5-----	1,2-Dichloropropane	2.00	U
75-27-4-----	Bromodichloromethane	2.00	U
108-10-1-----	4-Methyl-2-Pentanone	50.0	U
10061-01-5-----	cis-1,3-Dichloropropene	2.00	U
108-88-3-----	Toluene	2.00	U
10061-02-6-----	trans-1,3-Dichloropropene	2.00	U
79-00-5-----	1,1,2-Trichloroethane	2.00	U
591-78-6-----	2-Hexanone	50.0	U
127-18-4-----	Tetrachloroethene	2.00	U
124-48-1-----	Chlorodibromomethane	2.00	U
108-90-7-----	Chlorobenzene	2.00	U
1330-20-7-----	Xylene-mp	2.00	U
100-41-4-----	Ethylbenzene	2.00	U
95-47-6-----	Xylene-o	2.00	U

FORM I VOA-GCMS

000032

379 455

FORM 1
VOA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

Lab Name: ETC, INC.

V109091LB

SDG No.: 9809-235

Matrix: (soil/water) SOIL

Lab Prep Batch: V1090901

Sample wt/vol: 10.0 (g/mL) G

Lab File ID: 0302003

Level: (low/med) LOW

Date Analyzed: 09/09/98

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
100-42-5-----	Styrene	2.00	U	
75-25-2-----	Bromoform	2.00	U	
79-34-5-----	1,1,2,2-Tetrachloroethane	2.00	U	

FORM I VOA-GCMS

000033

FORM 3
SOIL VOA-GCMS LABORATORY CONTROL SAMPLE

379 456

Lab Name:

Lab Prep Batch: V1090901

SDG No.: 9809-235

Matrix Spike - Sample No.: V109091BS

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acetone	100		104	104	59-151
Acetonitrile	1000		1080	108	57-143
Benzene	100		95.2	95	72-124
Bromobenzene	100		100	100	77-120
Bromochloromethane	100		112	112	74-120
Bromodichloromethane	100		102	102	68-119
Bromoform	100		115	115	66-136
Bromomethane	100		100	100	40-134
Methyl-Ethyl Ketone	100		105	105	55-151
n-Butylbenzene	100		123	123	69-129
sec-Butylbenzene	100		117	117	72-127
tert-Butylbenzene	100		124	124	73-126
Carbon Disulfide	100		111	111	60-133
Carbon Tetrachloride	100		105	105	64-123
Chlorobenzene	100		95.1	95	77-112
Chlorodibromomethane	100		102	102	72-118
Chloroethane	100		87.7	88	64-142
2-Chloroethyl vinyl Eth	100		100	100	22-165
Chloroform	100		105	105	70-115
Chloromethane	100		98.6	99	58-139
2-Chlorotoluene	100		106	106	65-132
4-Chlorotoluene	100		109	109	67-127
1,2-Dibromo-3-chloropro	100		105	105	56-134
1,2-Dibromoethane	100		105	105	74-118
Dibromomethane	100		101	101	75-114
1,2-Dichlorobenzene	100		107	107	80-113
1,3-Dichlorobenzene	100		104	104	77-119
1,4-Dichlorobenzene	100		101	101	78-116

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS:

379 457

FORM 3
SOIL VOA-GCMS LABORATORY CONTROL SAMPLE

Lab Name:

Lab Prep Batch: V1090901

SDG No.: 9809-235

Matrix Spike - Sample No.: V109091BS

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Dichlorodifluoromethane	100		89.6	90	48-145
1,1-Dichloroethane	100		97.3	97	76-118
1,2-Dichloroethane	100		95.2	95	62-124
1,1-Dichloroethene	100		106	106	69-121
cis-1,2-Dichloroethene	100		98.7	99	76-114
trans-1,2-Dichloroethen	100		106	106	72-121
1,2-Dichloropropane	100		100	100	64-133
1,3-Dichloropropane	100		98.6	99	68-128
2,2-Dichloropropane	100		110	110	67-132
1,1-Dichloropropene	100		101	101	76-117
cis-1,3-Dichloropropene	100		105	105	77-120
trans-1,3-Dichloroprope	100		105	105	73-124
Ethylbenzene	100		98.0	98	77-111
Hexachlorobutadiene	100		124	124	69-137
2-Hexanone	100		110	110	53-144
Isopropylbenzene	100		106	106	74-125
4-Isopropyltoluene	100		124	124	72-127
Methylene Chloride	100		109	109	67-115
4-Methyl-2-Pentanone	100		107	107	42-144
Naphthalene	100		108	108	53-124
n-Propylbenzene	100		112	112	75-125
Styrene	100		111	111	77-117
1,1,1,2-Tetrachloroetha	100		102	102	79-113
1,1,2,2-Tetrachloroetha	100		98.2	98	67-126
Tetrachloroethene	100		82.4	82	77-115
Toluene	100		95.0	95	77-115
1,2,3-Trichlorobenzene	100		119	119	62-132
1,2,4-Trichlorobenzene	100		120	120	68-132

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS:

FORM 3
SOIL VOA-GCMS LABORATORY CONTROL SAMPLE

379 458

Lab Name:

Lab Prep Batch: V1090901

SDG No.: 9809-235

Matrix Spike - Sample No.: V109091BS

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
1,1,1-Trichloroethane	100		101	101	63-122
1,1,2-Trichloroethane	100		99.7	100	69-117
Trichloroethene	100		104	104	75-113
Trichlorofluoromethane	100		101	101	55-130
1,2,3-Trichloropropane	100		110	110	62-130
1,2,4-Trimethylbenzene	100		121	121	69-126
1,3,5-Trimethylbenzene	100		120	120	69-128
Vinyl Acetate	100		98.1	98	28-146
Vinyl Chloride	100		98.6	99	65-134
Xylene-mp	200		206	103	77-115
Xylene-o	100		102	102	77-115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 67 outside limits

COMMENTS:

379 459

FORM 3
SOIL VOA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: V1090901

SDG No.: 9809-235

Matrix Spike - Sample No.: 9809-235-1

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	217	0.000	168	77	69-121
Benzene	217	0.000	157	72	72-124
Trichloroethene	217	0.000	175	81	75-113
Toluene	217	0.000	164	76*	77-115
Chlorobenzene	217	0.000	160	74*	77-112

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene	200	173	86	11	20	69-121
Benzene	200	155	78	8	20	72-124
Trichloroethene	200	162	81	0	20	75-113
Toluene	200	153	76*	0	20	77-115
Chlorobenzene	200	148	74*	0	20	77-112

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 4 out of 10 outside limits

COMMENTS:

FORM III VOA-GCMS

000037

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC/MS Semi-Volatiles

379 461

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235
Method (SW-846) : 8270C/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P04032 P04032LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recoveries for multiple analytes were flagged for high recovery in P04032LB, P04032BS, and samples 9809-235-01MS/MSD (RA-TS-005). Review of the raw data showed no obvious matrix interference. P04032LB and P04032BS were re-analyzed for verification with similar recoveries.

Laboratory Control Sample FORM 3
P04032BS

All criteria met.*
*

Recovery for Bis(2-Chloroisopropyl) ether was flagged for high recovery in P04032BS. High recovery indicates the detection limits were not affected. This analyte was not detected in sample associated with this project. The data was not affected.

Matrix Spike / Matrix Spike Dup FORM 3
9809-235-01 RPD : All analytes within QC limits.
RA-TS-005 Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P04032LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

DFTPP Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7

Semi-Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

00039

ENVIRONMENTAL TESTING AND CONSULTING, INC.

MEMPHIS, TN

CASE NARRATIVE

GC/MS SEMI-VOLATILE COMPOUNDS - SOIL

379 462

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235
Method (SW-846) : 8270C/3550B

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.



Laboratory Manager

000040

379 463

FORM 2
SOIL BNA-GCMS SURROGATE RECOVERY

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-235

Level: (low/med) LOW

	CLIENT SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (NBZ) #	S4 (FBP) #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	P04032IB	66	73	92*	94*	83	91			2
02	P04032BS	83	90	94*	100*	92*	101			3
03	9809-235-1	60	64	67	74	65	82			0
04	9809-235-1M	75	84	94*	96*	94*	98			3
05	9809-235-1S	82	90	95*	97*	97*	97			3
06	P04032LB	67	76	86*	94*	74	75			2
07	P04032BS	81	91	97*	99*	90	80			2
08										
09										
10										
11										
12										
13										
14										
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28										
29										
30										

QC LIMITS

S1 (2FP) = 2-Fluorophenol (23- 89)
 S2 (PHL) = Phenol-d6 (31- 94)
 S3 (NBZ) = Nitrobenzene-d5 (39- 80)
 S4 (FBP) = 2-Fluorobiphenyl (43- 84)
 S5 (TBP) = 2,4,6-Tribromophenol (17- 91)
 S6 (TPH) = Terphenyl-d14 (40-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

000041

FORM 4
BNA-GCMS METHOD BLANK SUMMARY

379 464

CLIENT SAMPLE NO

P04032LB

Lab Name: ETC, INC.

Lab Prep Batch: P04032

Lab File ID: 1301011

Matrix: (soil/water) SOIL

Level:(low/med) LOW

SDG No.: 9809-235

Instrument ID. BNA2

Date Analyzed: 09/10/98

Time Analyzed: 2123

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P04032BS		1401012	09/10/98
02	9809-235-1		2001018	09/11/98
03	9809-235-1M		2101019	09/11/98
04	9809-235-1S		2201020	09/11/98
05	P04032BS		3201002	09/11/98
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

P04032LB

Lab Name: ETC, INC.

SDG No.: 9809-235

Matrix: (soil/water) SOIL

Lab Prep Batch: P04032

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 1301011

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1(mL)

Date Analyzed: 09/10/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
83-32-9-----	Acenaphthene	167	U
208-96-8-----	Acenaphthylene	167	U
120-12-7-----	Anthracene	167	U
92-87-5-----	Benizidine	333	U
56-55-3-----	Benzo(a)Anthracene	167	U
205-99-2-----	Benzo(b)fluoranthene	167	U
207-08-9-----	Benzo(k)fluoranthene	167	U
191-24-2-----	Benzo(g,h,i)perylene	167	U
50-32-8-----	Benzo(a)pyrene	167	U
65-85-0-----	Benzoic Acid	1670	U
100-51-6-----	Benzyl Alcohol	167	U
111-44-4-----	bis(2-Chloroethyl)ether	167	U
111-91-1-----	Bis(2-chloroethoxy)methane	167	U
39638-32-9-----	bis(2-Chloroisopropyl)ether	167	U
117-81-7-----	bis(2-ethylhexyl)Phthalate	167	U
101-55-3-----	4-Bromophenyl-phenylether	167	U
85-68-7-----	Butylbenzylphthalate	167	U
86-74-8-----	Carbazole	167	U
106-47-8-----	4-Chloroaniline	167	U
59-50-7-----	4-Chloro-3-Methylphenol	167	U
91-58-7-----	2-Chloronaphthalene	167	U
95-57-8-----	2-Chlorophenol	167	U
7005-72-3-----	4-Chlorophenyl-phenylether	167	U
218-01-9-----	Chrysene	167	U
53-70-3-----	Dibenzo(a,h)anthracene	167	U
132-64-9-----	Dibenzofuran	167	U
84-74-2-----	Di-n-Butylphthalate	167	U
95-50-1-----	1,2-Dichlorobenzene	167	U
541-73-1-----	1,3-Dichlorobenzene	167	U
106-46-7-----	1,4-Dichlorobenzene	167	U
91-94-1-----	3,3'-Dichlorobenzidine	167	U
120-83-2-----	2,4-Dichlorophenol	167	U
84-66-2-----	Diethylphthalate	167	U

FORM I BNA-GCMS

000043

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

379 466

P04032LB

Lab Name: ETC, INC.

SDG No.: 9809-235

Matrix: (soil/water) SOIL

Lab Prep Batch: P04032

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 1301011

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1 (mL)

Date Analyzed: 09/10/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

105-67-9	2,4-Dimethyphenol	167	U
131-11-3	Dimethylphthalate	167	U
534-52-1	4,6-Dinitro-2-methylphenol	167	U
51-28-5	2,4-Dinitrophenol	333	U
121-14-2	2,4-Dinitrotoluene	167	U
606-20-2	2,6-Dinitrotoluene	167	U
117-84-0	Di-n-octylphthalate	167	U
86-30-6	Diphenylamine/n-NDPA	167	U
206-44-0	Fluoranthene	167	U
86-73-7	Fluorene	167	U
118-74-1	Hexachlorobenzene	167	U
87-68-3	Hexachlorobutadiene	167	U
77-47-4	Hexachlorocyclopentadiene	167	U
67-72-1	Hexachloroethane	167	U
193-39-5	Indeno(1,2,3-cd)pyrene	167	U
78-59-1	Isophorone	167	U
91-57-6	2-Methylnaphthalene	167	U
95-48-7	2-Methylphenol	167	U
106-44-5	3&4-Methylphenol	167	U
91-20-3	Naphthalene	167	U
88-74-4	2-Nitroaniline	167	U
99-09-2	3-Nitroaniline	167	U
100-01-6	4-Nitroaniline	167	U
98-95-3	Nitrobenzene	167	U
88-75-5	2-Nitrophenol	167	U
100-02-7	4-Nitrophenol	167	U
621-64-7	N-Nitrosodipropylamine	167	U
87-86-5	Pentachlorophenol	167	U
85-01-8	Phenanthrene	167	U
108-95-2	Phenol	167	U
129-00-0	Pyrene	167	U
110-86-1	Pyridine	167	U
120-82-1	1,2,4-Trichlorobenzene	167	U

FORM I BNA-GCMS

000044

379 467

FORM 1
BNA-GCMS ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

Lab Name: ETC, INC.

P04032LB

SDG No.: 9809-235

Matrix: (soil/water) SOIL

Lab Prep Batch: P04032

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 1301011

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 1 (mL)

Date Analyzed: 09/10/98

Injection Volume: 1.0 (uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
95-95-4-----	2,4,5-Trichlorophenol	167	U	
88-06-2-----	2,4,6-Trichlorophenol	167	U	

FORM I BNA-GCMS

000045

FORM 3
SOIL BNA-GCMS LABORATORY CONTROL SAMPLE

379 468

Lab Name: ETC, INC.

Lab Prep Batch: P04032

SDG No.: 9809-235

Matrix Spike - Sample No.: P04032BS

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	1670		1490	89	34-126
Acenaphthylene	1670		1560	93	62-123
Anthracene	1670		1700	102	68-124
Benzidine	3330		1770	53	4-117
Benzo(a)Anthracene	1670		1670	100	60-133
Benzo(b)fluoranthene	1670		1680	100	67-126
Benzo(k)fluoranthene	1670		1720	103	75-131
Benzo(g,h,i)perylene	1670		1450	87	53-137
Benzo(a)pyrene	1670		1730	104	68-129
Benzoic Acid	1670		3880	232	37-251
Benzyl Alcohol	1670		1560	93	20-159
bis(2-Chloroethyl) ether	1670		1640	98	25-147
Bis(2-chloroethoxy)meth	1670		1520	91	37-153
bis(2-Chloroisopropyl)e	1670		2720	163*	35-138
bis(2-ethylhexyl)Phthal	1670		1670	100	60-150
4-Bromophenyl-phenyleth	1670		1620	97	59-130
Butylbenzylphthalate	1670		1760	105	71-137
Carbazole	1670		1570	94	64-149
4-Chloroaniline	1670		526	31	27-106
4-Chloro-3-Methylphenol	3330		3020	91	33-147
2-Chloronaphthalene	1670		1540	92	62-126
2-Chlorophenol	3330		3070	92	34-126
4-Chlorophenyl-phenylet	1670		1570	94	60-128
Chrysene	1670		1690	101	67-131
Dibenzo(a,h)anthracene	1670		1660	99	51-138
Dibenzofuran	1670		1550	93	57-131
Di-n-Butylphthalate	1670		1590	95	39-179
1,2-Dichlorobenzene	1670		1460	87	58-110

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

379 460

FORM 3
SOIL BNA-GCMS LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P04032

SDG No.: 9809-235

Matrix Spike - Sample No.: P04032BS

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
1,3-Dichlorobenzene	1670		1400	84	55-109
1,4-Dichlorobenzene	1670		1420	85	26-121
3,3'-Dichlorobenzidine	3330		4190	126	18-191
2,4-Dichlorophenol	3330		2980	89	68-123
2,6-Dichlorophenol	3330		3250	98	45-157
Diethylphthalate	1670		1620	97	72-133
2,4-Dimethyphenol	3330		2770	83	53-121
Dimethylphthalate	1670		1570	94	64-132
4,6-Dinitro-2-methylphe	3330		3210	96	70-158
2,4-Dinitrophenol	3330		3380	102	31-186
2,4-Dinitrotoluene	1670		1580	95	22-139
2,6-Dinitrotoluene	1670		1570	94	64-142
Di-n-octylphthalate	1670		1750	105	42-172
Diphenylamine/n-NDPA	1670		1620	97	55-140
Fluoranthene	1670		1650	99	71-132
Fluorene	1670		1580	95	65-126
Hexachlorobenzene	1670		1630	98	64-130
Hexachlorobutadiene	1670		1480	89	62-116
Hexachlorocyclopentadie	1670		1330	80	16-160
Hexachloroethane	1670		1440	86	58-110
Indeno(1,2,3-cd)pyrene	1670		1590	95	34-170
Isophorone	1670		1660	99	35-135
2-Methylnaphthalene	1670		1410	84	57-123
2-Methylphenol	3330		3100	93	56-132
3&4-Methylphenol	3330		2700	81	68-111
Naphthalene	1670		1430	86	62-113
2-Nitroaniline	1670		1540	92	63-138
3-Nitroaniline	1670		1310	78	53-128

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

COMMENTS:

000047

FORM 3
SOIL BNA-GCMS LABORATORY CONTROL SAMPLE

379 470

Lab Name: ETC, INC.

Lab Prep Batch: P04032

SDG No.: 9809-235

Matrix Spike - Sample No.: P04032BS

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
4-Nitroaniline	1670		1540	92	60-140
Nitrobenzene	1670		1460	87	59-123
2-Nitrophenol	3330		3050	92	52-145
4-Nitrophenol	3330		1550	46	12-105
N-Nitrosodipropylamine	1670		1510	90	24-141
Pentachlorophenol	3330		3190	96	6-164
Phenanthrene	1670		1640	98	66-128
Phenol	3330		2660	80	22-127
Pyrene	1670		1660	99	33-155
Pyridine	1670		1350	81	41- 94
1,2,4-Trichlorobenzene	1670		1570	94	30-127
2,4,5-Trichlorophenol	3330		3170	95	50-173
2,4,6-Trichlorophenol	3330		3060	92	46-161

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 1 out of 69 outside limits

COMMENTS:

379 471

FORM 3

SOIL BNA-GCMS MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P04032

SDG No.: 9809-235

Matrix Spike - Sample No.: 9809-235-1

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Acenaphthene	3330	0.00	2790	84	34-126
4-Chloro-3-Methylphenol	5330	0.00	4840	91	33-147
2-Chlorophenol	5330	0.00	4780	90	35-138
1,4-Dichlorobenzene	3330	0.00	2650	80	26-121
2,4-Dinitrotoluene	3330	0.00	2920	88	22-139
4-Nitrophenol	1610	0.00	1650	102	12-105
N-Nitrosodinpropylamine	3330	0.00	3030	91	24-141
Pentachlorophenol	5330	0.00	5590	105	6-164
Phenol	5330	0.00	3630	68	22-127
Pyrene	3330	0.00	3160	95	33-155
1,2,4-Trichlorobenzene	3330	0.00	2870	86	30-127

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
Acenaphthene	3290	2880	88	5	20	34-126
4-Chloro-3-Methylphenol	5260	5120	97	6	20	33-147
2-Chlorophenol	5260	5130	98	8	20	35-138
1,4-Dichlorobenzene	3290	2850	87	8	20	26-121
2,4-Dinitrotoluene	3290	2930	89	1	20	22-139
4-Nitrophenol	1580	1510	96	6	20	12-105
N-Nitrosodinpropylamine	3290	3150	96	5	20	24-141
Pentachlorophenol	5260	5480	104	1	20	6-164
Phenol	5260	4080	78	14	20	22-127
Pyrene	3290	3060	93	2	20	33-155
1,2,4-Trichlorobenzene	3290	3090	94	9	20	30-127

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits

COMMENTS:

FORM III BNA-GCMS

000049

379 472

Environmental Testing & Consulting, Inc.

**Quality Control Reports
GC Pesticides**

000050

379 473

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235
Method (SW-846) : 8081A/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P06017 P06017LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
P06017BS

All criteria met.*

*

Several compounds were flagged for high recovery in P06017BS. High recovery indicates that detection levels were not affected. These analytes were not identified in the sample associated with this project. The data was not affected.

Matrix Spike / Matrix Spike Dup FORM 3
9809-235-01 RPD : All analytes within QC limits.*
RA-TS-005 Spike Recovery : All analytes within QC limits.*
*

RPD for Endrin Ketone was flagged as outside QC Limits due to high recovery in the Matrix Spike. MS/MSD recoveries were within QC Limits.

Recoveries for multiple analytes were flagged for high recovery in the Matrix Spike and Matrix Spike Duplicate.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P06017LB

No Target Analytes detected above Practical Quantitation Limit.

CALIBRATION

Initial Calibration : All criteria met. FORM 6*
Calibration Verification : All criteria met. FORM 7**
Endrin/Breakdown : All criteria met. FORM 7A

000051

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - SOIL

379 474

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235
Method (SW-846) : 8081A/3550B

CALIBRATION

Calibration Verification(CV) : P109171A.14R (Primary)

Analyte	%Diff(15% Max)	Response
Endrin aldehyde	22.2	High
Endrin ketone	15.2	High

High responses indicate that reported levels for these analytes may be biased high. These compounds were not identified in samples associated with this project. The data was not affected.

Calibration Verification(CV) : P109171A.15R (Primary)

Analyte	%Diff(15% Max)	Response
Decachlorobiphenyl	17.7	Low

Low response indicates that reported levels for this surrogate may be biased low. Surrogate recoveries for all samples associated with this project were within QC Limits. The data was not affected.

Calibration Verification(CV) : P109171B.02R (Confirmation)

Analyte	%Diff(15% Max)	Response
Endrin	24.4	High
Heptachlor	17.0	High
Methoxychlor	34.2	High

High recoveries indicate that reported levels for these analytes may be biased high. This CV confirmation was required for 4,4-DDT and Endrin Ketone only. Responses for these analytes were within QC Limits in the CV. Results were reported from the primary analysis. The data was not affected.

Calibration Verification(CV) : P109171B.14R (Confirmation)

Analyte	%Diff(15% Max)	Response
alpha-BHC	16.9	Low
delta-BHC	24.7	Low
Endosulfan sulfate	20.6	Low
Endrin	28.1	High
Endrin aldehyde	29.0	Low

High recovery for Endrin indicate that reported levels for this analyte may be biased high. Low responses indicate reported levels for these analytes may be biased low. Results were reported from the primary analysis. The data was not affected.

Calibration Verification(CV) : P109211B.22R (Confirmation)

Analyte	%Diff(15% Max)	Response
Endrin aldehyde	49.5	High

High recovery for Endrin aldehyde indicate that reported level for this analyte may be biased high. Results were reported from the primary analysis. The data was not affected.

000052

379 475

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PESTICIDES - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN

ETC Order # : 9809-235
Method (SW-846) : 8081A/3550B

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.


Laboratory Manager

000053

FORM 2
SOIL PESTICIDE SURROGATE RECOVERY

379 476

Lab Name: ETC, INC.

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-235

Level: (low/med) LOW

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	9809-235-1	82	151							0
02	9809-235-1M	100	123							0
03	9809-235-1S	82	102							0
04	P06017LB	89	102							0
05	P06017BS	115	126							0
06										
07										
08										
09										
10										
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28										
29										
30										

QC LIMITS
S1 (TMX) = Tetrachloro-m-xylene (39-130)
S2 (DBC) = Decachlorobiphenyl (64-154)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

379 477

FORM 4
PESTICIDE METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

P06017LB

Lab Name: ETC, INC.

Lab Prep Batch: P06017

Lab File ID: P109211B-10R

Matrix: (soil/water) SOIL

Level: (low/med) LOW

SDG No.: 9809-235

Instrument ID: PEST1B

Date Analyzed: 09/21/98

Time Analyzed: 2141

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	9809-235-1		P109171A-07R	09/17/98
02	9809-235-1M		P109171A-08R	09/17/98
03	9809-235-1S		P109171A-09R	09/17/98
04	P06017BS		P109211B-16R	09/22/98
05				
06				
07				
08				
09				
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COMMENTS:

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P06017LB

Lab Name: ETC, INC.

SDG No.: 9809-235

Matrix: (soil/water) SOIL

Lab Prep Batch: P06017

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: P109211B-10R

Level: (low/med) LOW

Date Received: _____

Concentrated Extract Volume: 10(mL)

Date Analyzed: 09/21/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
309-00-2-----	Aldrin	1.33	U
319-84-6-----	alpha-BHC	1.33	U
319-85-7-----	beta-BHC	1.33	U
319-86-8-----	delta-BHC	1.33	U
58-89-9-----	gamma-BHC	1.33	U
5103-71-9-----	alpha-chlordane	1.33	U
5103-74-2-----	gamma-chlordane	1.33	U
72-54-8-----	4,4'-DDD	1.33	U
72-55-9-----	4,4'-DDE	1.33	U
50-29-3-----	4,4'-DDT	1.33	U
60-57-1-----	Dieldrin	1.33	U
959-98-8-----	Endosulfan I	1.33	U
33213-65-9-----	Endosulfan II	1.33	U
1031-07-8-----	Endosulfan sulfate	1.33	U
72-20-8-----	Endrin	1.33	U
7421-93-4-----	Endrin aldehyde	1.33	U
53494-70-5-----	Endrin ketone	1.33	U
76-44-8-----	Heptachlor	1.33	U
1024-57-3-----	Heptachlor epoxide	1.33	U
72-43-5-----	Methoxychlor	1.33	U

FORM I PESTICIDE

JC0056

379 479

FORM 3
SOIL PESTICIDE LABORATORY CONTROL SAMPLE

Lab Name: ETC, INC.

Lab Prep Batch: P06017

SDG No.: 9809-235

Matrix Spike - Sample No.: P06017BS

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
Aldrin	33.33		30.74	92	31-111
alpha-BHC	33.33		28.98	87	22-112
beta-BHC	33.33		36.22	109	54-120
delta-BHC	33.33		27.12	81	10- 96
gamma-BHC	33.33		30.73	92	26-113
alpha-chlordane	33.33		35.05	105*	49-103
gamma-chlordane	33.33		35.69	107*	50-106
4,4'-DDD	33.33		40.84	122*	47-112
4,4'-DDE	33.33		39.74	119*	36-117
4,4'-DDT	33.33		41.91	126*	49-124
Dieldrin	33.33		36.91	111*	44-108
Endosulfan I	33.33		39.04	117*	49-103
Endosulfan II	33.33		41.09	123*	53-115
Endosulfan sulfate	33.33		39.89	120*	51-110
Endrin	33.33		40.01	120*	44-118
Endrin aldehyde	33.33		48.94	147*	48-128
Endrin ketone	33.33		41.03	123	38-130
Heptachlor	33.33		37.25	112	47-113
Heptachlor epoxide	33.33		34.40	103	47-112
Methoxychlor	33.33		52.27	157*	39-147

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 12 out of 20 outside limits

COMMENTS:

FORM 3

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P06017

SDG No.: 9809-235

Matrix Spike - Sample No.: 9809-235-1

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	M CONCENTRATION (ug/Kg)	M % REC #	QC. LIMITS REC.
Aldrin	32.89473	0.00000	38.69193	118*	31-111
alpha-BHC	32.89473	0.00000	35.24369	107	22-112
beta-BHC	32.89473	0.00000	38.68179	118	54-120
delta-BHC	32.89473	0.00000	29.25848	89	10- 96
gamma-BHC (Lindane)	32.89473	0.00000	38.18732	116*	26-113
alpha-chlordane	32.89473	0.00000	38.77300	118*	49-103
gamma-chlordane	32.89473	0.00000	39.29390	119*	50-106
4,4'-DDD	32.89473	0.00000	39.45908	120*	47-112
4,4'-DDE	32.89473	0.00000	38.49110	117	36-117
4,4'-DDT	32.89473	18.60254	50.31390	96	49-124
Dieldrin	32.89473	0.00000	39.28831	119*	44-108
Endosulfan I	32.89473	0.00000	39.73993	121*	49-103
Endosulfan II	32.89473	0.00000	41.97469	128*	53-115
Endosulfan sulfate	32.89473	0.00000	39.18045	119*	51-110
Endrin	32.89473	0.00000	39.91786	121*	44-118
Endrin aldehyde	32.89473	0.00000	43.20491	131*	48-128
Endrin Ketone	32.89473	9.16009	43.00170	103	38-130
Heptachlor	32.89473	0.00000	39.18962	119*	47-113
Heptachlor epoxide	32.89473	0.00000	38.39512	117*	47-112
Methoxychlor	32.89473	0.00000	43.29785	132	39-147

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

COMMENTS:

379 481

FORM 3

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ETC, INC.

Lab Prep Batch: P06017

SDG No.: 9809-235

Matrix Spike - Sample No.: 9809-235-1

Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	S CONCENTRATION (ug/Kg)	S % REC #	% RPD #	QC LIMITS	
					RPD	REC.
Aldrin	33.11258	32.51533	98	18	20	31-111
alpha-BHC	33.11258	30.47654	92	15	20	22-112
beta-BHC	33.11258	36.28272	110	7	20	54-120
delta-BHC	33.11258	27.12536	82	8	20	10- 96
gamma-BHC (Lindane)	33.11258	32.17841	97	18	20	26-113
alpha-chlordane	33.11258	36.42203	110*	7	20	49-103
gamma-chlordane	33.11258	36.81434	111*	7	20	50-106
4,4'-DDD	33.11258	39.11516	118*	2	20	47-112
4,4'-DDE	33.11258	35.92079	108	8	20	36-117
4,4'-DDT	33.11258	51.62273	100	4	20	49-124
Dieldrin	33.11258	34.87580	105	12	20	44-108
Endosulfan I	33.11258	35.98871	109*	10	20	49-103
Endosulfan II	33.11258	37.60448	114	12	20	53-115
Endosulfan sulfate	33.11258	38.58301	116*	2	20	51-110
Endrin	33.11258	35.70096	108	11	20	44-118
Endrin aldehyde	33.11258	39.07491	118	10	20	48-128
Endrin Ketone	33.11258	36.00412	81	24*	20	38-130
Heptachlor	33.11258	35.22571	106	12	20	47-113
Heptachlor epoxide	33.11258	34.66362	105	11	20	47-112
Methoxychlor	33.11258	38.53526	116	13	20	39-147

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

RPD: 1 out of 20 outside limits
 Spike Recovery: 18 out of 40 outside limits

COMMENTS:

379 482

Environmental Testing & Consulting, Inc.

Quality Control Reports

GC PCBs

000060

379 483

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
GC PCBs - SOIL

Client Name : OHM Remediation Services
Project Name : Defense Depot Memphis TN
ETC Order # : 9809-235
Method (SW-846) : 8082/3550B

HOLDING TIMES

Sample Extraction : All soil samples extracted within 14 days.
Sample Analysis : All samples analyzed within 40 days of
extraction.

QUALITY CONTROL

QC Batch Form 4 Summary
P06017 P06017LB

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.*
*

Surrogate recoveries for Decachlorobiphenyl were flagged as outside QC Limits in samples 9809-235-01(RA-TS-005) and MS/MSD associated with this project due to required dilutions. Review of the raw data showed interference from Non-Target Analytes present in the sample.

Laboratory Control Sample FORM 3
P06017BS

All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9809-235-01 RPD : All analytes within QC limits.
RA-TS-005 Spike Recovery : All analytes within QC limits.

Refer to Laboratory Control Sample(s) for system verification.

Method Blank FORM 4
P06017LB

No Target Analytes detected above Practical Quantitation Limit.

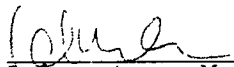
CALIBRATION

Initial Calibration : All criteria met. FORM 6
Calibration Verification : All criteria met. FORM 7

SAMPLE ANALYSIS

Instrumentation : HP 5890 Series II GC
Dilutions Required : No dilutions required.*
*

Due to interference from Non-Target Analytes, sample 9809-235-01 was diluted 1:10 to bring the analysis within calibration range.


Laboratory Manager

000061

FORM 2
SOIL PCB SURROGATE RECOVERY

379 484

Lab Name:

Contract:

Lab Code:

Case No.:

SAS No.:

SDG No.: 9809-235

Level: (low/med) LOW

	EPA GC SAMPLE NO.	S1 (TMX) #	S2 (DBC) #	S3 #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	P06017LB	88	113							0
02	P06017BD	79	117							0
03	9809-235-1	69	163D							1
04	9809-235-1M	77	170D							1
05	9809-235-1S	83	164D							1
06										
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28										
29										
30										

QC LIMITS
S1 (TMX) = Tetrachloro-m-xylene (39-130)
S2 (DBC) = Decachlorobiphenyl (64-154)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

379 485

FORM 4
PCB METHOD BLANK SUMMARY

EPA GC SAMPLE NO.

Lab Name:

P06017LB

Lab Prep Batch: P06017

SDG No.: 9809-235

Lab File ID: C209141A-08R

Instrument ID: PEST2A

Matrix: (soil/water) SOIL

Date Analyzed: 09/14/98

Level:(low/med) LOW

Time Analyzed: 2227

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA GC SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	P06017BD		C209141A-09R	09/14/98
02	9809-235-1		C209141A-10R	09/14/98
03	9809-235-1M		C209141A-11R	09/15/98
04	9809-235-1S		C209141A-12R	09/15/98
05				
06				
07				
08				
09				
10				
11				
12				
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28				
29				
30				

COMMENTS:

000063

379 486

FORM 1
PCB ORGANICS ANALYSIS DATA SHEET

EPA GC SAMPLE NO.

P06017LB

Lab Name:

SDG No.: 9809-235

Matrix: (soil/water) SOIL

Sample wt/vol: 30.0 (g/mL) G

Level: (low/med) LOW

Concentrated Extract Volume: 10 (mL)

Injection Volume: 1.0 (uL)

Lab Prep Batch: P06017

Lab File ID: C209141A-08R

Date Received: _____

Date Analyzed: 09/14/98

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
12674-11-2-----	Aroclor 1016	16.67	U	
11104-28-2-----	Aroclor 1221	16.67	U	
11141-16-5-----	Aroclor 1232	16.67	U	
53469-21-9-----	Aroclor 1242	16.67	U	
11097-69-1-----	Aroclor 1254	16.67	U	
11096-82-5-----	Aroclor 1260	16.67	U	
12672-29-6-----	Aroclor 1248	16.67	U	

FORM I PCB

000064

379 487

FORM 3
SOIL PCB LABORATORY CONTROL SAMPLE

Lab Name:

Lab Prep Batch: P06017

SDG No.: 9809-235

Matrix Spike - Sample No.: P06017BS Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
Aroclor 1242	333.3		287.9	86	25-125
Aroclor 1260	333.3		330.1	99	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

FORM III PCB

J00065

FORM 3
SOIL PCB MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

379 488

Lab Name:

Lab Prep Batch: P06017

SDG No.: 9809-235

Matrix Spike - Sample No.: 9809-235-1

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	M CONCENTRATION (ug/Kg)	M % REC #	QC. LIMITS REC.
Aroclor 1242	332.2	0.000	290.5	87	25-125
Aroclor 1260	332.2	0.000	339.5	102	25-125

COMPOUND	SPIKE ADDED (ug/Kg)	S CONCENTRATION (ug/Kg)	S % REC #	% RPD #	QC LIMITS RPD	REC.
Aroclor 1242	331.1	298.0	90	3	20	25-125
Aroclor 1260	331.1	324.3	98	4	20	25-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 2 outside limits

Spike Recovery: 0 out of 4 outside limits

COMMENTS:

FORM III PCB

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ADMINISTRATIVE RECORD

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