~~R-001-206.25~~
6-000-206.25

1028

MANHOLE 180/KNOLLMAN FIELD - LAB DATA

06-27-90

DOE-1288-90
DOE-FMPC/USEPA
~~2~~ 168
LETTER

[redacted] 1022

Department of Energy
FMPC Site Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6319

Peterman
Is this in Admin. Record?
Pat

June 27, 1990
DOE-1288-90

Catherine A. McCord, Remedial Project Manager
U. S. Environmental Protection Agency
Waste Management Division
Region V-5HR-12
230 South Dearborn Street
Chicago, IL 60604

MANHOLE 180/KNOLLMAN FIELD-LAB DATA

As you requested at the April 24, 1990 meeting, enclosed are summary data for the verification sampling of the Manhole 180 area. The complete CLP package is available in the RI/FS project file.

If you have any questions, please contact Andy Avel of my staff, at (513) 738-6161.

Sincerely,

Gerald W. Westerbeck
FMPC Site Manager

DP-84:Avel

cc w/encl.:

P. Q. Andrews, USEPA-5
D. A. Kee, USEPA-5
E. Schussler, PRC

bcc w/encl.:

John Wood, ASI

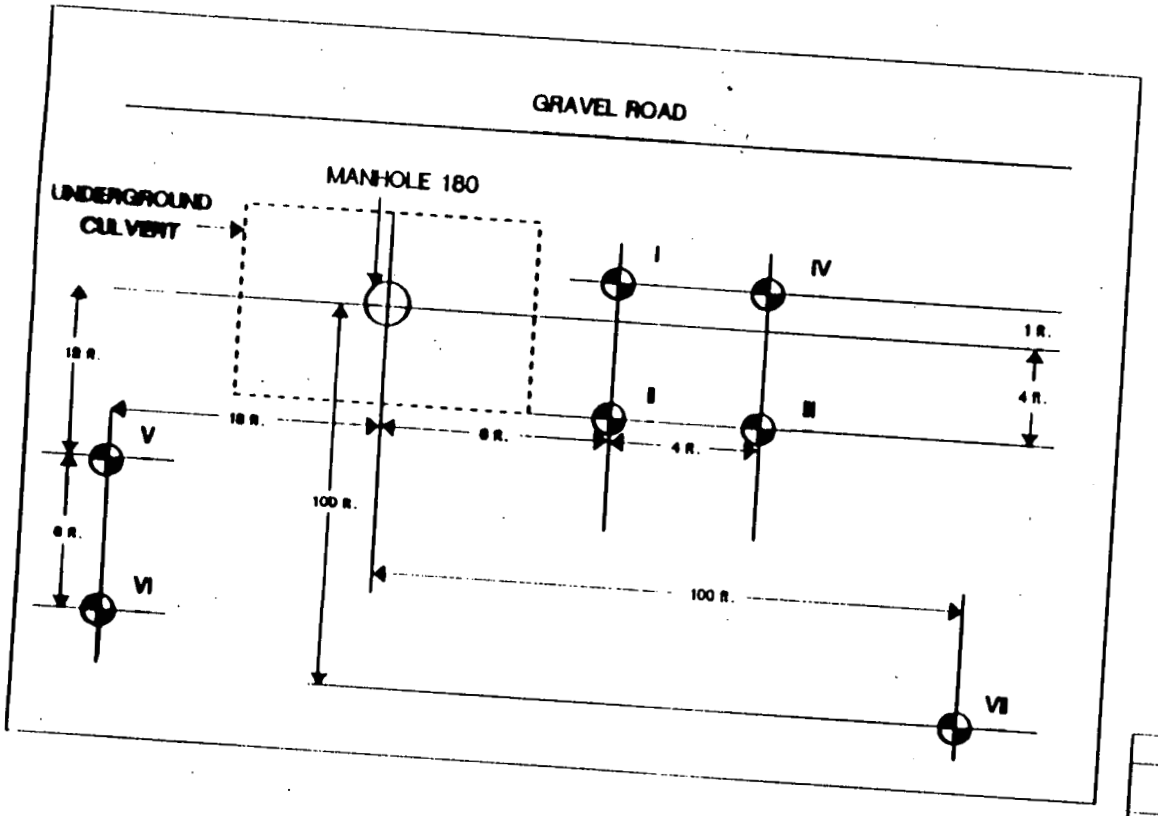
bcc w/o encl.:

J. P. Hopper, WMCO

E ure

Manhole 180/Knollman Field
Lab Data
Sample Locations Map

HSL SAMPLE LOCATIONS MAP



LOCATION	DEPTH FROM SURFACE RANGE IN INCHES	SAMPLE #	TOTAL U PPM
I	24 TO 30	00810	18.6
II	24 TO 30	00811	7.2
III	24 TO 30	00812	9.5
IV	24 TO 30	00813	8.4
V	0 TO 6	00814	9.3
VI	0 TO 6	00815	6.2
VII	0 TO 6	00816	7.8
DUPLICATE (II)	24 TO 30	00817	3.9

000603

1028

Enclosure
Manhole 180/Knollman Field
Lab Data
Test Codes and Names Used on Report

Received: 03/30/90

ITRSL Oak Ridge REPORT
04/17/90 10:47:21

Work Order # SO-03-129

REPORT TO
ADVANCED SCIENCES, INC.
P.O. BOX 475
ROSS, OH 45061-0475

ATTEN CINDY CAPANNARI

CLIENT RI FS FER SAMPLES 8
COMPANY ADVANCED SCIENCES, INC.
FACILITY 11003 HAMILTON CLEVES ROAD

PREPARED BY
IT/RADIOLOGICAL SCIENCES LAB.
1550 BEAR CREEK ROAD
OAK RIDGE, TN 37831

CERTIFIED BY

ATTEN ERS
PHONE 615-482-9707

CONTACT JIM DILLARD

AMENDED TO CORRECT RESULTS FOR GAMMA SPEC.

WORK ID SOIL SAMPLES
TAKEN
TRANS
TYPE
P.O. # 866A21602-04 602.09.24
INVOICE under separate cover

	SAMPLE IDENTIFICATION
01	00810
02	00813
03	00811
04	00815
05	00814
06	00817
07	00812
08	00816

TEST CODES and NAMES used on this report

ASIRPT	FORM FOR REPORTING DATA
GSPEC	GAMMA SPEC
NP237	NP-237
PU238	PU-238
PU239	PU-239/240
SR90S	Sr-90
TC99S	Tc-99
TH228	TH-228
TH230	TH-230
TH232	TH-232
U234	U-234
U235	U-235/236
U238	U-238

Enclosure
Manhole 180/Knollman Field
Lab Data
Soil Sample

Page 1
Received: 03/30/90

ITRSL Oak Ridge REPORT
Results by Sample

Work Order # SO-03-129

1028

SAMPLE ID 00810 FRACTION 01A TEST CODE ASIRPT NAME FORM FOR REPORTING DATA
Date & Time Collected 03/28/90 Category 40350

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
CS-137	<0.2		pCi/g
RU-106	<1.0		pCi/g
RA-226	0.727	0.07	pCi/g
RA-228	<0.5		pCi/g
U-TOTAL	18.6	2.5	ug/g
U-234	5.4	0.8	pCi/g
U-235/236	<0.6		pCi/g
U-238	6.5	0.9	pCi/g
PU-238	<0.6		pCi/g
PU-239/240	<0.6		pCi/g
TH-228	0.6	0.2	pCi/g
TH-230	2.4	0.4	pCi/g
TH-232	<0.6		pCi/g
TH-TOTAL	3	1	ug/g
NP-237	<0.6		pCi/g
SR-90	0.824	0.273	pCi/g
TC-99	2.33	0.52	pCi/g

SAMPLE ID 00813 FRACTION 02A TEST CODE ASIRPT NAME FORM FOR REPORTING DATA
Date & Time Collected 03/28/90 Category 40350

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
CS-137	<0.2		pCi/g
RU-106	<1.0		pCi/g
RA-226	0.830	0.10	pCi/g
RA-228	0.689	0.12	pCi/g
U-TOTAL	8.42	1.90	ug/g
U-234	1.9	0.3	pCi/g
U-235/236	<0.6		pCi/g
U-238	2.4	0.4	pCi/g
PU-238	<0.6		pCi/g
PU-239/240	<0.6		pCi/g
TH-228	0.7	0.2	pCi/g
TH-230	1.3	0.3	pCi/g
TH-232	<0.6		pCi/g
TH-TOTAL	5	2	ug/g
NP-237	<0.6		pCi/g
SR-90	1.69	0.39	pCi/g
TC-99	1.07	0.44	pCi/g

Page 2
Received: 03/30/90

ITRSL Oak Ridge REPORT
Results by Sample

Work Order # SO-03-129

SAMPLE ID 00811

FRACTION 03A TEST CODE ASIRPT NAME FORM FOR REPORTING DATA
Date & Time Collected 03/28/90 Category 40350

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
CS-137	<0.2		pCi/g
RU-106	<1.0		pCi/g
RA-226	1.08	0.10	pCi/g
RA-228	0.789	0.119	pCi/g
U-TOTAL	7.19	1.87	ug/g
U-234	1.4	0.3	pCi/g
U-235/236	<0.6		pCi/g
U-238	1.7	0.3	pCi/g
PU-239	<0.6		pCi/g
PU-239/240	<0.6		pCi/g
TH-228	0.8	0.2	pCi/g
TH-230	1.7	0.3	pCi/g
TH-232	0.6	0.2	pCi/g
TH-TOTAL	6	2	ug/g
NP-237	<0.6		pCi/g
SR-90	12.8	1.5	pCi/g
TC-99	1.54	0.49	pCi/g

SAMPLE ID 00815

FRACTION 04A TEST CODE ASIRPT NAME FORM FOR REPORTING DATA
Date & Time Collected 03/28/90 Category 40348

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
CS-137	<0.2		pCi/g
RU-106	<1.0		pCi/g
RA-226	1.08	0.12	pCi/g
RA-228	0.945	0.153	pCi/g
U-TOTAL	6.18	1.95	ug/g
U-234	1.6	0.3	pCi/g
U-235/236	<0.6		pCi/g
U-238	1.9	0.3	pCi/g
PU-238	<0.6		pCi/g
PU-239/240	<0.6		pCi/g
TH-228	0.9	0.2	pCi/g
TH-230	1.7	0.4	pCi/g
TH-232	0.8	0.2	pCi/g
TH-TOTAL	7	2	ug/g
NP-237	<0.6		pCi/g
SR-90	3.07	0.50	pCi/g
TC-99	<0.9		pCi/g

Enclosure
Manhole 180/Knollman Field
Lab Data
Soil Samples

1028

Page 3
Received: 03/30/90

ITRSL Oak Ridge REPORT
Results by Sample

Work Order # S0-03-129

SAMPLE ID 00814 FRACTION 05A TEST CODE ASIRPT NAME FORM FOR REPORTING DATA
Date & Time Collected 03/28/90 Category 40348

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
CS-137	0.452	0.07	pCi/g
RU-106	<1.0		pCi/g
RA-226	0.991	0.09	pCi/g
RA-228	0.813	0.115	pCi/g
U-TOTAL	9.30	1.92	ug/g
U-234	2.8	0.5	pCi/g
U-235/236	<0.6		pCi/g
U-238	3.1	0.5	pCi/g
PU-238	<0.6		pCi/g
PU-239/240	<0.6		pCi/g
TH-228	0.6	0.2	pCi/g
TH-230	1.4	0.3	pCi/g
TH-232	<0.6		pCi/g
TH-TOTAL	4	1	ug/g
NP-237	<0.6		pCi/g
SR-90	1.89	0.38	pCi/g
TC-99	<0.9		pCi/g

SAMPLE ID 00817 FRACTION 06A TEST CODE ASIRPT NAME FORM FOR REPORTING DATA
Date & Time Collected 03/28/90 Category 40349

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
CS-137	<0.2		pCi/g
RU-106	<1.0		pCi/g
RA-226	0.577	0.07	pCi/g
RA-228	<0.5		pCi/g
U-TOTAL	3.89	1.13	ug/g
U-234	0.8	0.2	pCi/g
U-235/236	<0.6		pCi/g
U-238	1.2	0.2	pCi/g
PU-238	<0.6		pCi/g
PU-239/240	<0.6		pCi/g
TH-228	<0.6		pCi/g
TH-230	0.9	0.2	pCi/g
TH-232	<0.6		pCi/g
TH-TOTAL	3	1	ug/g
NP-237	<0.6		pCi/g
SR-90	1.47	0.32	pCi/g
TC-99	1.71	0.52	pCi/g

Enclosure
Manhole 180/Knollman Field
Lab Data
Soil Samples

Page 4
Received: 03/30/90

ITRSL Oak Ridge REPORT
Results by Sample

Work Order # S0-03-129

SAMPLE ID 00812

FRACTION 07A TEST CODE ASIRPT NAME FORM FOR REPORTING DATA
Date & Time Collected 03/28/90 Category 40349

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
CS-137	<0.2		pCi/g
RU-106	<1.0		pCi/g
RA-226	1.02	0.09	pCi/g
RA-228	0.846	0.120	pCi/g
U-TOTAL	9.49	1.96	ug/g
U-234	2.0	0.3	pCi/g
U-235/236	<0.6		pCi/g
U-238	2.3	0.3	pCi/g
PU-238	<0.6		pCi/g
PU-239/240	<0.6		pCi/g
TH-228	0.8	0.2	pCi/g
TH-230	1.3	0.3	pCi/g
TH-232	<0.6		pCi/g
TH-TOTAL	5	1	ug/g
NP-237	<0.6		pCi/g
SR-90	5.58	0.74	pCi/g
TC-99	<0.9		pCi/g

SAMPLE ID 00816

FRACTION 08A TEST CODE ASIRPT NAME FORM FOR REPORTING DATA
Date & Time Collected 03/28/90 Category 40349

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
CS-137	<0.2		pCi/g
RU-106	<1.0		pCi/g
RA-226	1.30	0.14	pCi/g
RA-228	1.12	0.17	pCi/g
U-TOTAL	7.83	2.27	ug/g
U-234	1.8	0.3	pCi/g
U-235/236	<0.6		pCi/g
U-238	1.6	0.3	pCi/g
PU-238	<0.6		pCi/g
PU-239/240	<0.6		pCi/g
TH-228	1.3	0.3	pCi/g
TH-230	1.6	0.3	pCi/g
TH-232	<0.6		pCi/g
TH-TOTAL	1	1	ug/g
NP-237	<0.6		pCi/g
SR-90	<0.5		pCi/g
TC-99	<0.9		pCi/g

Enclosure
Manhole 180/Knollman Field
Lab Data

Water Sample Results

Page 1
Received: 03/30/90

ITRSL Oak Ridge REPORT
04/13/90 17:33:51

Work Order # SO-03-130

1028

REPORT TO: ADVANCED SCIENCES, INC.
P.O. BOX 475
ROSS, OH 45061-0475

ATTEN: CINDY CAPANNARI

PREPARED BY: IT/RADIOLOGICAL SCIENCES LAB.
1550 BEAR CREEK ROAD
OAK RIDGE, TN 37831

ATTEN: ERS
PHONE: 615-482-9707

CERTIFIED BY: James T. Harney

CONTACT: JIM DILLARD

CLIENT: RI FS FER SAMPLES: 1
COMPANY: ADVANCED SCIENCES, INC.
FACILITY: 11003 HAMILTON CLEVES ROAD

WORK ID: WATER SAMPLES
TAKEN:
TRANS:
TYPE:
P.O. #: 866A21602-04 602.09.24
INVOICE: under separate cover

SAMPLE IDENTIFICATION
01 00818

TEST CODES and NAMES used on this report

ASIRPT	FORM FOR REPORTING DATA
GSPEC	GAMMA SPEC
NP237	NP-237
PU238	PU-238
PU239	PU-239/240
RA226W	Ra-226
RA228W	Ra-228
SR90W	Sr-90
TC99W	Tc-99
TH228	TH-228
TH230	TH-230
TH232	TH-232
THTOTW	THORIUM TOTAL
U234	U-234
U235	U-235/236
U238	U-238
UTOTW	URANIUM TOTAL

Page 2
Received: 03/30/90

ITRSL Oak Ridge REPORT Work Order # SO-03-130
Results by Sample

SAMPLE ID 00818 FRACTION 01A TEST CODE ASIRPT NAME FORM FOR REPORTING DATA
Date & Time Collected 03/29/90 Category 40351

PARAMETER	RESULT	2-SIGMA ERROR	UNITS
NP-237	<1.0		pCi/l
CS-137	<20		pCi/l
RU-106	<150		pCi/l
RA-226	<1.0		pCi/l
RA-228	<3.0		pCi/l
SR-90	<5.0		pCi/l
TC-99	<30.0		pCi/l
U-TOTAL	<1		ug/l
U-234	<1.0		pCi/l
U-235/236	<1.0		pCi/l
U-238	<1.0		pCi/l
PU-238	<1.0		pCi/l
PU-239/240	<1.0		pCi/l
TH-228	<1.0		pCi/l
TH-230	<1.0		pCi/l
TH-232	<1.0		pCi/l
TH-TOTAL	<2.0		ug/l

Enclosure
Manhole 180/Knollman Field
Lab Data
Sample Data Summary

1028

INTERNATIONAL
TECHNOLOGY
CORPORATION

ADV 35888

SAMPLE DATA SUMMARY

000011

Case # 35888

Sample Delivery Group # 00810

ITAS Project # ADV 35888

SAMPLE DATA SUMMARY

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1028

CERTIFICATE OF ANALYSIS

C/O ASI Inc.
11030 Hamilton Cleves Road
Ross, OH 45061
Attn: Cindy Capannari

Date: April 26, 1990

Job Number: ADV 35888

P.O Number: Accounts Payable

This is the Certificate of Analysis for the following:

Client Project ID: FMPC RI/FS
Date Received by Lab: 03/30/90
Number of Samples: Nine (9)
Sample Type: Eight (8) soils and One (1) Rinsate

I. INTRODUCTION

On March 30, 1989, nine (9) samples were received at ITAS Oak Ridge, Tennessee laboratory from Advanced Sciences Inc., Ross, Ohio. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

Blanks are identified with client sample ID's starting with either "QX..B" or "QX...B.". Data are reported with the qualifier "U" if the compound was analyzed for but not detected. Lists with concentration unit code and lab and client suffix code definitions are attached.

II. ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by analytical tests. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits.

Reviewed and Approved:

Mary Hall for Snell Mills

Snell A. Mills III
Laboratory Manager

SAM/mmh

II. ANALYTICAL RESULTS/METHODOLOGY (Continued)

The samples were analyzed for Target Compound List (TCL) volatile compounds using the EPA CLP 10/86 Statement of Work.

The samples were analyzed for TCL semivolatile compounds using the EPA CLP 10/86 Statement of Work.

The samples were analyzed for TCL pesticide/PCB using the EPA CLP 10/86 Statement of Work.

The samples were analyzed for TCL metals and cyanide compounds using the EPA CLP 7/87 Statement of Work.

III. Quality Control

The matrix spike (MS) and matrix spike duplicate (MSD) for the organic analyses were performed on sample 00810.

The sample was analyzed for volatile organics on 04/04/90 and 04/05/90. The sample runs proceeded well. All surrogates and internal standards were within QC required limits. The MS/MSD percent recoveries were all within QC limits. There were no problems, QC or otherwise, seen in the final data review.

The sample was extracted on 04/03/90 and analyzed for semivolatile organics on 04/04/90 and 04/05/90. The analyses proceeded well with one surrogate on sample 00810MS below QC limits but within CLP protocol. All internal standards within QC required limits. The MS/MSD showed 1,4-Dichlorobenzene, N-Nitroso-di-n-propylamine and 1,2,4-Trichlorobenzene to have low percent recoveries, but all percent RPD's are within QC limits. There were no other problems, QC or otherwise, seen in the final data review.

The pesticide and aroclor analyses for the water sample was performed on 02/08/90. No confirmation analyses was needed. The sample and blank were prepared as low-level waters and analyzed by CLP protocol. All water pesticide surrogate recoveries were within QC limits.

The pesticide and aroclor analyses for the soil sample were analyzed on 04/05/90 and 04/06/90. All samples and blank were prepared and analyzed as low-level soils. Sample 00811 showed the soil pesticide surrogate recovery to be outside QC limits due to a large amount of matrix interference. The MS/MSD analyses were performed on sample 00810. All soil pesticide MS and MSD were within QC limits.

III. Quality Control (cont.)

The duplicate and spike analyses for the inorganics were performed on sample 00810.

The samples were prepared for ICP analyses on 04/06/90 and analyzed on 04/09/90. The matrix spike was outside QC limits for Antimony. The serial dilution was outside QC limits for zinc. The duplicate values were outside QC limits for Calcium, Chromium, Magnesium, and Silver.

The samples were prepared for GFAA analysis on 04/06/90 and analyzed during the period 04/09/90 - 04/12/90. The MS recovery and analytical spike recovery were outside QC limits for selenium.

The samples were prepared and analyzed for Mercury on 04/12/90.

The samples were prepared for Potassium analyses on 04/06/90 and analyzed on 04/12/90.

The samples were prepared for cyanide analyses on 04/03/90 and 04/04/90 and analyzed on 04/05/90.

III. Quality Control (cont.)

The duplicate and spike analyses for the inorganics were performed on sample 00810.

The samples were prepared for ICP analyses on 04/06/90 and analyzed on 04/09/90. The matrix spike was outside QC limits for Antimony. The serial dilution was outside QC limits for zinc. The duplicate values were outside QC limits for Calcium, Chromium, Magnesium, and Silver.

The samples were prepared for GFAA analysis on 04/06/90 and analyzed during the period 04/09/90 - 04/12/90. The MS recovery and analytical spike recovery were outside QC limits for selenium.

The samples were prepared and analyzed for Mercury on 04/12/90.

The samples were prepared for Potassium analyses on 04/06/90 and analyzed on 04/12/90.

The samples were prepared for cyanide analyses on 04/03/89 and 04/04/90 and analyzed on 04/05/90.

Advanced Sciences, Inc.
Date: April 26, 1990
Client Project ID: RI/FS Fernald

IT ANALYTICAL SERVICES
OAK RIDGE, TN

Job Number: ADV 35888

SAMPLE DATA SUMMARY

FIELD #	ITAS #	MATRIX	CONC.	ANALYSIS
00810	MM4140	SOIL	LOW	VOC
	MM4120	SOIL	LOW	BNA
	MM4120	SOIL	LOW	PEST/PCB
	MM4130	SOIL	LOW	METALS
	MM4130	SOIL	LOW	MERCURY
	MM4130	SOIL	LOW	CYANIDE
00810MS	MM4141	SOIL	LOW	QC/MS/VOC
	MM4121	SOIL	LOW	QC/MS/BNA
	MM4121	SOIL	LOW	QC/MS/PEST/PCB
	MM4131	SOIL	LOW	QC/MS/METALS
	MM4131	SOIL	LOW	QC/MS/MERCURY
	MM4131	SOIL	LOW	QC/MS/CYANIDE
00810DUP	MM4132	SOIL	LOW	QC/DUP/METALS
	MM4132	SOIL	LOW	QC/DUP/MERCURY
	MM4132	SOIL	LOW	QC/DUP/CYANIDE
00810MSD	MM4142	SOIL	LOW	QC/MSD/VOC
	MM4122	SOIL	LOW	QC/MSD/BNA
	MM4122	SOIL	LOW	QC/MSD/PEST/PCB
00813	MM4143	SOIL	LOW	VOC
	MM4123	SOIL	LOW	BNA
	MM4123	SOIL	LOW	PEST/PCB
	MM4133	SOIL	LOW	METALS
	MM4133	SOIL	LOW	MERCURY
	MM4133	SOIL	LOW	CYANIDE
00811	MM4144	SOIL	LOW	VOC
	MM4124	SOIL	LOW	BNA
	MM4124	SOIL	LOW	PEST/PCB
	MM4134	SOIL	LOW	METALS
	MM4134	SOIL	LOW	MERCURY
	MM4134	SOIL	LOW	CYANIDE
00817	MM4145	SOIL	LOW	VOC
	MM4125	SOIL	LOW	BNA
	MM4125	SOIL	LOW	PEST/PCB
	MM4135	SOIL	LOW	METALS
	MM4135	SOIL	LOW	MERCURY
	MM4135	SOIL	LOW	CYANIDE

SAMPLE DATA SUMMARY (cont.)

FIELD #	ITAS #	MATRIX	CONC.	ANALYSIS
00812	MM4146	SOIL	LOW	VOC
	MM4126	SOIL	LOW	BNA
	MM4126	SOIL	LOW	PEST/PCB
	MM4136	SOIL	LOW	METALS
	MM4136	SOIL	LOW	MERCURY
	MM4136	SOIL	LOW	CYANIDE
00816	MM4147	SOIL	LOW	VOC
	MM4127	SOIL	LOW	BNA
	MM4127	SOIL	LOW	PEST/PCB
	MM4137	SOIL	LOW	METALS
	MM4137	SOIL	LOW	MERCURY
	MM4137	SOIL	LOW	CYANIDE
00815	MM4148	SOIL	LOW	VOC
	MM4128	SOIL	LOW	BNA
	MM4128	SOIL	LOW	PEST/PCB
	MM4138	SOIL	LOW	METALS
	MM4138	SOIL	LOW	MERCURY
	MM4138	SOIL	LOW	CYANIDE
00814	MM4149	SOIL	LOW	VOC
	MM4129	SOIL	LOW	BNA
	MM4129	SOIL	LOW	PEST/PCB
	MM4139	SOIL	LOW	METALS
	MM4139	SOIL	LOW	MERCURY
	MM4139	SOIL	LOW	CYANIDE
00818	MM4117	RINSATE	LOW	VOC
	MM4108	RINSATE	LOW	BNA
	MM4111	RINSATE	LOW	PEST/PCB
	MM4118	RINSATE	LOW	METALS
	MM4119	RINSATE	LOW	MERCURY
	MM4114	RINSATE	LOW	CYANIDE

ABBREVIATIONS:
VOC = VOLATILES
BNA = SEMIVOLATILES
PEST = PESTICIDES
PCB = POLYCHLORINATED BIPHENYLS
DUP = DUPLICATE
MS = MATRIX SPIKE
MSD = MATRIX SPIKE DUPLICATE

ORGANIC QUALIFIERS

U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

C = This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and reanalyzed. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate Forms I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number.

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

F = Estimated value due to a confirmed compound which is off-scale in both columns.

X = A flag that FORMASTER III CLP software automatically inserts to indicate that the data was entered manually.

Y = Indistinguishable isomer in tentatively identified compounds.

Z = No estimated value reported, or an elevated CRQL reported because matrix effects interfere with or obscure the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

* = Values outside of contract required QC limits.

INORGANIC QUALIFIERS

Concentration Qualifiers (C)

B = Reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRQL) but greater than or equal to the Instrument Detection Limit (IDL).

U = Analyte was analyzed for but not detected.

Quality Qualifiers (Q)

E = The reported value is estimated because of the presence of interference.

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

S = The reported value was determined by the Method of Standard Additions.

W = Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G = Native analyte > 4 times spike added, therefore acceptance criteria do not apply.

X = Detection limit is higher than normal due to sample matrix interferences.

* = Duplicate analysis not within control limits.

+ = Correlation coefficient for the MSA is less than 0.955.

Method Qualifiers (M)

"P" for ICP
"A" for Flame AA
"F" for Furnace AA
"CV" for Manual Cold Vapor AA
"AV" for Automated Cold Vapor AA
"AS" for Semi-Automated Spectrophotometric
"C" for Manual Spectrophotometric
"T" for Titrimetric
"NR" if the analyte is not required to be analyzed

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00810

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4140

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4140

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 Date Analyzed: 04/04/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	16	B
67-64-1	Acetone	11	BJ
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	15	
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	9	BJ
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

04-09-90

FORM I VOA 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

00810

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4140

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4140

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 Date Analyzed: 04/04/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-69-4	METHANE, TRICHLOROFLUORO-	9.20	14	J
2. 1066-40-6	SILANOL, TRIMETHYL-	14.00	9.3	BJ

FORM I VOA-TIC

1/87 Rev.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

1028 EPA SAMPLE NO.

00810

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4120

Sample wt/vol: 29.0 (g/mL) G Lab File ID: MM4120

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
100-51-6	Benzyl Alcohol	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	bis(2-Chloroisopropyl)Ether	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
65-85-0	Benzoic Acid	1900	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	1900	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	1900	U
131-11-3	Dimethyl Phthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U

LWS 04-10-90

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00810

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4120

Sample wt/vol: 29.0 (g/mL) G Lab File ID: MM4120

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1900	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	1900	U
100-02-7	4-Nitrophenol	1900	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	1900	U
534-52-1	4,6-Dinitro-2-Methylphenol	1900	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	1900	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	790	U
56-55-3	Benzo(a)Anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)Phthalate	400	U
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	400	U
207-08-9	Benzo(k)Fluoranthene	400	U
50-32-8	Benzo(a)Pyrene	400	U
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

1028 EPA SAMPLE NO.

00810

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4120

Sample wt/vol: 29.0 (g/mL) G Lab File ID: MM4120

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.10	15000	ABJ
2.	UNK HYDROXY PENTANONE	5.60	970	AJ
3.	UNK HYDROXY PENTANONE	7.82	320	AJ
4.	UNK HYDROXY PENTANONE	8.54	310	AJ
5.	UNK HYDROXY PENTANONE	7.32	210	AJ
6. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	8.42	180	BJ

MWS 04.10.90

8808 1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00811

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4124

Sample wt/vol: 29.1 (g/mL) G Lab File ID: MM4124

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 15 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
100-51-6	Benzyl Alcohol	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	bis(2-Chloroisopropyl)Ether	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
65-85-0	Benzoic Acid	1900	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	1900	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	1900	U
131-11-3	Dimethyl Phthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U

MS 04.1C

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.

00811

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4124

Sample wt/vol: 29.1 (g/mL) G Lab File ID: MM4124

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 15 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1900	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	1900	U
100-02-7	4-Nitrophenol	1900	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	1900	U
534-52-1	4,6-Dinitro-2-Methylphenol	1900	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	1900	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	800	U
56-55-3	Benzo(a)Anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)Phthalate	400	U
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	400	U
207-08-9	Benzo(k)Fluoranthene	400	U
50-32-8	Benzo(a)Pyrene	400	U
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

(1) - Cannot be separated from Diphenylamine

MS 04.10.90

EPA SAMPLE NO.

00811

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4124

Sample wt/vol: 29.1 (g/mL) G Lab File ID: MM4124

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 15 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.12	20000	ABJ
2.	UNK HYDROXY PENTANONE	5.60	1300	AJ
3.	UNK HYDROXY PENTANONE	7.82	580	AJ
4.	UNK HYDROXY PENTANONE	8.54	550	AJ
5.	UNK HYDROXY PENTANONE	7.32	310	AJ
6.	UNK HYDROXY PENTANONE	6.35	220	AJ
7. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	8.44	220	BJ

MJS 04.10.90

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

1028

00065
EPA SAMPLE NO.

00812

) Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

atrix: (soil/water) SOIL Lab Sample ID: MM4126

Sample wt/vol: 29.1 (g/mL) G Lab File ID: MM4126

evel: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 dec. ____ Date Extracted: 04/03/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

PC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	390	U
111-44-4	bis(2-Chloroethyl)Ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
100-51-6	Benzyl Alcohol	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	bis(2-Chloroisopropyl)Ether	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-Di-n-Propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
65-85-0	Benzoic Acid	1900	U
111-91-1	bis(2-Chloroethoxy)Methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-Methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	1900	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	1900	U
131-11-3	Dimethyl Phthalate	390	U
208-96-8	Acenaphthylene	390	U
606-20-2	2,6-Dinitrotoluene	390	U

MJS 04.10.90

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00812

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4126

Sample wt/vol: 29.1 (g/mL) G Lab File ID: MM4126

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1900	U
83-32-9	Acenaphthene	390	U
51-28-5	2,4-Dinitrophenol	1900	U
100-02-7	4-Nitrophenol	1900	U
132-64-9	Dibenzofuran	390	U
121-14-2	2,4-Dinitrotoluene	390	U
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	1900	U
534-52-1	4,6-Dinitro-2-Methylphenol	1900	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	1900	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
84-74-2	Di-n-Butylphthalate	390	U
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	770	U
56-55-3	Benzo(a)Anthracene	390	U
218-01-9	Chrysene	390	U
117-81-7	bis(2-Ethylhexyl)Phthalate	390	U
117-84-0	Di-n-Octyl Phthalate	390	U
205-99-2	Benzo(b)Fluoranthene	390	U
207-08-9	Benzo(k)Fluoranthene	390	U
50-32-8	Benzo(a)Pyrene	390	U
193-39-5	Indeno(1,2,3-cd)Pyrene	390	U
53-70-3	Dibenz(a,h)Anthracene	390	U
191-24-2	Benzo(g,h,i)Perylene	390	U

(1) - Cannot be separated from Diphenylamine

MS 04-10

F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

F028

EPA SAMPLE NO.

00812

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4126

Sample wt/vol: 29.1 (g/mL) G Lab File ID: MM4126

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.10	19000	ABJ
2.	UNK HYDROXY PENTANONE	5.60	1200	AJ
3.	UNK HYDROXY PENTANONE	7.82	570	AJ
.	UNK HYDROXY PENTANONE	8.54	410	AJ
.	UNK HYDROXY PENTANONE	7.32	260	AJ
6. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	8.42	200	BJ
7.	UNK HYDROXY PENTANONE	6.35	190	AJ

MS 04.10.90

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00813

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4123

Sample wt/vol: 29.2 (g/mL) G Lab File ID: MM4123

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	390	U
111-44-4	bis(2-Chloroethyl)Ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
100-51-6	Benzyl Alcohol	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	bis(2-Chloroisopropyl)Ether	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-Di-n-Propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
65-85-0	Benzoic Acid	1900	U
111-91-1	bis(2-Chloroethoxy)Methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-Methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	1900	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	1900	U
131-11-3	Dimethyl Phthalate	390	U
208-96-8	Acenaphthylene	390	U
606-20-2	2,6-Dinitrotoluene	390	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.
00813

Name: ITAS-OAK RIDGE Contract: FERNALD

ab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

atrix: (soil/water) SOIL Lab Sample ID: MM4123

Sample wt/vol: 29.2 (g/mL) G Lab File ID: MM4123

evel: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 dec. ____ Date Extracted: 04/03/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

PC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1900	U
83-32-9	Acenaphthene	390	U
51-28-5	2,4-Dinitrophenol	1900	U
100-02-7	4-Nitrophenol	1900	U
132-64-9	Dibenzofuran	390	U
121-14-2	2,4-Dinitrotoluene	390	U
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	1900	U
534-52-1	4,6-Dinitro-2-Methylphenol	1900	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	1900	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
84-74-2	Di-n-Butylphthalate	390	U
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	770	U
56-55-3	Benzo(a)Anthracene	390	U
218-01-9	Chrysene	390	U
117-81-7	bis(2-Ethylhexyl)Phthalate	390	U
117-84-0	Di-n-Octyl Phthalate	390	U
205-99-2	Benzo(b)Fluoranthene	390	U
207-08-9	Benzo(k)Fluoranthene	390	U
50-32-8	Benzo(a)Pyrene	390	U
193-39-5	Indeno(1,2,3-cd)Pyrene	390	U
53-70-3	Dibenz(a,h)Anthracene	390	U
191-24-2	Benzo(g,h,i)Perylene	390	U

(1) - Cannot be separated from Diphenylamine

MB 04.10.90

1F

EPA SAMPLE NO.

00813

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4123

Sample wt/vol: 29.2 (g/mL) G Lab File ID: MM4123

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.0

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.10	13000	ABJ
2.	UNK HYDROXY PENTANONE	5.60	740	AJ
3.	UNKNOWN	28.04	280	J
4. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	8.42	260	BJ
5.	UNK HYDROXY PENTANONE	7.82	220	AJ
6.	UNK HYDROXY PENTANONE	6.33	210	AJ
7.	UNK HYDROXY PENTANONE	8.54	180	AJ

WS 04-10-90

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.

00814

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4129

Sample wt/vol: 29.0 (g/mL) G Lab File ID: MM4129

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
100-51-6	Benzyl Alcohol	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	bis(2-Chloroisopropyl)Ether	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
65-85-0	Benzoic Acid	1900	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	1900	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	1900	U
131-11-3	Dimethyl Phthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U

MJS 04-10-90

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00814

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4129

Sample wt/vol: 29.0 (g/mL) G Lab File ID: MM4129

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1900	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	1900	U
100-02-7	4-Nitrophenol	1900	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	1900	U
534-52-1	4,6-Dinitro-2-Methylphenol	1900	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	1900	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	790	U
56-55-3	Benzo(a)Anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)Phthalate	400	U
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	400	U
207-08-9	Benzo(k)Fluoranthene	400	U
50-32-8	Benzo(a)Pyrene	400	U
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

(1) - Cannot be separated from Diphenylamine

MS 04/10

FORM I SV-2

1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

1028 EPA SAMPLE NO.

00814

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

atrix: (soil/water) SOIL Lab Sample ID: MM4129

Sample wt/vol: 29.0 (g/mL) G Lab File ID: MM4129

evel: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. Date Extracted: 04/03/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

PC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

umber TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.10	21000	ABJ
2.	UNK HYDROXY PENTANONE	5.60	1200	AJ
.	UNK HYDROXY PENTANONE	8.54	510	AJ
.	UNK HYDROXY PENTANONE	7.82	470	AJ
5.	UNK HYDROXY PENTANONE	7.32	290	AJ
6.	UNK HYDROXY PENTANONE	6.35	220	AJ
7. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	8.42	220	BJ

MB 04.10.90

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00815

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4128

Sample wt/vol: 29.5 (g/mL) G Lab File ID: MM4128

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 18 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 7.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)Ether	410	U
95-57-8	2-Chlorophenol	410	U
541-73-1	1,3-Dichlorobenzene	410	U
106-46-7	1,4-Dichlorobenzene	410	U
100-51-6	Benzyl Alcohol	410	U
95-50-1	1,2-Dichlorobenzene	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	bis(2-Chloroisopropyl)Ether	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-Di-n-Propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
65-85-0	Benzoic Acid	2000	U
111-91-1	bis(2-Chloroethoxy)Methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
120-82-1	1,2,4-Trichlorobenzene	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-Methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	2000	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	2000	U
131-11-3	Dimethyl Phthalate	410	U
208-96-8	Acenaphthylene	410	U
606-20-2	2,6-Dinitrotoluene	410	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.

00815

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4128

Sample wt/vol: 29.5 (g/mL) G Lab File ID: MM4128

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 18 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 7.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	2000	U
83-32-9	Acenaphthene	410	U
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	2000	U
132-64-9	Dibenzofuran	410	U
121-14-2	2,4-Dinitrotoluene	410	U
84-66-2	Diethylphthalate	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
86-73-7	Fluorene	410	U
100-01-6	4-Nitroaniline	2000	U
534-52-1	4,6-Dinitro-2-Methylphenol	2000	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
87-86-5	Pentachlorophenol	2000	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
84-74-2	Di-n-Butylphthalate	410	U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	820	U
56-55-3	Benzo(a)Anthracene	410	U
218-01-9	Chrysene	410	U
117-81-7	bis(2-Ethylhexyl)Phthalate	410	U
117-84-0	Di-n-Octyl Phthalate	410	U
205-99-2	Benzo(b)Fluoranthene	410	U
207-08-9	Benzo(k)Fluoranthene	410	U
50-32-8	Benzo(a)Pyrene	410	U
193-39-5	Indeno(1,2,3-cd)Pyrene	410	U
53-70-3	Dibenz(a,h)Anthracene	410	U
191-24-2	Benzo(g,h,i)Perylene	410	U

(1) - Cannot be separated from Diphenylamine

MS 04.10.90

F

EPA SAMPLE NO.

00815

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4128

Sample wt/vol: 29.5 (g/mL) G Lab File ID: MM4128

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 18 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 7.7 Dilution Factor: 1.0

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.12	20000	ABJ
2.	UNK HYDROXY PENTANONE	5.60	1300	AJ
3.	UNK HYDROXY PENTANONE	7.82	810	AJ
4.	UNK HYDROXY PENTANONE	8.54	810	AJ
5. 24433-34-9	C(14A)-HOMO-27-NORGAMMACER-1	31.86	270	J
6.	UNK HYDROXY PENTANONE	7.33	340	AJ
7.	UNK HYDROXY PENTANONE	6.35	270	AJ
8. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	8.44	220	BJ

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.

00816

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4127

Sample wt/vol: 29.2 (g/mL) G Lab File ID: MM4127

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 20 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 7.9 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	430	U
111-44-4	bis(2-Chloroethyl)Ether	430	U
95-57-8	2-Chlorophenol	430	U
541-73-1	1,3-Dichlorobenzene	430	U
106-46-7	1,4-Dichlorobenzene	430	U
100-51-6	Benzyl Alcohol	430	U
95-50-1	1,2-Dichlorobenzene	430	U
95-48-7	2-Methylphenol	430	U
108-60-1	bis(2-Chloroisopropyl)Ether	430	U
106-44-5	4-Methylphenol	430	U
621-64-7	N-Nitroso-Di-n-Propylamine	430	U
67-72-1	Hexachloroethane	430	U
98-95-3	Nitrobenzene	430	U
78-59-1	Isophorone	430	U
88-75-5	2-Nitrophenol	430	U
105-67-9	2,4-Dimethylphenol	430	U
65-85-0	Benzoic Acid	2100	U
111-91-1	bis(2-Chloroethoxy)Methane	430	U
120-83-2	2,4-Dichlorophenol	430	U
120-82-1	1,2,4-Trichlorobenzene	430	U
91-20-3	Naphthalene	430	U
106-47-8	4-Chloroaniline	430	U
87-68-3	Hexachlorobutadiene	430	U
59-50-7	4-Chloro-3-Methylphenol	430	U
91-57-6	2-Methylnaphthalene	430	U
77-47-4	Hexachlorocyclopentadiene	430	U
88-06-2	2,4,6-Trichlorophenol	430	U
95-95-4	2,4,5-Trichlorophenol	2100	U
91-58-7	2-Chloronaphthalene	430	U
88-74-4	2-Nitroaniline	2100	U
131-11-3	Dimethyl Phthalate	430	U
208-96-8	Acenaphthylene	430	U
606-20-2	2,6-Dinitrotoluene	430	U

KLS 04-10-90

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00816

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4127

Sample wt/vol: 29.2 (g/mL) G Lab File ID: MM4127

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 20 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 7.9 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	2100	U
83-32-9	Acenaphthene	430	U
51-28-5	2,4-Dinitrophenol	2100	U
100-02-7	4-Nitrophenol	2100	U
132-64-9	Dibenzofuran	430	U
121-14-2	2,4-Dinitrotoluene	430	U
84-66-2	Diethylphthalate	430	U
7005-72-3	4-Chlorophenyl-phenylether	430	U
86-73-7	Fluorene	430	U
100-01-6	4-Nitroaniline	2100	U
534-52-1	4,6-Dinitro-2-Methylphenol	2100	U
86-30-6	N-Nitrosodiphenylamine (1)	430	U
101-55-3	4-Bromophenyl-phenylether	430	U
118-74-1	Hexachlorobenzene	430	U
87-86-5	Pentachlorophenol	2100	U
85-01-8	Phenanthrene	430	U
120-12-7	Anthracene	430	U
84-74-2	Di-n-Butylphthalate	430	U
206-44-0	Fluoranthene	430	U
129-00-0	Pyrene	430	U
85-68-7	Butylbenzylphthalate	430	U
91-94-1	3,3'-Dichlorobenzidine	850	U
56-55-3	Benzo(a)Anthracene	430	U
218-01-9	Chrysene	430	U
117-81-7	bis(2-Ethylhexyl)Phthalate	430	U
117-84-0	Di-n-Octyl Phthalate	430	U
205-99-2	Benzo(b)Fluoranthene	430	U
207-08-9	Benzo(k)Fluoranthene	430	U
50-32-8	Benzo(a)Pyrene	430	U
193-39-5	Indeno(1,2,3-cd)Pyrene	430	U
53-70-3	Dibenz(a,h)Anthracene	430	U
191-24-2	Benzo(g,h,i)Perylene	430	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 1028
TENTATIVELY IDENTIFIED COMPOUNDS

00185
EPA SAMPLE NO.

00816

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4127

Sample wt/vol: 29.2 (g/mL) G Lab File ID: MM4127

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 20 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 7.9 Dilution Factor: 1.0

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.10	20000	ABJ
2.	UNK HYDROXY PENTANONE	5.60	1200	AJ
3.	UNK HYDROXY PENTANONE	7.82	780	AJ
4.	UNK HYDROXY PENTANONE	8.54	470	AJ
5.	UNK HYDROXY PENTANONE	7.32	300	AJ
6.	UNK HYDROXY PENTANONE	6.35	230	AJ
7. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	8.42	220	BJ

WB 04-10-90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

1028

00036
EPA SAMPLE NO.

00811

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

atrix: (soil/water) SOIL Lab Sample ID: MM4144

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4144

evel: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 15 Date Analyzed: 04/04/90

olumn: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	50	B
67-64-1	Acetone	13	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	8	BJ
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	1	J
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

WJ 04-09-90

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

00811

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4144

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4144

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 15 Date Analyzed: 04/04/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-69-4	METHANE, TRICHLOROFLUORO-	9.14	12	J
2. 1066-40-6	SILANOL, TRIMETHYL-	13.94	12	BJ

04-09-90

FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

T028

EPA SAMPLE NO.

00812

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4146

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4146

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 Date Analyzed: 04/05/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	110	B
67-64-1	Acetone	9	BJ
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	21	
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	7	BJ
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	2	J
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

04-09-90

FORM I VOA 1/87 Rev.

EPA SAMPLE NO.

00812

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4146

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4146

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 Date Analyzed: 04/05/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-69-4	METHANE, TRICHLOROFLUORO-	9.17	10	J
2. 1066-40-6	SILANOL, TRIMETHYL-	13.94	6.8	J

04-09-90

FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.

00813

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4143

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4143

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 Date Analyzed: 04/04/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	41	B
67-64-1	Acetone	8	BJ
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	9	
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	7	BJ
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	1	J
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	2	J
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

04-09-90

FORM I VOA 1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
00813

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4143

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4143

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 Date Analyzed: 04/04/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-69-4	METHANE, TRICHLOROFLUORO-	9.14	8.0	J
2. 1066-40-6	SILANOL, TRIMETHYL-	13.94	11	BJ

04-09-90

FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.

00814

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4149

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4149

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 Date Analyzed: 04/05/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	45	B
67-64-1	Acetone	34	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	8	BJ
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	2	BJ
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

04-09-90

FORM I VOA 1/87 Rev.

EPA SAMPLE NO.

00814

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4149

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4149

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 Date Analyzed: 04/05/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 1066-40-6	SILANOL, TRIMETHYL-	13.97	9.3	J

04-09-90

FORM I VOA-TIC 1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

1028

EPA SAMPLE NO.

00815

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4148

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4148

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 18 Date Analyzed: 04/05/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	24	B
67-64-1	Acetone	19	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	11	
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	7	BJ
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	1	J
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

04-09-90

FORM I VOA 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

00815

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4148

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4148

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 18 Date Analyzed: 04/05/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 1066-40-6	SILANOL, TRIMETHYL-	13.94	8.5	J

04-09-90

FORM I VOA-TIC 1/87 Rev.

1028

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00816

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4147

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4147

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 20 Date Analyzed: 04/05/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	95	B
67-64-1	Acetone	14	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

04-09-90

FORM I VOA 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

00816

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4147

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4147

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 20 Date Analyzed: 04/05/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 1066-40-6	SILANOL, TRIMETHYL-	13.94	8.8	J

04-09-90

FORM I VOA-TIC 1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.

00817

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4145

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4145

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 Date Analyzed: 04/05/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	22	B
67-64-1	Acetone	5	BJ
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	9	
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	6	BJ
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

04-09-90

FORM I VOA 1/87 Rev.

EPA SAMPLE NO.

00817

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4145

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4145

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 Date Analyzed: 04/05/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-69-4	METHANE, TRICHLOROFLUORO-	9.17	14	J
2. 1066-40-6	SILANOL, TRIMETHYL-	13.97	9.3	J

04-09-90

FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET **1028**

EPA SAMPLE NO.

00818

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4117

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4117

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. ____ Date Analyzed: 04/04/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	28	B
67-64-1	Acetone	10	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	23	
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	7	BJ
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	4	J
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	2	J
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	7	
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
	Total Xylenes	5	U

04-09-90

FORM I VOA 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

00818

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4117

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4117

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. ____ Date Analyzed: 04/04/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 1066-40-6	SILANOL, TRIMETHYL-	14.00	6.0	BJ

04-09-90

FORM I VOA-TIC

1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET F028

EPA SAMPLE NO.

VBLK2

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: N.A. SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: VBA0405

Sample wt/vol: 5.0 (g/mL) G Lab File ID: VBA0405

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 04/05/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	8	J
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	2	J
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
	Total Xylenes	5	U

04-09-90

FORM I VOA 1/87 Rev.

VOLATILE METHOD BLANK SUMMARY

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Lab File ID: VBA0405 Lab Sample ID: VBA0405

Date Analyzed: 04/05/90 Time Analyzed: 1056

Matrix: (soil/water) SOIL Level:(low/med) LOW

Instrument ID: OWA1

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	00812	MM4146	MM4146	1237
02	00814	MM4149	MM4149	1547
03	00815	MM4148	MM4148	1454
04	00816	MM4147	MM4147	1324
05	00817	MM4145	MM4145	1155

COMMENTS: CLP,,,VBLK,LOW,SOIL,VBA0405,VOA,BLANK,
INST: OWA1 ANALYST: MAS

04-09-90

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

1028 EPA SAMPLE NO.

00817

ame: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

atrix: (soil/water) SOIL Lab Sample ID: MM4125

Sample wt/vol: 29.1 (g/mL) G Lab File ID: MM4125

evel: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. Date Extracted: 04/03/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

PC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
100-51-6	Benzyl Alcohol	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	bis(2-Chloroisopropyl)Ether	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
65-85-0	Benzoic Acid	1900	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	1900	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	1900	U
131-11-3	Dimethyl Phthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U

04/10/90

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00817

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4125

Sample wt/vol: 29.1 (g/mL) G Lab File ID: MM4125

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1900	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	1900	U
100-02-7	4-Nitrophenol	1900	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	1900	U
534-52-1	4,6-Dinitro-2-Methylphenol	1900	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	1900	U
85-01-8	Phenanthrene	59	J
120-12-7	Anthracene	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	91	J
129-00-0	Pyrene	65	J
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	790	U
56-55-3	Benzo(a)Anthracene	41	J
218-01-9	Chrysene	61	J
117-81-7	bis(2-Ethylhexyl)Phthalate	400	U
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	72	J
207-08-9	Benzo(k)Fluoranthene	400	U
50-32-8	Benzo(a)Pyrene	400	U
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

(1) - Cannot be separated from Diphenylamine

MJS 04/10

FORM I SV-2 1/87 Rev.

1028

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

00817

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4125

Sample wt/vol: 29.1 (g/mL) G Lab File ID: MM4125

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.10	17000	ABJ
2.	UNK HYDROXY PENTANONE	7.82	1800	AJ
.	UNK HYDROXY PENTANONE	5.60	1100	AJ
.	UNK HYDROXY PENTANONE	8.54	900	AJ
5.	UNK HYDROXY PENTANONE	7.32	280	AJ
6.	UNK HYDROXY PENTANONE	6.33	220	AJ
7. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	8.42	200	BJ

WS 08.10.90

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00818

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) WATER Lab Sample ID: MM4108

Sample wt/vol: 1000 (g/mL) ML Lab File ID: MM4108

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/04/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

1028

EPA SAMPLE NO.

00818

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) WATER Lab Sample ID: MM4108

Sample wt/vol: 1000 (g/mL) ML Lab File ID: MM4108

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/04/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

MS MSD 04.10.90

FORM I SV-2 1/87 Rev.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

00818

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) WATER Lab Sample ID: MM4108

Sample wt/vol: 1000 (g/mL) ML Lab File ID: MM4108

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/04/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.08	100	ABJ
2.	UNKNOWN	13.87	12	J

MS 04.10.90

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET **1028**

EPA SAMPLE NO.

00810

I ame: ITAS-KNOXVILLE Contract: FERNALD

ab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

atrix: (soil/water) SOIL Lab Sample ID: MM4120

Sample wt/vol: 29.0 (g/mL) G Lab File ID:

evel: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. Date Extracted: 04/03/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	9.6	U
319-85-7	beta-BHC	9.6	U
319-86-8	delta-BHC	9.6	U
58-89-9	gamma-BHC (Lindane)	9.6	U
76-44-8	Heptachlor	9.6	U
309-00-2	Aldrin	9.6	U
1024-57-3	Heptachlor epoxide	9.6	U
959-98-8	Endosulfan I	9.6	U
60-57-1	Dieldrin	19	U
72-55-9	4,4'-DDE	19	U
72-20-8	Endrin	19	U
33213-65-9	Endosulfan II	19	U
72-54-8	4,4'-DDD	19	U
1031-07-8	Endosulfan sulfate	19	U
50-29-3	4,4'-DDT	19	U
72-43-5	Methoxychlor	96	U
53494-70-5	Endrin ketone	19	U
5103-71-9	alpha-Chlordane	96	U
5103-74-2	gamma-Chlordane	96	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	96	U
11104-28-2	Aroclor-1221	96	U
11141-16-5	Aroclor-1232	96	U
53469-21-9	Aroclor-1242	96	U
12672-29-6	Aroclor-1248	96	U
11097-69-1	Aroclor-1254	190	U
11096-82-5	Aroclor-1260	190	U

04/09/90

FORM I PEST 1/87 Rev.

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 00810

00810DL

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

ab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4120-4

ample wt/vol: 29.0 (g/mL) G Lab File ID:

evel: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. Date Extracted: 04/03/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 4.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	39	U
319-85-7	beta-BHC	39	U
319-86-8	delta-BHC	39	U
58-89-9	gamma-BHC (Lindane)	39	U
76-44-8	Heptachlor	39	U
309-00-2	Aldrin	39	U
1024-57-3	Heptachlor epoxide	39	U
959-98-8	Endosulfan I	39	U
60-57-1	Dieldrin	77	U
72-55-9	4,4'-DDE	77	U
72-20-8	Endrin	77	U
33213-65-9	Endosulfan II	77	U
72-54-8	4,4'-DDD	77	U
1031-07-8	Endosulfan sulfate	77	U
50-29-3	4,4'-DDT	77	U
72-43-5	Methoxychlor	390	U
53494-70-5	Endrin ketone	77	U
5103-71-9	alpha-Chlordane	390	U
5103-74-2	gamma-Chlordane	390	U
8001-35-2	Toxaphene	770	U
12674-11-2	Aroclor-1016	390	U
11104-28-2	Aroclor-1221	390	U
11141-16-5	Aroclor-1232	390	U
53469-21-9	Aroclor-1242	390	U
12672-29-6	Aroclor-1248	390	U
11097-69-1	Aroclor-1254	770	U
11096-82-5	Aroclor-1260	770	U

04/09/90 SV

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

1028

EPA SAMPLE NO.

00811

Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4124

Sample wt/vol: 29.1 (g/mL) G Lab File ID:

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 15 dec. Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/06/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	9.7	U
319-85-7	beta-BHC	9.7	U
319-86-8	delta-BHC	9.7	U
58-89-9	gamma-BHC (Lindane)	9.7	U
76-44-8	Heptachlor	9.7	U
309-00-2	Aldrin	9.7	U
1024-57-3	Heptachlor epoxide	9.7	U
959-98-8	Endosulfan I	9.7	U
60-57-1	Dieldrin	19	U
72-55-9	4,4'-DDE	19	U
72-20-8	Endrin	19	U
33213-65-9	Endosulfan II	19	U
72-54-8	4,4'-DDD	19	U
1031-07-8	Endosulfan sulfate	19	U
50-29-3	4,4'-DDT	19	U
72-43-5	Methoxychlor	97	U
53494-70-5	Endrin ketone	19	U
5103-71-9	alpha-Chlordane	97	U
5103-74-2	gamma-Chlordane	97	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	97	U
11104-28-2	Aroclor-1221	97	U
11141-16-5	Aroclor-1232	97	U
53469-21-9	Aroclor-1242	97	U
12672-29-6	Aroclor-1248	97	U
11097-69-1	Aroclor-1254	190	U
11096-82-5	Aroclor-1260	190	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00812

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4126

Sample wt/vol: 29.1 (g/mL) G Lab File ID:

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 dec. Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/06/90

GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	9.4	U
319-85-7	beta-BHC	9.4	U
319-86-8	delta-BHC	9.4	U
58-89-9	gamma-BHC (Lindane)	9.4	U
76-44-8	Heptachlor	9.4	U
309-00-2	Aldrin	9.4	U
1024-57-3	Heptachlor epoxide	9.4	U
959-98-8	Endosulfan I	9.4	U
60-57-1	Dieldrin	19	U
72-55-9	4,4'-DDE	19	U
72-20-8	Endrin	19	U
33213-65-9	Endosulfan II	19	U
72-54-8	4,4'-DDD	19	U
1031-07-8	Endosulfan sulfate	19	U
50-29-3	4,4'-DDT	19	U
72-43-5	Methoxychlor	94	U
53494-70-5	Endrin ketone	19	U
5103-71-9	alpha-Chlordane	94	U
5103-74-2	gamma-Chlordane	94	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	94	U
11104-28-2	Aroclor-1221	94	U
11141-16-5	Aroclor-1232	94	U
53469-21-9	Aroclor-1242	94	U
12672-29-6	Aroclor-1248	94	U
11097-69-1	Aroclor-1254	190	U
11096-82-5	Aroclor-1260	190	U

04/09/90 gv

FORM I PEST 1/87 Rev.

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

1028

EPA SAMPLE NO.

00813

Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4123

Sample wt/vol: 29.2 (g/mL) G Lab File ID:

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 12 dec. Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	9.4	U
319-85-7	beta-BHC	9.4	U
319-86-8	delta-BHC	9.4	U
58-89-9	gamma-BHC (Lindane)	9.4	U
76-44-8	Heptachlor	9.4	U
309-00-2	Aldrin	9.4	U
1024-57-3	Heptachlor epoxide	9.4	U
959-98-8	Endosulfan I	9.4	U
60-57-1	Dieldrin	19	U
72-55-9	4,4'-DDE	19	U
72-20-8	Endrin	19	U
33213-65-9	Endosulfan II	19	U
72-54-8	4,4'-DDD	19	U
1031-07-8	Endosulfan sulfate	19	U
50-29-3	4,4'-DDT	19	U
72-43-5	Methoxychlor	94	U
53494-70-5	Endrin ketone	19	U
5103-71-9	alpha-Chlordane	94	U
5103-74-2	gamma-Chlordane	94	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	94	U
11104-28-2	Aroclor-1221	94	U
11141-16-5	Aroclor-1232	94	U
53469-21-9	Aroclor-1242	94	U
12672-29-6	Aroclor-1248	94	U
11097-69-1	Aroclor-1254	190	U
11096-82-5	Aroclor-1260	190	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00814

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4129

Sample wt/vol: 29.0 (g/mL) G Lab File ID:

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/06/90

GPC Cleanup: (Y/N) N pH: 7.6 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	9.6	U
319-85-7	beta-BHC	9.6	U
319-86-8	delta-BHC	9.6	U
58-89-9	gamma-BHC (Lindane)	9.6	U
76-44-8	Heptachlor	9.6	U
309-00-2	Aldrin	9.6	U
1024-57-3	Heptachlor epoxide	9.6	U
959-98-8	Endosulfan I	9.6	U
60-57-1	Dieldrin	19	U
72-55-9	4,4'-DDE	19	U
72-20-8	Endrin	19	U
33213-65-9	Endosulfan II	19	U
72-54-8	4,4'-DDD	19	U
1031-07-8	Endosulfan sulfate	19	U
50-29-3	4,4'-DDT	19	U
72-43-5	Methoxychlor	96	U
53494-70-5	Endrin ketone	19	U
5103-71-9	alpha-Chlordane	96	U
5103-74-2	gamma-Chlordane	96	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	96	U
11104-28-2	Aroclor-1221	96	U
11141-16-5	Aroclor-1232	96	U
53469-21-9	Aroclor-1242	96	U
12672-29-6	Aroclor-1248	96	U
11097-69-1	Aroclor-1254	190	U
11096-82-5	Aroclor-1260	190	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

1028 EPA SAMPLE NO.

00815

Name: ITAS-KNOXVILLE Contract: FERNALD

ab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4128

Sample wt/vol: 29.5 (g/mL) G Lab File ID:

evel: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 18 dec. Date Extracted: 04/03/90

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/06/90

GPC Cleanup: (Y/N) N pH: 7.7 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	10	U
319-85-7	beta-BHC	10	U
319-86-8	delta-BHC	10	U
58-89-9	gamma-BHC (Lindane)	10	U
76-44-8	Heptachlor	10	U
309-00-2	Aldrin	10	U
1024-57-3	Heptachlor epoxide	10	U
959-98-8	Endosulfan I	10	U
60-57-1	Dieldrin	20	U
72-55-9	4,4'-DDE	20	U
72-20-8	Endrin	20	U
33213-65-9	Endosulfan II	20	U
72-54-8	4,4'-DDD	20	U
1031-07-8	Endosulfan sulfate	20	U
50-29-3	4,4'-DDT	20	U
72-43-5	Methoxychlor	100	U
53494-70-5	Endrin ketone	20	U
5103-71-9	alpha-Chlordane	100	U
5103-74-2	gamma-Chlordane	100	U
8001-35-2	Toxaphene	200	U
12674-11-2	Aroclor-1016	100	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	100	U
53469-21-9	Aroclor-1242	100	U
12672-29-6	Aroclor-1248	100	U
11097-69-1	Aroclor-1254	200	U
11096-82-5	Aroclor-1260	200	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00816

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4127

Sample wt/vol: 29.2 (g/mL) G Lab File ID:

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 21 dec. Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/06/90

GPC Cleanup: (Y/N) N pH: 7.9 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	10	U
319-85-7	beta-BHC	10	U
319-86-8	delta-BHC	10	U
58-89-9	gamma-BHC (Lindane)	10	U
76-44-8	Heptachlor	10	U
309-00-2	Aldrin	10	U
1024-57-3	Heptachlor epoxide	10	U
959-98-8	Endosulfan I	10	U
60-57-1	Dieldrin	21	U
72-55-9	4,4'-DDE	21	U
72-20-8	Endrin	21	U
33213-65-9	Endosulfan II	21	U
72-54-8	4,4'-DDD	21	U
1031-07-8	Endosulfan sulfate	21	U
50-29-3	4,4'-DDT	21	U
72-43-5	Methoxychlor	100	U
53494-70-5	Endrin ketone	21	U
5103-71-9	alpha-Chlordane	100	U
5103-74-2	gamma-Chlordane	100	U
8001-35-2	Toxaphene	210	U
12674-11-2	Aroclor-1016	100	U
11104-28-2	Aroclor-1221	100	U
11141-16-5	Aroclor-1232	100	U
53469-21-9	Aroclor-1242	100	U
12672-29-6	Aroclor-1248	100	U
11097-69-1	Aroclor-1254	210	U
11096-82-5	Aroclor-1260	210	U

04/09/90 gy

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

1028

EPA SAMPLE NO.

00817

Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4125

Sample wt/vol: 29.1 (g/mL) G Lab File ID:

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 15 dec. Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/06/90

GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	9.7	U
319-85-7	beta-BHC	9.7	U
319-86-8	delta-BHC	9.7	U
58-89-9	gamma-BHC (Lindane)	9.7	U
76-44-8	Heptachlor	9.7	U
309-00-2	Aldrin	9.7	U
1024-57-3	Heptachlor epoxide	9.7	U
959-98-8	Endosulfan I	9.7	U
60-57-1	Dieldrin	19	U
72-55-9	4,4'-DDE	19	U
72-20-8	Endrin	19	U
33213-65-9	Endosulfan II	19	U
72-54-8	4,4'-DDD	19	U
1031-07-8	Endosulfan sulfate	19	U
50-29-3	4,4'-DDT	19	U
72-43-5	Methoxychlor	97	U
53494-70-5	Endrin ketone	19	U
5103-71-9	alpha-Chlordane	97	U
5103-74-2	gamma-Chlordane	97	U
8001-35-2	Toxaphene	190	U
12674-11-2	Aroclor-1016	97	U
11104-28-2	Aroclor-1221	97	U
11141-16-5	Aroclor-1232	97	U
53469-21-9	Aroclor-1242	97	U
12672-29-6	Aroclor-1248	97	U
11097-69-1	Aroclor-1254	190	U
11096-82-5	Aroclor-1260	190	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00818

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) WATER Lab Sample ID: MM4111

Sample wt/vol: 1000 (g/mL) ML Lab File ID:

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/02/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/06/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

04/09/90 gr

2B
SOIL VOLATILE SURROGATE RECOVERY F028

I-- Name: ITAS-OAK RIDGE Contract: FERNALD

Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	00810	108	97	98	0	0
02	00811	113	100	109	0	0
03	00812	115	95	98	0	0
04	00813	111	95	94	0	0
05	00814	112	97	95	0	0
06	00815	111	92	109	0	0
07	00816	106	91	92	0	0
08	00817	114	98	103	0	0
09	00818	108	108	103	0	0
10	00810MS	113	95	97	0	0
11	00810MSD	116	93	100	0	0
12	VBLK1	102	102	98	0	0
13	VBLK2	104	106	96	0	0

		QC LIMITS
S1 (TOL)	= Toluene-d8	(81-117)
S2 (BFB)	= Bromofluorobenzene	(74-121)
S3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

04-09-90

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

00001

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

ab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	00818	90	87	106	39	49	54	0	0
02	SBLK1	91	97	106	41	68	104	0	0

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl	(33-141)
S4 (PHL)	= Phenol-d5	(10-94)
S5 (2FP)	= 2-Fluorophenol	(21-100)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

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

MS 04.10.0

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY **1028** 00002

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	00810	39	53	92	43	43	64	0	0
02	00811	45	64	85	50	48	82	0	0
03	00812	47	69	98	55	54	93	0	0
04	00813	37	48	91	38	40	71	0	0
05	00814	45	64	82	49	52	78	0	0
06	00815	46	63	90	51	51	87	0	0
07	00816	45	67	85	50	52	82	0	0
08	00817	46	64	91	49	50	91	0	0
09	00810MS	23	34	91	27	23 *	65	0	1
10	00810MSD	24	37	92	28	26	73	0	0
11	SBLK2	30	34	101	28	27	40	0	0

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(23-120)
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)
S3 (TPH)	= Terphenyl	(18-137)
S4 (PHL)	= Phenol-d5	(24-113)
S5 (2FP)	= 2-Fluorophenol	(25-121)
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)

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

MDS 09.10.90

2E
WATER PESTICIDE SURROGATE RECOVERY

Lab Name: ITAS-KNOXVILLE Contract: FERNALD 00001

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

	EPA SAMPLE NO.	S1 (DBC)#	OTHER
01	00818	98	0
02	PBLK2	95	0

ADVISORY QC LIMITS

S1 (DBC) = Dibutlychlorendate (24-154)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II PEST-1

04/09/90
1/87 Rev.

2F

SOIL PESTICIDE SURROGATE RECOVERY

F028

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (DBC)#	OTHER
01	00810	97	0
02	00810DL	88	0
03	00810MS	82	0
04	00810MSD	88	0
05	00811	154 *	0
06	00812	102	0
07	00813	88	0
08	00814	107	0
09	00815	104	0
10	00816	86	0
11	00817	103	0
12	PBLK1	100	0

ADVISORY QC LIMITS

S1 (DBC) = Dibutlychlorendate (20-150)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II PEST-2

04/09/90
1/87 Rev.

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ VG 4/18/90 Fernald

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

SOW No.: 788__

EPA Sample No.	Lab Sample ID.
__00810___	MM_4130___
__00810_D_	MM_4131_D_
__00810_S_	MM_4132_S_
__00811___	MM_4134___
__00812___	MM_4136___
__00813___	MM_4133___
__00814___	MM_4139___
__00815___	MM_4138___
__00816___	MM_4137___
__00817___	MM_4135___
__00818___	MM_4118___

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No NO_
If yes - were raw data generated before application of background corrections ? Yes/No

Comments:

Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: [signature]

Date: 4/18/90

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00810

Lab Name: ITAS_OAK_RIDGE Contract: ~~BECHTEL~~ Fernald JG 4/16/90

Lab Code: ITMWL Case No.: 35888 SAS No.: _____ SDG No.: 00810

Matrix (soil/water): SOIL Lab Sample ID: MM 4130

Level (low/med): _____ Date Received: 03/30/90

% Solids: 86.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8750			P
7440-36-0	Antimony	6.8	U	N	P
7440-38-2	Arsenic	7.4			F
7440-39-3	Barium	75.8			P
7440-41-7	Beryllium	1.2			P
7440-43-9	Cadmium	4.0			P
7440-70-2	Calcium	34500		*	P
7440-47-3	Chromium	22.9		*	P
7440-48-4	Cobalt	13.7			P
7440-50-8	Copper	19.2			P
7439-89-6	Iron	20800			P
7439-92-1	Lead	16.1			F
7439-95-4	Magnesium	14700		*	P
7439-96-5	Manganese	622			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	38.8			P
7440-09-7	Potassium	1000	B		A
7782-49-2	Selenium	0.41	U	EN	F
7440-22-4	Silver	2.7		*	P
7440-23-5	Sodium	102	B		P
7440-28-0	Thallium	0.41	U		F
7440-62-2	Vanadium	21.2			P
7440-66-6	Zinc	69.4		E	P
	Cyanide	0.58	U		AS
	Molybdenum	3.1			P

SJC 4/12/90

Color Before: BROWN Clarity Before: N/A Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: YES

Comments:
ARTIFACTS INCLUDE ROCKS AND ROOTS

FORM I - IN 7/87

4/1/90

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00811

Lab Name: ITAS_OAK_RIDGE Contract: ~~BECHTEL~~ Fernald YL 4/18/90

Lab Code: ITMWL Case No.: 35888 SAS No.: _____ SDG No.: 00810

Matrix (soil/water): SOIL Lab Sample ID: MM 4134

Level (low/med): _____ Date Received: 03/30/90

% Solids: 84.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9100			P
7440-36-0	Antimony	5.2	U	N	P
7440-38-2	Arsenic	9.3			F
7440-39-3	Barium	71.1			P
7440-41-7	Beryllium	1.2			P
7440-43-9	Cadmium	3.7			P
7440-70-2	Calcium	25700		*	P
7440-47-3	Chromium	20.2		*	P
7440-48-4	Cobalt	13.6			P
7440-50-8	Copper	19.7			P
7439-89-6	Iron	21300			P
7439-92-1	Lead	19.0			F
7439-95-4	Magnesium	10900		*	P
7439-96-5	Manganese	638			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	35.2			P
7440-09-7	Potassium	1140			A
7782-49-2	Selenium	0.44	U	EN	F
7440-22-4	Silver	2.2		*	P
7440-23-5	Sodium	152	B		P
7440-28-0	Thallium	0.44	U		F
7440-62-2	Vanadium	19.7			P
7440-66-6	Zinc	90.4		E	P
	Cyanide	0.59	U		AS
	Molybdenum	1.7	U		P

Color Before: BROWN Clarity Before: N/A Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: YES

Comments:
ARTIFACTS_INCLUDE_ROCKS

FORM I - IN 7/87

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00812

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Matrix (soil/water): SOIL_ Lab Sample ID: MM 4136___

Level (low/med): _____ Date Received: 03/30/90

% Solids: _87.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4520			P
7440-36-0	Antimony	5.6	U	N	P
7440-38-2	Arsenic	4.9			F
7440-39-3	Barium	30.9	B		P
7440-41-7	Beryllium	1.0			P
7440-43-9	Cadmium	3.8			P
7440-70-2	Calcium	105000		*	P
7440-47-3	Chromium	19.9		*	P
7440-48-4	Cobalt	7.7	B		P
7440-50-8	Copper	9.5			P
7439-89-6	Iron	9250			P
7439-92-1	Lead	11.8			F
7439-95-4	Magnesium	26600		*	P
7439-96-5	Manganese	335			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	26.1			P
7440-09-7	Potassium	527	B		A
7782-49-2	Selenium	0.38	U	WN	F
7440-22-4	Silver	1.9	U	*	P
7440-23-5	Sodium	112	B		P
7440-28-0	Thallium	0.38	U		F
7440-62-2	Vanadium	20.9			P
7440-66-6	Zinc	43.1		E	P
	Cyanide	0.57	U		AS
	Molybdenum	1.9	U		P

Color Before: BROWN____ Clarity Before: N/A___ Texture: MEDIUM

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: YES

Comments:
ARTIFACTS_INCLUDE_ROCKS

FORM I - IN 7/87

U.S. EPA - CLP

1028

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00813

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 4/12/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Matrix (soil/water): SOIL_ Lab Sample ID: MM 4133___

Level (low/med): _____ Date Received: 03/30/90

% Solids: _87.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4140			P
7440-36-0	Antimony	4.7	U	N	P
7440-38-2	Arsenic	8.3			F
7440-39-3	Barium	40.1			P
7440-41-7	Beryllium	0.95			P
7440-43-9	Cadmium	3.5			P
7440-70-2	Calcium	39800		*	P
7440-47-3	Chromium	16.2		*	P
7440-48-4	Cobalt	8.4			P
7440-50-8	Copper	12.1			P
7439-89-6	Iron	11800			P
7439-92-1	Lead	14.1			F
7439-95-4	Magnesium	17700		*	P
7439-96-5	Manganese	363			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	28.7			P
7440-09-7	Potassium	461	B		A
7782-49-2	Selenium	0.46	U	WN	F
7440-22-4	Silver	1.8		*	P
7440-23-5	Sodium	77.6	B		P
7440-28-0	Thallium	0.46	U		F
7440-62-2	Vanadium	15.6			P
7440-66-6	Zinc	41.8		E	P
	Cyanide	0.57	U		AS
	Molybdenum	2.9			P

Color Before: BROWN____ Clarity Before: N/A___ Texture: COARSE

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: YES

Comments:
ARTIFACTS_INCLUDE_ROCKS_AND_ROOTS

FORM I - IN 7/87

4/12/90

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00814

Lab Name: ITAS_OAK_RIDGE Contract: ~~BECHTEL~~ Fernald 4/18/90 UG

Lab Code: ITMWL Case No.: 35888 SAS No.: _____ SDG No.: 00810

Matrix (soil/water): SOIL Lab Sample ID: MM 4139

Level (low/med): _____ Date Received: 03/30/90

% Solids: 85.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7430			P
7440-36-0	Antimony	5.5	U	N	P
7440-38-2	Arsenic	5.2			F
7440-39-3	Barium	72.7			P
7440-41-7	Beryllium	0.77	B		P
7440-43-9	Cadmium	1.9			P
7440-70-2	Calcium	2890		*	P
7440-47-3	Chromium	10.5		*	P
7440-48-4	Cobalt	12.9			P
7440-50-8	Copper	20.4			P
7439-89-6	Iron	19400			P
7439-92-1	Lead	16.[illegible]			F
7439-95-4	Magnesium	2240[illegible]		*	P
7439-96-5	Manganese	691			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	32.4			P
7440-09-7	Potassium	906	B		A
7782-49-2	Selenium	0.40	U	WN	F
7440-22-4	Silver	1.8	U	*	P
7440-23-5	Sodium	37.3	B		P
7440-28-0	Thallium	0.40	U		F
7440-62-2	Vanadium	13.2			P
7440-66-6	Zinc	69.1		E	P
	Cyanide	0.58	U		AS
	Molybdenum	1.8	U		P

sec 4/12/90

Color Before: DRK_BROWN Clarity Before: N/A Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: YES

Comments:
ARTIFACTS_INCLUDE_ROCKS

FORM I - IN 7/87

U.S. EPA - CLP

1028

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00815

Lab Name: ITAS_OAK_RIDGE Contract: ~~BECHTEL~~ Fernald VG 4/18/90

Lab Code: ITMWL Case No.: 35888 SAS No.: _____ SDG No.: 00810

Matrix (soil/water): SOIL Lab Sample ID: MM 4138

Level (low/med): _____ Date Received: 03/30/90

% Solids: 81.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10400			P
7440-36-0	Antimony	6.4	U	N	P
7440-38-2	Arsenic	0.40	U		F
7440-39-3	Barium	85.0			P
7440-41-7	Beryllium	1.0	B		P
7440-43-9	Cadmium	3.8			P
7440-70-2	Calcium	16500		*	P
7440-47-3	Chromium	17.9		*	P
7440-48-4	Cobalt	14.9			P
7440-50-8	Copper	22.2			P
7439-89-6	Iron	25000			P
7439-92-1	Lead	16.3			F
7439-95-4	Magnesium	10300		*	P
7439-96-5	Manganese	803			P
7439-97-6	Mercury	0.11			CV
7440-02-0	Nickel	48.9			P
7440-09-7	Potassium	1430			A
7782-49-2	Selenium	0.40	U	WN	F
7440-22-4	Silver	2.1	U	*	P
7440-23-5	Sodium	65.6	B		P
7440-28-0	Thallium	0.40	U		F
7440-62-2	Vanadium	20.6			P
7440-66-6	Zinc	79.3		E	P
	Cyanide	0.61	U		AS
	Molybdenum	2.1	U		P

Atc 4/12/90

Color Before: BROWN Clarity Before: N/A Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: ____

Comments:

FORM I - IN 7/87

4/12/90

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00816

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 4/18/90 UG

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Matrix (soil/water): SOIL_ Lab Sample ID: MM 4137___

Level (low/med): _____ Date Received: 03/30/90

% Solids: _79.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11900			P
7440-36-0	Antimony	5.5	U	N	P
7440-38-2	Arsenic	9.3			F
7440-39-3	Barium	111			P
7440-41-7	Beryllium	1.3			P
7440-43-9	Cadmium	4.2			P
7440-70-2	Calcium	26000		*	P
7440-47-3	Chromium	23.7		*	P
7440-48-4	Cobalt	15.5			P
7440-50-8	Copper	27.2			P
7439-89-6	Iron	26800			P
7439-92-1	Lead	0.37	U		F
7439-95-4	Magnesium	13800		*	P
7439-96-5	Manganese	739			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	40.8			P
7440-09-7	Potassium	1710			A
7782-49-2	Selenium	0.37	U	WN	F
7440-22-4	Silver	1.8		*	P
7440-23-5	Sodium	67.3	B		P
7440-28-0	Thallium	0.37	U		F
7440-62-2	Vanadium	23.8			P
7440-66-6	Zinc	96.5		E	P
	Cyanide	0.63	U		AS
	Molybdenum	1.8	U		P

ASC 4/12/90

Color Before: GREY/BROW Clarity Before: N/A___ Texture: MEDIUM

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: YES

Comments:
ARTIFACTS_INCLUDE_ROOTS

FORM I - IN 7/87

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00817

Lab Name: ITAS_OAK_RIDGE Contract: ~~BECHTEL~~ Fernald VG 4/18/90

Lab Code: ITMWL Case No.: 35888 SAS No.: _____ SDG No.: 00810

Matrix (soil/water): SOIL Lab Sample ID: MM 4135

Level (low/med): _____ Date Received: 03/30/90

% Solids: 85.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7530			P
7440-36-0	Antimony	6.8	U	N	P
7440-38-2	Arsenic	9.2			F
7440-39-3	Barium	70.2			P
7440-41-7	Beryllium	0.94	B		P
7440-43-9	Cadmium	2.6			P
7440-70-2	Calcium	11000		*	P
7440-47-3	Chromium	13.6		*	P
7440-48-4	Cobalt	12.3			P
7440-50-8	Copper	21.2			P
7439-89-6	Iron	20800			P
7439-92-1	Lead	27.8			F
7439-95-4	Magnesium	5540		*	P
7439-96-5	Manganese	617			P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	51.1			P
7440-09-7	Potassium	783	B		A
7782-49-2	Selenium	0.42	U	EN	F
7440-22-4	Silver	2.3	U	*	P
7440-23-5	Sodium	98.6	B		P
7440-28-0	Thallium	0.42	U		F
7440-62-2	Vanadium	15.8			P
7440-66-6	Zinc	71.7		E	P
	Cyanide	0.59	U		AS
	Molybdenum	2.3	U		P

ALC 4/12/90

Color Before: BROWN Clarity Before: N/A Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: YES

Comments:
ARTIFACTS_INCLUDE_ROCKS_AND_ROOTS

4/12/90

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix Spike - EPA Sample No.: 00810 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	58.1	0	58.6	101	59-172
Trichloroethene	58.1	0	54.7	94	62-137
Benzene	58.1	0	64.7	111	66-142
Toluene	58.1	2.33	60.0	99	59-139
Chlorobenzene	58.1	0	58.5	101	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	58.1	56.7	98	3	22	59-172
Trichloroethene	58.1	54.5	94	0	24	62-137
Benzene	58.1	64.4	111	0	21	66-142
Toluene	58.1	61.2	101	-2	21	59-139
Chlorobenzene	58.1	59.7	103	-2	21	60-133

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: 0 out of 10 outside limits

COMMENTS: CLP,35888,00810,00810,LOW,SOIL,MM4140,VOA,EPA,
INST: OWA1 ANALYST: MAS

04-09-91

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

102

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix Spike - EPA Sample No.: 00810 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	7860	0	2300	29	26- 90
2-Chlorophenol	7860	0	2630	33	25-102
1,4-Dichlorobenzene	3930	0	873	22 *	28 104
N-Nitroso-di-n-prop.(1)	3930	0	1220	31 *	41 126
1,2,4-Trichlorobenzene	3930	0	1140	29 *	38 107
4-Chloro-3-methylphenol	7860	0	4320	55	26 103
Acenaphthene	3930	0	1630	41	31-137
4-Nitrophenol	7860	0	7310	93	11-114
2,4-Dinitrotoluene	3930	0	2170	55	28- 89
Pentachlorophenol	7860	0	7430	95	17-109
Pyrene	3930	0	3970	101	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	8020	2390	30	-3	35	26- 90
2-Chlorophenol	8020	2700	34	-3	50	25-102
1,4-Dichlorobenzene	4010	979	24 *	-9	27	28 104
N-Nitroso-di-n-prop.(1)	4010	1230	31 *	0	38	41 126
1,2,4-Trichlorobenzene	4010	1220	30 *	-3	23	38 107
4-Chloro-3-methylphenol	8020	4570	57	-4	33	26 103
Acenaphthene	4010	1710	43	-5	19	31-137
4-Nitrophenol	8020	7380	92	1	50	11-114
2,4-Dinitrotoluene	4010	2130	53	4	47	28- 89
Pentachlorophenol	8020	8620	108	-13	47	17-109
Pyrene	4010	4050	101	0	36	35-142

(1) N-Nitroso-di-n-propylamine

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: 6 out of 22 outside limits

NAS 04.10.90

COMMENTS: CLP,35888,00810,00810,LOW,SOIL,MM4120,BNA,EPA,
INSTR.TRIO2 , COLUMN : EPA CLP SOW 7/87,1.0 UL INJ.

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix Spike - EPA Sample No.: 00810DL Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
gamma-BHC (Lindane)	31.4	0	14.5	46	46-127
Heptachlor	31.4	0	19.7	63	35-130
Aldrin	31.4	0	26.7	85	34-132
Dieldrin	78.5	0	68.1	87	31-134
Endrin	78.5	0	84.8	108	42-139
4,4'-DDT	78.5	0	63.7	81	23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
gamma-BHC (Lindane)	32.1	15.8	49	-6	50	46-1
Heptachlor	32.1	20.6	64	-2	31	35-130
Aldrin	32.1	26.8	83	2	43	34-132
Dieldrin	80.2	57.1	71	20	38	31-134
Endrin	80.2	57.1	71	41	45	42-139
4,4'-DDT	80.2	56.5	70	15	50	23-134

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

* Values outside of QC limits

RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS:

04/09/90 8

FORM III PEST-2

8/87 Rev.

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Lab File ID: VBA0404 Lab Sample ID: VBA0404

Date Analyzed: 04/04/90 Time Analyzed: 1119

Matrix: (soil/water) SOIL Level:(low/med) LOW

Instrument ID: OWA1

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	00810	MM4140	MM4140	1320
02	00811	MM4144	MM4144	1828
03	00813	MM4143	MM4143	1546
04	00818	MM4117	MM4117	1221
05	00810MS	MM4141	MM4141	1657
06	00810MSD	MM4142	MM4142	1737

COMMENTS: CLP,,,VBLK,LOW,SOIL,VBA0404,VOA,BLANK,
INST: OWA1 ANALYST: MAS

04-09-90

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: N.A. SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: VBA0404

Sample wt/vol: 5.0 (g/mL) G Lab File ID: VBA0404

Level: (low/med) LOW Date Received:

% Moisture: not dec. Date Analyzed: 04/04/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	9	J
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
	Total Xylenes	5	U

04-09-90

FORM I VOA 1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

1028

EPA SAMPLE NO.

VBLK1

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: N.A. SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: VBA0404

Sample wt/vol: 5.0 (g/mL) G Lab File ID: VBA0404

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 04/04/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 1066-40-6	SILANOL, TRIMETHYL-	13.97	5.0	J

04-09-90

FORM I VOA-TIC

1/87 Rev.

EPA SAMPLE NO.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

VBLK2

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: N.A. SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: VBA0405

Sample wt/vol: 5.0 (g/mL) G Lab File ID: VBA0405

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 04/05/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

04-09-90

FORM I VOA-TIC 1/87 Rev.

4B
SEMIVOLATILE METHOD BLANK SUMMARY

b Name: ITAS-OAK RIDGE Contract: FERNALD

.o Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Lab File ID: Q1625 Lab Sample ID: Q1625

ate Extracted: 04/03/90 Extraction:(SepF/Cont/Sonc) SEPF

ate Analyzed: 04/04/90 Time Analyzed: 1925

matrix: (soil/water) WATER Level:(low/med) LOW

nstrument ID: TRIO2

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	00818	MM4108	MM4108	04/04/90

OMMENTS: CLP,,,SBLK1,LOW,WATER,Q1625,BNA,BLANK,9,BNA,EPA,
INSTR.TRIO2 , COLUMN : EPA CLP SOW 7/87,1.0 UL INJ.

MJS 04.10.90

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK1

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) WATER Lab Sample ID: Q1625

Sample wt/vol: 1000 (g/mL) ML Lab File ID: Q1625

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/04/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.

SBLK1

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA MWS 04-10-90 SDG No.: 00810

Matrix: (soil/water) WATER Lab Sample ID: Q1625

Sample wt/vol: 1000 (g/mL) ML Lab File ID: Q1625

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/04/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

MWS 04-10-90

FORM I SV-2 1/87 Rev.

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SBLK1

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA MS 04-10-90 SDG No.: 00810

Matrix: (soil/water) WATER Lab Sample ID: Q1625

Sample wt/vol: 1000 (g/mL) ML Lab File ID: Q1625

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/04/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.08	50	AJ

MS 04-10-90

4B
SEMIVOLATILE METHOD BLANK SUMMARY **1028** 00005

Name: ITAS-OAK RIDGE Contract: FERNALD

Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Lab File ID: Q1626 Lab Sample ID: Q1626

Date Extracted: 04/03/90 Extraction:(SepF/Cont/Sonc) SONC

Date Analyzed: 04/05/90 Time Analyzed: 1155

Matrix: (soil/water) SOIL Level:(low/med) LOW

Instrument ID: TRIO2

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	00810	MM4120	MM4120	04/05/90
02	00811	MM4124	MM4124	04/05/90
03	00812	MM4126	MM4126	04/05/90
04	00813	MM4123	MM4123	04/05/90
05	00814	MM4129	MM4129	04/05/90
06	00815	MM4128	MM4128	04/05/90
07	00816	MM4127	MM4127	04/05/90
08	00817	MM4125	MM4125	04/05/90
09	00810MS	MM4121	MM4121	04/05/90
10	00810MSD	MM4122	MM4122	04/05/90

COMMENTS: CLP,,,SBLK1,LOW,SOIL,Q1626,BNA,BLANK,
INSTR.TRIO2 , COLUMN : EPA CLP SOW 7/87,1.0 UL INJ.

NWS 04.10.90

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK2

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: Q1626

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q1626

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl Alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)Ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic Acid	1600	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1600	U
131-11-3	Dimethyl Phthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

1028 EPA SAMPLE NO.

SBLK2

Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA MWS 04-10-90 SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: Q1626

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q1626

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1600	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-Methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

MWS 04-10-90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLK2

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA MWS 09.10.90 SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: Q1626

Sample wt/vol: 30.0 (g/mL) G Lab File ID: Q1626

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.00

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	6.07	230	AJ
2.	UNK HYDROXY PENTANONE	5.58	12	AJ
3. 57-15-8	2-PROPANOL, 1,1,1-TRICHLORO-	8.44	8.9	J
4.	UNK HYDROXY PENTANONE	6.33	8.7	AJ

MWS 09.10.90

4C

PESTICIDE METHOD BLANK SUMMARY

1028

00005

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Lab Sample ID: Q1626 Lab File ID:

Matrix:(soil/water) SOIL Level:(low/med) LOW

Date Extracted: 04/03/90 Extraction:(SepF/Cont/Sonc) SONC

Date Analyzed (1): 04/05/90 Date Analyzed (2): 04/06/90

Time Analyzed (1): 1650 Time Analyzed (2): 1455

Instrument ID (1): HP3-A Instrument ID (2): SH1-A

GC Column ID (1): 3 OV-1 GC Column ID (2): 22502401

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	00810	MM4120	04/05/90	
02	00810DL	MM4120-4	04/05/90	
03	00810MS	MM4121-4	04/05/90	04/06/90
04	00810MSD	MM4122-4	04/05/90	04/06/90
05	00811	MM4124	04/06/90	
06	00812	MM4126	04/06/90	
07	00813	MM4123	04/05/90	
08	00814	MM4129	04/06/90	
09	00815	MM4128	04/06/90	
10	00816	MM4127	04/06/90	
11	00817	MM4125	04/06/90	

COMMENTS:

FORM IV PEST

04/09/90
1/87 Rev.

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK1

Lab Name: ITAS-KNOXVILLE Contract: BECHTEL

Lab Code: IT-MWL Case No.: 35877R SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: Q1626

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

Level: (low/med) LOW Date Received: NA

% Moisture: not dec. 0 dec. Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: ND Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	8.0	U
319-85-7	beta-BHC	8.0	U
319-86-8	delta-BHC	8.0	U
58-89-9	gamma-BHC (Lindane)	8.0	U
76-44-8	Heptachlor	8.0	U
309-00-2	Aldrin	8.0	U
1024-57-3	Heptachlor epoxide	8.0	U
959-98-8	Endosulfan I	8.0	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	16	U
72-20-8	Endrin	16	U
33213-65-9	Endosulfan II	16	U
72-54-8	4,4'-DDD	16	U
1031-07-8	Endosulfan sulfate	16	U
50-29-3	4,4'-DDT	16	U
72-43-5	Methoxychlor	80	U
53494-70-5	Endrin ketone	16	U
5103-71-9	alpha-Chlordane	80	U
5103-74-2	gamma-Chlordane	80	U
8001-35-2	Toxaphene	160	U
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	80	U
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	160	U

04/09/90

FORM I PEST

1/87 Rev.

4C

PESTICIDE METHOD BLANK SUMMARY

F028

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Lab Sample ID: Q1624 Lab File ID: _____

Matrix:(soil/water) WATER Level:(low/med) LOW

Date Extracted: 04/02/90 Extraction:(SepF/Cont/Sonc) SEPF

Date Analyzed (1): 04/05/90 Date Analyzed (2): _____

Time Analyzed (1): 2220 Time Analyzed (2): _____

Instrument ID (1): HP3-A Instrument ID (2): _____

GC Column ID (1): 3 OV-1 GC Column ID (2): _____

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

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	00818	MM4111	04/06/90	

COMMENTS:

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK2

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) WATER Lab Sample ID: Q1624

Sample wt/vol: 1000 (g/mL) ML Lab File ID:

Level: (low/med) LOW Date Received: NA

% Moisture: not dec. ____ dec. ____ Date Extracted: 04/02/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: ND Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

04/09/90 jr

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET 1028

EPA SAMPLE NO.

00810MS

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4141

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4141

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 Date Analyzed: 04/04/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	33	B
67-64-1	Acetone	12	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	26	
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	20	B
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	2	J
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	4	J
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

04-09-90

FORM I VOA 1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00810MSD

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4142

Sample wt/vol: 5.0 (g/mL) G Lab File ID: MM4142

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 Date Analyzed: 04/04/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	29	B
67-64-1	Acetone	15	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	5	J
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	34	B
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	5	J
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	2	J
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
	Total Xylenes	6	U

DJW 04-09-90

FORM I VOA 1/87 Rev.

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

1028 00001

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	00818	90	87	106	39	49	54	0	0
02	SBLK1	91	97	106	41	68	104	0	0

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl	(33-141)
S4 (PHL)	= Phenol-d5	(10-94)
S5 (2FP)	= 2-Fluorophenol	(21-100)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

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

LWS 09.10.90

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00810MS

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4121

Sample wt/vol: 29.6 (g/mL) G Lab File ID: MM4121

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	390	U
111-44-4	bis(2-Chloroethyl)Ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
100-51-6	Benzyl Alcohol	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	bis(2-Chloroisopropyl)Ether	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-Di-n-Propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
65-85-0	Benzoic Acid	1900	U
111-91-1	bis(2-Chloroethoxy)Methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-Methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	1900	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	1900	U
131-11-3	Dimethyl Phthalate	390	U
208-96-8	Acenaphthylene	390	U
606-20-2	2,6-Dinitrotoluene	390	U

MAS 12.10.90

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

1028 EPA SAMPLE NO.

00810MS

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4121

Sample wt/vol: 29.6 (g/mL) G Lab File ID: MM4121

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1900	U
83-32-9	Acenaphthene	390	U
51-28-5	2,4-Dinitrophenol	1900	U
100-02-7	4-Nitrophenol	1900	U
132-64-9	Dibenzofuran	390	U
121-14-2	2,4-Dinitrotoluene	390	U
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	1900	U
534-52-1	4,6-Dinitro-2-Methylphenol	1900	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	1900	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
84-74-2	Di-n-Butylphthalate	390	U
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	770	U
56-55-3	Benzo(a)Anthracene	390	U
218-01-9	Chrysene	390	U
117-81-7	bis(2-Ethylhexyl)Phthalate	390	U
117-84-0	Di-n-Octyl Phthalate	390	U
205-99-2	Benzo(b)Fluoranthene	390	U
207-08-9	Benzo(k)Fluoranthene	390	U
50-32-8	Benzo(a)Pyrene	390	U
193-39-5	Indeno(1,2,3-cd)Pyrene	390	U
53-70-3	Dibenz(a,h)Anthracene	390	U
191-24-2	Benzo(g,h,i)Perylene	390	U

(1) - Cannot be separated from Diphenylamine

MS 04-10-90

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00810MSD

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4122

Sample wt/vol: 29.0 (g/mL) G Lab File ID: MM4122

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
100-51-6	Benzyl Alcohol	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	bis(2-Chloroisopropyl)Ether	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-Di-n-Propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
65-85-0	Benzoic Acid	1900	U
111-91-1	bis(2-Chloroethoxy)Methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	1900	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	1900	U
131-11-3	Dimethyl Phthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U

MS 24.10.50

1028

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00810MSD

Lab Name: ITAS-OAK RIDGE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4122

Sample wt/vol: 29.0 (g/mL) G Lab File ID: MM4122

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1900	U
83-32-9	Acenaphthene	400	U
51-28-5	2,4-Dinitrophenol	1900	U
100-02-7	4-Nitrophenol	1900	U
132-64-9	Dibenzofuran	400	U
121-14-2	2,4-Dinitrotoluene	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	1900	U
534-52-1	4,6-Dinitro-2-Methylphenol	1900	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenyl-phenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	1900	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
84-74-2	Di-n-Butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	790	U
56-55-3	Benzo(a)Anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)Phthalate	400	U
117-84-0	Di-n-Octyl Phthalate	400	U
205-99-2	Benzo(b)Fluoranthene	400	U
207-08-9	Benzo(k)Fluoranthene	400	U
50-32-8	Benzo(a)Pyrene	400	U
193-39-5	Indeno(1,2,3-cd)Pyrene	400	U
53-70-3	Dibenz(a,h)Anthracene	400	U
191-24-2	Benzo(g,h,i)Perylene	400	U

(1) - Cannot be separated from Diphenylamine

MJS 04-10-90

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00810MS

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4121-4

Sample wt/vol: 29.6 (g/mL) G Lab File ID:

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 4.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	38	U
319-85-7	beta-BHC	38	U
319-86-8	delta-BHC	38	U
58-89-9	gamma-BHC (Lindane)	38	U
76-44-8	Heptachlor	38	U
309-00-2	Aldrin	38	U
1024-57-3	Heptachlor epoxide	38	U
959-98-8	Endosulfan I	38	U
60-57-1	Dieldrin	75	U
72-55-9	4,4'-DDE	75	U
72-20-8	Endrin	75	U
33213-65-9	Endosulfan II	75	U
72-54-8	4,4'-DDD	75	U
1031-07-8	Endosulfan sulfate	75	U
50-29-3	4,4'-DDT	75	U
72-43-5	Methoxychlor	380	U
53494-70-5	Endrin ketone	75	U
5103-71-9	alpha-Chlordane	380	U
5103-74-2	gamma-Chlordane	380	U
8001-35-2	Toxaphene	750	U
12674-11-2	Aroclor-1016	380	U
11104-28-2	Aroclor-1221	380	U
11141-16-5	Aroclor-1232	380	U
53469-21-9	Aroclor-1242	380	U
12672-29-6	Aroclor-1248	380	U
11097-69-1	Aroclor-1254	750	U
11096-82-5	Aroclor-1260	750	U

04/09/90

FORM I PEST 1/87 Rev.

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

1028 EPA SAMPLE NO.

00810MSD

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 35888 SAS No.: NA SDG No.: 00810

Matrix: (soil/water) SOIL Lab Sample ID: MM4122-4

Sample wt/vol: 29.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 03/30/90

% Moisture: not dec. 14 dec. ____ Date Extracted: 04/03/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 04/05/90

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 4.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	39	U
319-85-7	beta-BHC	39	U
319-86-8	delta-BHC	39	U
58-89-9	gamma-BHC (Lindane)	39	U
76-44-8	Heptachlor	39	U
309-00-2	Aldrin	39	U
1024-57-3	Heptachlor epoxide	39	U
959-98-8	Endosulfan I	39	U
60-57-1	Dieldrin	77	U
72-55-9	4,4'-DDE	77	U
72-20-8	Endrin	77	U
33213-65-9	Endosulfan II	77	U
72-54-8	4,4'-DDD	77	U
1031-07-8	Endosulfan sulfate	77	U
50-29-3	4,4'-DDT	77	U
72-43-5	Methoxychlor	390	U
53494-70-5	Endrin ketone	77	U
5103-71-9	alpha-Chlordane	390	U
5103-74-2	gamma-Chlordane	390	U
8001-35-2	Toxaphene	770	U
12674-11-2	Aroclor-1016	390	U
11104-28-2	Aroclor-1221	390	U
11141-16-5	Aroclor-1232	390	U
53469-21-9	Aroclor-1242	390	U
12672-29-6	Aroclor-1248	390	U
11097-69-1	Aroclor-1254	770	U
11096-82-5	Aroclor-1260	770	U

04/09/90 ✓

FORM I PEST 1/87 Rev.

U.S. EPA - CLP

1028

00010

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

00818

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 4/18/90 VG

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Matrix (soil/water): WATER Lab Sample ID: MM 4118___

Level (low/med): _____ Date Received: 03/30/90

% Solids: ____0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	277			P
7440-36-0	Antimony	30.0	U	N	P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	3.9	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	2.0	U		P
7440-70-2	Calcium	1810	B	*	P
7440-47-3	Chromium	340		*	P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	17.2	B		P
7439-89-6	Iron	60.1	B		P
7439-92-1	Lead	16.7			F
7439-95-4	Magnesium	349	B	*	P
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury	0.66			CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	117	B		A
7782-49-2	Selenium	2.0	U	N	F
7440-22-4	Silver	10.0	U	*	P
7440-23-5	Sodium	440	B		P
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium	10.0	U		P
7440-66-6	Zinc	1650		E	P
	Cyanide	10.0	U		AS
	Molybdenum	10.0	U		P

stc 4/12/90

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: ___

Comments:

FORM I - IN 7/87

A 1 4/12

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald VB 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Initial Calibration Source: NBS_____

Continuing Calibration Source: NBS_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	40000.0	39710.00	99.3	40000.0	39620.00	99.0	38500.00	96.2	P
Antimony	1000.0	976.90	97.7	1000.0	979.80	98.0	1003.00	100.3	P
Arsenic	30.0	32.93	109.8	30.0	32.54	108.5	29.00	96.7	F
Barium	1000.0	965.20	96.5	1000.0	963.00	96.3	942.10	94.2	P
Beryllium	500.0	529.20	105.8	500.0	535.20	107.0	538.90	107.8	P
Cadmium	1000.0	1004.00	100.4	1000.0	1006.00	100.6	993.20	99.3	P
Calcium	40000.0	41370.00	103.4	40000.0	41620.00	104.0	41920.00	104.8	P
Chromium	4000.0	4047.00	101.2	4000.0	4058.00	101.4	4075.00	101.9	P
Cobalt	2000.0	1973.00	98.6	2000.0	1975.00	98.8	1969.00	98.4	P
Copper	4000.0	4088.00	102.2	4000.0	4078.00	102.0	3974.00	99.4	P
Iron	40000.0	39260.00	98.2	40000.0	39360.00	98.4	39500.00	98.8	P
Lead	25.0	26.73	106.9	25.0	27.48	109.9			
Magnesium	40000.0	39860.00	99.6	40000.0	39710.00	99.3	38540.00	96.4	P
Manganese	1000.0	1041.00	104.1	1000.0	1038.00	103.8	1025.00	102.5	P
Mercury	4.0	4.00	100.0	4.0	4.27	106.8	4.11	102.8	CV
Nickel	4000.0	4058.00	101.4	4000.0	4029.00	100.7	3968.00	99.2	P
Potassium	2000.0	2000.00	100.0	2000.0	2091.00	104.6	2001.00	100.0	A
Selenium	25.0	26.81	107.2	25.0	24.51	98.0			F
Silver	1000.0	966.40	96.6	1000.0	949.10	94.9	931.00	93.1	P
Sodium	40000.0	39620.00	99.0	40000.0	39680.00	99.2	38300.00	95.8	P
Thallium	25.0	26.35	105.4	25.0	26.28	105.1	23.87	95.5	F
Vanadium	1000.0	1023.00	102.3	1000.0	1032.00	103.2	1028.00	102.8	P
Zinc	4000.0	4032.00	100.8	4000.0	4041.00	101.0	4106.00	102.6	P
Cyanide	100.0	94.13	94.1	100.0	102.60	102.6	103.14	103.1	AS
Molybdenum	4000.0	4073.00	101.8	4000.0	4096.00	102.4	4116.00	102.9	P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald VG 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Initial Calibration Source: NBS_____

Continuing Calibration Source: NBS_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum				40000.0	40460.00	101.2	39810.00	99.5	P
Antimony				1000.0	983.80	98.4	916.70	91.7	P
Arsenic				30.0	32.91	109.7			F
Barium				1000.0	924.70	92.5	911.60	91.2	P
Beryllium				500.0	532.10	106.4	513.30	102.7	P
Cadmium				1000.0	966.00	96.6	937.40	93.7	P
Calcium				40000.0	42490.00	106.2	40330.00	100.8	P
Chromium				4000.0	4031.00	100.8	3854.00	96.4	P
Cobalt				2000.0	1945.00	97.2	1872.00	93.6	P
Copper				4000.0	4112.00	102.8	4042.00	101.0	P
Iron				40000.0	40720.00	101.8	38830.00	97.1	P
Lead	25.0	25.25	101.0	25.0	23.89	95.6	26.72	106.9	F
Magnesium				40000.0	40920.00	102.3	40360.00	100.9	P
Manganese				1000.0	1031.00	103.1	987.90	98.8	P
Mercury									NR
Nickel				4000.0	3928.00	98.2	3781.00	94.5	P
Potassium				2000.0	2007.00	100.4			A
Selenium	25.0	26.98	107.9	25.0	26.99	108.0	26.28	105.1	F
Silver				1000.0	950.20	95.0	922.30	92.2	P
Sodium				40000.0	42220.00	105.6	42000.00	105.0	P
Thallium				25.0	25.87	103.5	25.21	100.8	F
Vanadium				1000.0	1034.00	103.4	1001.00	100.1	P
Zinc				4000.0	3993.00	99.8	3782.00	94.6	P
Cyanide				100.0	103.43	103.4	105.13	105.1	AS
Molybdenum				4000.0	4111.00	102.8	3902.00	97.6	P

see 4/24

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

4/12/90

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald VG 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Initial Calibration Source: NBS_____

Continuing Calibration Source: NBS_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum				40000.0	40120.00	100.3			P
Antimony				1000.0	927.80	92.8			P
Arsenic	30.0	30.75	102.5	30.0	32.08	106.9			F
Barium				1000.0	913.50	91.4			P
Beryllium				500.0	515.50	103.1			P
Cadmium				1000.0	938.20	93.8			P
Calcium				40000.0	40260.00	100.6			P
Chromium				4000.0	3866.00	96.6			P
Cobalt				2000.0	1873.00	93.6			P
Copper				4000.0	4065.00	101.6			
Iron				40000.0	38900.00	97.2			
Lead	25.0	23.20	92.8	25.0	25.73	102.9	26.75	107.0	F
Magnesium				40000.0	40460.00	101.2			P
Manganese				1000.0	989.40	98.9			P
Mercury									NR
Nickel				4000.0	3794.00	94.8			P
Potassium									NR
Selenium				25.0	26.71	106.8	27.31	109.2	F
Silver				1000.0	922.40	92.2			P
Sodium				40000.0	42020.00	105.0			P
Thallium				25.0	24.40	97.6	24.42	97.7	F
Vanadium				1000.0	999.80	100.0			P
Zinc				4000.0	3765.00	94.1			P
Cyanide									NR
Molybdenum				4000.0	3898.00	97.4			P

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

1028 00014

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 4/18/90 VG

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Initial Calibration Source: NBS_____

Continuing Calibration Source: NBS_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic	30.0	31.45	104.8	30.0	30.86	102.9	31.69	105.6	F
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead	25.0	23.99	96.0	25.0	25.19	100.8	25.36	101.4	F
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium	25.0	26.68	106.7	25.0	25.08	100.3	27.45	109.8	F
Silver									NR
Sodium									NR
Thallium	25.0	24.78	99.1	25.0	27.44	109.8	27.46	109.8	F
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN 7/87

000124

4/18/90

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald UL 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Initial Calibration Source: NBS_____

Continuing Calibration Source: NBS_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									
Copper									
Iron									
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium				25.0	25.27	101.1			F
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

1028

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald UL 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

AA CRDL Standard Source: SPEX_____

ICP CRDL Standard Source: SPEX_____

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	True	Initial Found	%R	Final Found	%R
Aluminum								
Antimony				120.0	140.20	116.8	107.70	89.8
Arsenic	10.0	11.23	112.3					
Barium								
Beryllium				10.0	11.11	111.1	10.13	101.3
Cadmium				10.0	11.98	119.8	8.71	87.1
Calcium								
Chromium				20.0	27.10	135.5	11.81	59.0
Cobalt				100.0	109.30	109.3	92.54	92.5
Copper				50.0	53.43	106.9	49.12	98.2
Iron								
Lead	5.0	5.68	113.6					
Magnesium								
Manganese				30.0	32.18	107.3	29.19	97.3
Mercury								
Nickel				80.0	86.01	107.5	75.28	94.1
Potassium								
Selenium	5.0	5.12	102.4					
Silver				20.0	23.80	119.0	13.82	69.1
Sodium								
Thallium	10.0	10.46	104.6					
Vanadium				100.0	109.10	109.1	98.17	98.2
Zinc				40.0	43.82	109.6	35.76	89.4

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald UG 4/12/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	60.0	U	60.0	U	60.0	U	60.0	U	60.0	U	P
Antimony	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	F
Barium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	P
Cadmium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Calcium	20.0	U	20.0	U	-20.7	B	20.0	U	20.0	U	
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	
Copper	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Lead	2.0	U	2.0	U					-2.4	B	F
Magnesium	60.0	U	60.0	U	60.0	U	60.0	U	60.0	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Mercury	0.2	U	0.2	U	0.2	U			0.2	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	P
Potassium	100.0	U	100.0	U	100.0	U	100.0	U	100.0	U	A
Selenium	2.0	U	2.0	U					2.0	U	F
Silver	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	100.0	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	F
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Zinc	2.0	U	2.0	U	-2.7	B	2.0	U	2.0	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	AS
Molybdenum	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P

3
BLANKS

Lab Name: ITAS_OAK_RIDGE Contract: ~~BECHTEL~~ Fernald 4/18/90 UG

Lab Code: ITMWL Case No.: 35888 SAS No.: _____ SDG No.: 00810

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			60.0	U	60.0	U			60.0	U	P
Antimony			30.0	U	30.0	U			30.0	U	P
Arsenic	2.0	U	2.0	U					2.0	U	F
Barium			2.0	U	2.0	U			2.0	U	P
Beryllium			1.0	U	1.0	U			1.0	U	P
Cadmium			2.0	U	2.0	U			2.0	U	P
Calcium			-30.6	B	-21.5	B			20.0	U	P
Chromium			10.0	U	10.0	U			10.0	U	P
Cobalt			10.0	U	10.0	U			10.0	U	P
Copper			10.0	U	10.0	U			10.0	U	P
Iron			10.0	U	10.0	U			10.0	U	P
Lead	2.0	U	2.0	U	2.0	U			2.0	U	F
Magnesium			60.0	U	60.0	U			60.0	U	P
Manganese			2.0	U	2.0	U			2.0	U	P
Mercury									0.2	U	CV
Nickel			20.0	U	20.0	U			20.0	U	P
Potassium									100.0	U	A
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	F
Silver			10.0	U	10.0	U			10.0	U	P
Sodium			100.0	U	100.0	U			100.0	U	P
Thallium			2.0	U	2.0	U	2.0	U	2.0	U	F
Vanadium			10.0	U	10.0	U			10.0	U	P
Zinc			-3.5	B	-3.1	B			3.5	B	P
Cyanide			10.0	U					10.0	U	AS
Molybdenum			10.0	U	10.0	U			10.0	U	P

AT 4/14

AT 5/12/90

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald UG 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic	2.0	U	2.0	U	2.0	U					F
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											
Chromium											
Cobalt											
Copper											
Iron											NR
Lead	2.0	U	2.0	U	2.0	U					F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium			2.0	U							F
Silver											NR
Sodium											NR
Thallium	2.0	U	2.0	U	2.0	U	2.0	U			F
Vanadium											NR
Zinc											NR
Cyanide											NR

FORM III - IN 7/87

3
BLANKS

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 4/18/90 VG

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead	2.0	U	2.0	U	-3.8	B					F
Magnesium											NR
Manganese											NR
Mercury											NR
Nickel											NR
Potassium											NR
Selenium	2.0	U	2.0	U	2.0	U					F
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide											NR

4/18/90

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald VG 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No: _____ SDG No.: 00810_

ICP ID Number: ICP61_____ ICS Source: SPEX_____

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum	500000	500000	496600	497400.0	99.5	496900	467700.0	93.5
Antimony								
Arsenic								
Barium		500		457.8	91.6		420.2	84.0
Beryllium		500		472.0	94.4		427.0	85.4
Cadmium		1000		935.2	93.5		811.6	81.2
Calcium	500000	500000	513800	518500.0	103.7	487200	458200.0	91.6
Chromium		500		536.5	107.3		460.8	92.2
Cobalt		500		519.7	103.9		449.0	89.8
Copper		500		483.1	96.6		450.5	90.1
Iron	200000	200000	208500	210800.0	105.4	198000	187900.0	94.0
Lead								
Magnesium	500000	500000	476500	479700.0	95.9	481300	455900.0	91.2
Manganese		500		532.4	106.5		471.5	94.3
Mercury								
Nickel		1000		1053.0	105.3		904.9	90.5
Potassium								
Selenium								
Silver		1000		803.6	80.4		837.0	83.7
Sodium								
Thallium								
Vanadium		500		521.0	104.2		471.2	94.2
Zinc		1000		945.4	94.5		811.7	81.2

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

00810

Lab Name: ITAS_OAK_RIDGE Contract: ~~BECHTEL~~ Fernald UG 4/18/90

Lab Code: ITMWL Case No.: 35888 SAS No.: _____ SDG No.: 00810

Matrix (soil/water): SOIL Level (low/med): _____

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	30.3466		6.8399	U	114.0	26.6	N	P
Arsenic	75-125	15.7650		7.4215		8.2	102.2		F
Barium	75-125	468.9922		75.8094		456.0	86.2		P
Beryllium	75-125	13.1988		1.2344		11.4	105.0		P
Cadmium	75-125	14.3342		4.0333		11.4	90.4		P
Calcium									NR
Chromium	75-125	65.6407		22.9138		45.6	93.7		P
Cobalt	75-125	120.0866		13.7095		114.0	93.3		P
Copper	75-125	75.2166		19.2043		57.0	98.3		P
Iron									NR
Lead	75-125	19.7062		16.1404		4.1	87.4		F
Magnesium									NR
Manganese		651.1628		622.2070		114.0	25.4		P
Mercury	75-125	0.5567		0.0969	U	0.5	116.0		CV
Nickel	75-125	154.8564		38.8053		114.0	101.8		P
Potassium									NR
Selenium	75-125	0.4080	U	0.4080	U	2.0	0.0	N	F
Silver	75-125	12.0155		2.7041		11.4	81.7		P
Sodium									NR
Thallium	75-125	11.7503		0.4080	U	10.2	115.2		F
Vanadium	75-125	134.2225		21.1742		114.0	99.2		P
Zinc	75-125	172.5718		69.3798		114.0	90.5		P
Cyanide	75-125	5.5233		0.5814	U	5.8	95.1		AS
Molybdenum	75-125	219.7391		3.0750		227.9	95.1		P

see 4/12/90

Comments:
ARTIFACTS_INCLUDE_ROCKS_AND_ROOTS

4/12/90

U.S. EPA - CLP

5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

00810

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 4/18/90 VG

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Matrix (soil/water): SOIL_ Level (low/med): _____

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony		88.92		30.00	U	120.0	74.1		P
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium		3.72	B	2.00	U	10.0	37.2		F
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									

Comments:

6
DUPLICATES

EPA SAMPLE NO.

00810

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald UG 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Matrix (soil/water): SOIL_ Level (low/med): _____

% Solids for Sample: _86.0 % Solids for Duplicate: _86.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		8748.2900		8344.7332		4.7		P
Antimony	13.7	6.8399	U	6.8399	U			P
Arsenic	2.0	7.4215		7.0624		5.0		F
Barium	45.6	75.8094		76.9038		1.4		P
Beryllium	1.1	1.2344		1.0445	B	16.7		P
Cadmium	1.1	4.0333		3.5363		13.1		P
Calcium		34450.5244		19195.1664		56.9	*	P
Chromium		22.9138		17.8203		25.0	*	P
Cobalt	11.4	13.7095		14.5121		5.7		P
Copper	5.7	19.2043		23.3014		19.3		P
Iron		20782.0337		22822.6174		9.4		P
Lead		16.1404		17.0665		5.6		F
Magnesium		14719.5622		8246.6940		56.4	*	P
Manganese		622.2070		720.2462		14.6		P
Mercury	0.1	0.0969	U	0.0969	U			CV
Nickel	9.1	38.8053		37.1409		4.4		P
Potassium	1140.0	1001.8240	B	22.7998	U	200.0		A
Selenium	1.0	0.4080	U	0.4080	U			F
Silver	2.3	2.7041		2.2800	U	200.0	*	P
Sodium	1140.0	101.7784	B	79.7310	B	24.3		P
Thallium	2.0	0.4080	U	0.4080	U			F
Vanadium	11.4	21.1742		18.1988		15.1		P
Zinc		69.3798		80.3922		14.7		P
Cyanide	0.6	0.5814	U	0.5814	U			AS
Molybdenum		3.0750		2.9950		2.6		P

stc 4/12/90

FORM VI - IN 7/87

4/12/90

7

LABORATORY CONTROL SAMPLE

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 4/18/90 VG

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Solid LCS Source: _____

Aqueous LCS Source: SPEX_____

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum	2000.0	2086.00	104.3						
Antimony	500.0	498.20	99.6						
Arsenic	40.0	47.70	119.2						
Barium	2000.0	1875.00	93.8						
Beryllium	50.0	54.56	109.1						
Cadmium	50.0	48.99	98.0						
Calcium	2000.0	2115.00	105.8						
Chromium	200.0	194.10	97.0						
Cobalt	500.0	487.70	97.5						
Copper	250.0	254.10	101.6						
Iron	1000.0	1023.00	102.3						
Lead	20.0	20.32	101.6						
Magnesium	2000.0	2145.00	107.2						
Manganese	500.0	492.20	98.4						
Mercury									
Nickel	500.0	497.90	99.6						
Potassium	2000.0	1817.00	90.8						
Selenium	10.0	9.53	95.3						
Silver	50.0	42.26	84.5						
Sodium	2000.0	2109.00	105.4						
Thallium	50.0	52.66	105.3						
Vanadium	500.0	513.40	102.7						
Zinc	500.0	506.20	101.2						
Cyanide	100.0	94.79	94.8						
Molybdenum	1000.0	1014.00	101.4						

ASC 4/12/90

7

LABORATORY CONTROL SAMPLE

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald UG 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

Solid LCS Source: _____

Aqueous LCS Source: SPEX_____

LCSS associated with soil samples 4/12/90

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum	2000.0	2085.00	104.2						
Antimony	500.0	525.50	105.1						
Arsenic	40.0	48.75	121.9						
Barium	2000.0	1872.00	93.6						
Beryllium	50.0	53.31	106.6						
Cadmium	50.0	49.54	99.1						
Calcium	2000.0	2190.00	109.5						
Chromium	200.0	205.30	102.6						
Cobalt	500.0	499.80	100.0						
Copper	250.0	249.10	99.6						
Iron	1000.0	1035.00	103.5						
Lead	20.0	19.74	98.7						
Magnesium	2000.0	2095.00	104.8						
Manganese	500.0	501.70	100.3						
Mercury									
Nickel	500.0	515.30	103.1						
Potassium	2000.0	1840.00	92.0						
Selenium	10.0	10.74	107.4						
Silver	50.0	46.15	92.3						
Sodium	2000.0	2003.00	100.2						
Thallium	50.0	50.78	101.6						
Vanadium	500.0	519.60	103.9						
Zinc	500.0	494.20	98.8						
Cyanide	100.0	94.66	94.7						
Molybdenum	1000.0	1050.00	105.0						

ASC 4/12/90

4/13/90

U.S. EPA - CLP

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

00810

Lab Name: ITAS_OAK_RIDGE Contract: ~~BECHTEL~~ Fernald VL 4/18/90

Lab Code: ITMWL Case No.: 35888 SAS No.: _____ SDG No.: 00810

Matrix (soil/water): SOIL Level (low/med): _____

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	38370.00		39940.00		4.1		P
Antimony	30.00	U	150.00	U			NR
Arsenic							F
Barium	332.50		349.85	B	5.2		P
Beryllium	5.41		10.41	B	92.4		P
Cadmium	17.69		23.14	B	30.8		P
Calcium	151100.00		159700.00		5.7		P
Chromium	100.50		150.10		49.4		P
Cobalt	60.13		95.65	B	59.1		P
Copper	84.23		94.20	B	11.8		P
Iron	91150.00		86200.00		5.4		P
Lead							F
Magnesium	64560.00		67550.00		4.6		P
Manganese	2729.00		2924.00		7.1		P
Mercury							CV
Nickel	170.20		206.90		21.6		P
Potassium							A
Selenium							F
Silver	11.86		50.00	U	100.0		P
Sodium	446.40	B	506.50	B	13.5		P
Thallium							F
Vanadium	92.87		115.20	B	24.0		P
Zinc	304.30		382.40		25.7	E	P
Molybdenum	13.49		52.30		288	E	P

sec 4/17/90

THIS PAGE LEFT INTENTIONALLY BLANK

U.S. EPA - CLP

10
HOLDING TIMES

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald VG 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

EPA Sample No.	Matrix	Date Received	Mercury Prep Date	Mercury Holding Time	Cyanide Prep Date	Cyanide Holding Time
00810	SOIL	03/30/90	04/12/90	13	04/03/90	4
00811	SOIL	03/30/90	04/12/90	13	04/04/90	5
00812	SOIL	03/30/90	04/12/90	13	04/04/90	5
00813	SOIL	03/30/90	04/12/90	13	04/03/90	4
00814	SOIL	03/30/90	04/12/90	13	04/04/90	5
00815	SOIL	03/30/90	04/12/90	13	04/04/90	5
00816	SOIL	03/30/90	04/12/90	13	04/04/90	5
00817	SOIL	03/30/90	04/12/90	13	04/04/90	5

FORM X - IN 7/87

U.S. EPA - CLP

1028

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald UG 4114190

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

ICP ID Number: ICP61_____ Date: 12/21/89

Flame AA ID Number : _____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.22		200	60.0	P
Antimony	206.84		60	30.0	P
Arsenic			10		NR
Barium	493.41		200	2.0	P
Beryllium	313.04		5	1.0	P
Cadmium	228.80		5	2.0	P
Calcium	317.93		5000	20.0	P
Chromium	267.72		10	10.0	P
Cobalt	228.62		50	10.0	P
Copper	324.75		25	10.0	P
Iron	259.94		100	10.0	P
Lead			5		NR
Magnesium	279.08		5000	60.0	P
Manganese	257.61		15	2.0	P
Mercury			0.2		NR
Nickel	231.60		40	20.0	P
Potassium			5000		NR
Selenium			5		NR
Silver	328.07		10	10.0	P
Sodium	589.00		5000	100.0	P
Thallium			10		NR
Vanadium	292.40		50	10.0	P
Zinc	213.86		20	2.0	P

Comments:

FORM XI - IN 7/87

U.S. EPA - CLP

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 06 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

ICP ID Number: _____ Date: 12/21/89

Flame AA ID Number : BUCK_400____

Furnace AA ID Number : PEZ1_____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			5		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.65		0.2	0.2	CV
Nickel			40		NR
Potassium			5000		NR
Selenium	196.03	BZ	5	2.0	F
Silver			10		NR
Sodium			5000		NR
Thallium	276.79	BZ	10	2.0	F
Vanadium			50		NR
Zinc			20		NR

Comments:

FORM XI - IN 7/87

U.S. EPA - CLP

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald VG 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

ICP ID Number: _____ Date: 12/21/89

Flame AA ID Number : TJA_____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			5		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40		NR
Potassium	766.50		5000	100.0	A
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR

Comments:

FORM XI - IN 7/87

U.S. EPA - CLP

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald VB 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

ICP ID Number: _____ Date: 12/21/89

Flame AA ID Number : _____

Furnace AA ID Number : PEZ2_____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic	190.70	BZ	10	2.0	F
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead	283.31	BZ	5	2.0	F
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR

Comments:

FORM XI - IN 7/87

U.S. EPA - CLP

12A

ICP INTERELEMENT CORRECTION FACTORS (QUARTERLY)

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald 06 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

ICP ID Number: ICP61_____ Date: 06/21/89

Analyte	Wave-length (nm)	Interelement Correction Factors for : Al	Ca	Fe	Mg	CR
Aluminum	308.22					
Antimony	206.84	0.0033900		0.0006600	0.0000354	0.0126000
Arsenic	189.00					
Barium	493.41					
Beryllium	313.04					
Cadmium	228.80					
Calcium	317.93			0.0002000	0.0001000	
Chromium	267.72		0.0001200	0.0000892	0.0001300	
Cobalt	228.62					
Copper	324.75		0.0000600			
Iron	259.94					
Lead	220.30					
Magnesium	279.08		0.0005000			0.0020000
Manganese	257.61			0.0008000		
Mercury						
Nickel	231.60				0.0004000	
Potassium						
Selenium	196.00					
Silver	328.07		0.0001560			
Sodium	589.00		0.0002000			
Thallium	377.50					
Vanadium	292.40			0.0002200		
Zinc	213.86					

Comments:

FORM XII (PART 1) - IN 7/87

AR 4/12/90

U.S. EPA - CLP

12B
ICP INTERELEMENT CORRECTION FACTORS (QUARTERLY)

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald VG 4/18/91

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

ICP ID Number: ICP61_____ Date: 06/21/89

Analyte	Wave-length (nm)	Interelement Correction Factors for : CU	MN	MO	V_	__
Aluminum	308.22		0.0025000	0.0124000	0.0280000	
Antimony	206.84			0.0110000		
Arsenic	189.00					
Barium	493.41					
Beryllium	313.04					
Cadmium	228.80					
Calcium	317.93					
Chromium	267.72				0.0008600	
Cobalt	228.62					
Copper	324.75					
Iron	259.94		0.0020000			
Lead	220.30					
Magnesium	279.08		0.0032000		0.0020000	
Manganese	257.61					
Mercury						
Nickel	231.60					
Potassium						
Selenium	196.00					
Silver	328.07	0.0002180	0.0001690		0.0004070	
Sodium	589.00					
Thallium	377.50					
Vanadium	292.40					
Zinc	213.86					

Comments:

13
ICP LINEAR RANGES (QUARTERLY)

Lab Name: ITAS_OAK_RIDGE_____ Contract: ~~BECHTEL~~ Fernald VB 4/18/90

Lab Code: ITMWL_ Case No.: 35888 SAS No.: _____ SDG No.: 00810_

ICP ID Number: ICP61_____ Date: 12/21/89

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	M
Aluminum	10.00	400000.0	
Antimony	10.00	2000.0	
Arsenic	10.00	20000.0	
Barium	10.00	6000.0	
Beryllium	10.00	2000.0	
Cadmium	10.00	4000.0	
Calcium	10.00	440000.0	
Chromium	10.00	10000.0	
Cobalt	10.00	4000.0	
Copper	10.00	10000.0	
Iron	10.00	400000.0	
Lead	10.00	20000.0	
Magnesium	10.00	400000.0	
Manganese	10.00	4000.0	
Mercury			NR
Nickel	10.00	10000.0	
Potassium			NR
Selenium	10.00	20000.0	
Silver	10.00	1000.0	
Sodium	10.00	400000.0	
Thallium	10.00	20000.0	
Vanadium	10.00	2000.0	
Zinc	10.00	10000.0	

Comments:

FORM XIII - IN 7/87

AI 1/17/90

I. CASE NARRATIVE

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

C/O ASI Inc.
11030 Hamilton Cleves Road
Ross, OH 45061
Attn: Cindy Capannari

Date: April 26, 1990

Job Number: ADV 35888

P.O Number: Accounts Payable

This is the Certificate of Analysis for the following:

Client Project ID: FMPC RI/FS
Date Received by Lab: 03/30/90
Number of Samples: Nine (9)
Sample Type: Eight (8) soils and One (1) Rinsate

I. INTRODUCTION

On March 30, 1989, nine (9) samples were received at ITAS Oak Ridge, Tennessee laborato from Advanced Sciences Inc., Ross, Ohio. The list of analytical tests performed, as wei as date of receipt and analysis, can be found in the attached report.

Blanks are identified with client sample ID's starting with either "QX..B" or "QX...B.". Data are reported with the qualifier "U" if the compound was analyzed for but not detected. Lists with concentration unit code and lab and client suffix code definitions are attached.

II. ANALYTICAL RESULTS/METHODOLOGY

The analytical results for this report are presented by analytical tests. Each set of data will include sample identification information, the analytical results, and the appropriate detection limits.

Reviewed and Approved:

Mary Hall for Snell Mills

Snell A. Mills III
Laboratory Manager

SAM/mmh

II. ANALYTICAL RESULTS/METHODOLOGY (Continued)

The samples were analyzed for Target Compound List (TCL) volatile compounds using the EPA CLP 10/86 Statement of Work.

The samples were analyzed for TCL semivolatile compounds using the EPA CLP 10/86 Statement of Work.

The samples were analyzed for TCL pesticide/PCB using the EPA CLP 10/86 Statement of Work.

The samples were analyzed for TCL metals and cyanide compounds using the EPA CLP 7/87 Statement of Work.

III. Quality Control

The matrix spike (MS) and matrix spike duplicate (MSD) for the organic analyses were performed on sample 00810.

The sample was analyzed for volatile organics on 04/04/90 and 04/05/90. The sample runs proceeded well. All surrogates and internal standards were within QC required limits. The MS/MSD percent recoveries were all within QC limits. There were no problems, QC or otherwise, seen in the final data review.

The sample was extracted on 04/03/90 and analyzed for semivolatile organics on 04/04/90 and 04/05/90. The analyses proceeded well with one surrogate on sample 00810MS below QC limits but within CLP protocol. All internal standards within QC required limits. The MS/MSD showed 1,4-Dichlorobenzene, N-Nitroso-di-n-propylamine and 1,2,4-Trichlorobenzene to have low percent recoveries, but all percent RPD's are within QC limits. There were no other problems, QC or otherwise, seen in the final data review.

The pesticide and aroclor analyses for the water sample was performed on 02/08/90. No confirmation analyses was needed. The sample and blank were prepared as low-level waters and analyzed by CLP protocol. All water pesticide surrogate recoveries were within QC limits.

The pesticide and aroclor analyses for the soil sample were analyzed on 04/05/90 and 04/06/90. All samples and blank were prepared and analyzed as low-level soils. Sample 00811 showed the soil pesticide surrogate recovery to be outside QC limits due to a large amount of matrix interference. The MS/MSD analyses were performed on sample 00810. All soil pesticide MS and MSD were within QC limits.

III. Quality Control (cont.)

The duplicate and spike analyses for the inorganics were performed on sample 00810.

The samples were prepared for ICP analyses on 04/06/90 and analyzed on 04/09/90. The matrix spike was outside QC limits for Antimony. The serial dilution was outside QC limits for zinc. The duplicate values were outside QC limits for Calcium, Chromium, Magnesium, and Silver.

The samples were prepared for GFAA analysis on 04/06/90 and analyzed during the period 04/09/90 - 04/12/90. The MS recovery and analytical spike recovery were outside QC limits for selenium.

The samples were prepared and analyzed for Mercury on 04/12/90.

The samples were prepared for Potassium analyses on 04/06/90 and analyzed on 04/12/90.

The samples were prepared for cyanide analyses on 04/03/90 and 04/04/90 and analyzed on 04/05/90.

Advanced Sciences, Inc.
Date: April 26, 1990
Client Project ID: RI/FS Fernald

IT ANALYTICAL SERVICES
OAK RIDGE, TN

Job Number: ADV 35888

SAMPLE DATA SUMMARY

FIELD #	ITAS #	MATRIX	CONC.	ANALYSIS
00810	MM4140	SOIL	LOW	VOC
	MM4120	SOIL	LOW	BNA
	MM4120	SOIL	LOW	PEST/PCB
	MM4130	SOIL	LOW	METALS
	MM4130	SOIL	LOW	MERCURY
	MM4130	SOIL	LOW	CYANIDE
00810MS	MM4141	SOIL	LOW	QC/MS/VOC
	MM4121	SOIL	LOW	QC/MS/BNA
	MM4121	SOIL	LOW	QC/MS/PEST/PCB
	MM4131	SOIL	LOW	QC/MS/METALS
	MM4131	SOIL	LOW	QC/MS/MERCURY
	MM4131	SOIL	LOW	QC/MS/CYANIDE
00810DUP	MM4132	SOIL	LOW	QC/DUP/METALS
	MM4132	SOIL	LOW	QC/DUP/MERCURY
	MM4132	SOIL	LOW	QC/DUP/CYANIDE
00810MSD	MM4142	SOIL	LOW	QC/MSD/VOC
	MM4122	SOIL	LOW	QC/MSD/BNA
	MM4122	SOIL	LOW	QC/MSD/PEST/PCB
00813	MM4143	SOIL	LOW	VOC
	MM4123	SOIL	LOW	BNA
	MM4123	SOIL	LOW	PEST/PCB
	MM4133	SOIL	LOW	METALS
	MM4133	SOIL	LOW	MERCURY
	MM4133	SOIL	LOW	CYANIDE
00811	MM4144	SOIL	LOW	VOC
	MM4124	SOIL	LOW	BNA
	MM4124	SOIL	LOW	PEST/PCB
	MM4134	SOIL	LOW	METALS
	MM4134	SOIL	LOW	MERCURY
	MM4134	SOIL	LOW	CYANIDE
00817	MM4145	SOIL	LOW	VOC
	MM4125	SOIL	LOW	BNA
	MM4125	SOIL	LOW	PEST/PCB
	MM4135	SOIL	LOW	METALS
	MM4135	SOIL	LOW	MERCURY
	MM4135	SOIL	LOW	CYANIDE

SAMPLE DATA SUMMARY (cont.)

FIELD #	ITAS #	MATRIX	CONC.	ANALYSIS
00812	MM4146	SOIL	LOW	VOC
	MM4126	SOIL	LOW	BNA
	MM4126	SOIL	LOW	PEST/PCB
	MM4136	SOIL	LOW	METALS
	MM4136	SOIL	LOW	MERCURY
	MM4136	SOIL	LOW	CYANIDE
00816	MM4147	SOIL	LOW	VOC
	MM4127	SOIL	LOW	BNA
	MM4127	SOIL	LOW	PEST/PCB
	MM4137	SOIL	LOW	METALS
	MM4137	SOIL	LOW	MERCURY
	MM4137	SOIL	LOW	CYANIDE
00815	MM4148	SOIL	LOW	VOC
	MM4128	SOIL	LOW	BNA
	MM4128	SOIL	LOW	PEST/PCB
	MM4138	SOIL	LOW	METALS
	MM4138	SOIL	LOW	MERCURY
	MM4138	SOIL	LOW	CYANIDE
00814	MM4149	SOIL	LOW	VOC
	MM4129	SOIL	LOW	BNA
	MM4129	SOIL	LOW	PEST/PCB
	MM4139	SOIL	LOW	METALS
	MM4139	SOIL	LOW	MERCURY
	MM4139	SOIL	LOW	CYANIDE
00818	MM4117	RINSATE	LOW	VOC
	MM4108	RINSATE	LOW	BNA
	MM4111	RINSATE	LOW	PEST/PCB
	MM4118	RINSATE	LOW	METALS
	MM4119	RINSATE	LOW	MERCURY
	MM4114	RINSATE	LOW	CYANIDE

ABBREVIATIONS:
VOC = VOLATILES
BNA = SEMIVOLATILES
PEST = PESTICIDES
PCB = POLYCHLORINATED BIPHENYLS
DUP = DUPLICATE
MS = MATRIX SPIKE
MSD = MATRIX SPIKE DUPLICATE

Advanced Sciences, Inc.
Date: April 26, 1990
Client Project ID: RI/FS Fernald

Job Number: ADV 35888

ORGANIC QUALIFIERS

U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

C = This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and reanalyzed. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate Forms I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number.

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

F = Estimated value due to a confirmed compound which is off-scale in both columns.

X = A flag that FORMASTER III CLP software automatically inserts to indicate that the data was entered manually.

Y = Indistinguishable isomer in tentatively identified compounds.

Z = No estimated value reported, or an elevated CRQL reported because matrix effects interfere with or obscure the compound on one or both columns. In either situation, the compound does not confirm as a positive identification.

* = Values outside of contract required QC limits.

INORGANIC QUALIFIERS

Concentration Qualifiers (C)

B = Reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRQL) but greater than or equal to the Instrument Detection Limit (IDL).

U = Analyte was analyzed for but not detected.

Quality Qualifiers (Q)

E = The reported value is estimated because of the presence of interference.

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

S = The reported value was determined by the Method of Standard Additions.

W = Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G = Native analyte > 4 times spike added, therefore acceptance criteria do not apply.

X = Detection limit is higher than normal due to sample matrix interferences.

* = Duplicate analysis not within control limits.

+ = Correlation coefficient for the MSA is less than 0.955.

Method Qualifiers (M)

"P" for ICP
"A" for Flame AA
"F" for Furnace AA
"CV" for Manual Cold Vapor AA
"AV" for Automated Cold Vapor AA
"AS" for Semi-Automated Spectrophotometric
"C" for Manual Spectrophotometric
"T" for Titrimetric
"NR" if the analyte is not required to be analyzed

II. TRAFFIC REPORTS

INORGANIC QUALIFIERS

Concentration Qualifiers (C)

B = Reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRQL) but greater than or equal to the Instrument Detection Limit (IDL).

U = Analyte was analyzed for but not detected.

Quality Qualifiers (Q)

E = The reported value is estimated because of the presence of interference.

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

S = The reported value was determined by the Method of Standard Additions.

W = Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G = Native analyte > 4 times spike added, therefore acceptance criteria do not apply.

X = Detection limit is higher than normal due to sample matrix interferences.

* = Duplicate analysis not within control limits.

+ = Correlation coefficient for the MSA is less than 0.955.

Method Qualifiers (M)

"P" for ICP
"A" for Flame AA
"F" for Furnace AA
"CV" for Manual Cold Vapor AA
"AV" for Automated Cold Vapor AA
"AS" for Semi-Automated Spectrophotometric
"C" for Manual Spectrophotometric
"T" for Titrimetric
"NR" if the analyte is not required to be analyzed

FERNALD RI/FS

ADV 35888

REQUEST FOR ANALYSIS

R/A Control No. 40059
C/C Control No. 40351

PROJECT NAME: RI/FS FERNALD.
PROJECT NUMBER: 602.09.24
PROJECT MANAGER: H. WINDECKER.
BILL TO: ASI.
2620-SAN MATEO, N.E. SUITE D.
ALBUQ, N.M. 87110
PURCHASE ORDER NO. ATTN: ACCT. PAY.

DATE SAMPLES SHIPPED: 03/29/90.
LAB DESTINATION: IT/RSL, OAKRIDGE, TENN.
LABORATORY CONTACT: J. HARVEY - S. MILLS.
SEND LAB REPORT TO: C. DANIELS C/O ASI
11003 HAMILTON CLEVES RD
ROSS, OHIO 45061
DATE REPORT REQUIRED: * APRIL 13, 1990
PROJECT CONTACT: C. DANIELS.
PROJECT CONTACT PHONE NO. 513-738-3100

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
00818	D.I. WTR.	40 ml.	NONE	SCREEN.	
00818	D.I. WTR.	4 l.	HNO_3	FULL RAD.	
00818	D.I. WTR.	120 ml.	NONE @ 4°C.	FULL HSL.	
00818	D.I. WTR.	320 oz.	NONE @ 4°C	FULL HSL.	
00818	D.I. WTR.	1 l.	NaOH	FULL HSL	

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)
Normal _____ Rush ✓ (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)
Nonhazard ✓ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other _____ (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)
Return to Client _____ Disposal by Lab ✓

FOR LAB USE ONLY
Received By [illegible] Date/Time 3-30-90 0830

WHITE - Original, to accompany samples
YELLOW - Field copy

000157

1028

IT FERNALD RI/FS

ADV 35888
CHAIN-OF-CUSTODY RECORD

R/A Control No. 40059

C/C Control No. 40351

PROJECT NAME/NUMBER RI/FS FERNALD. 602.09.24

LAB DESTINATION IT/RSL OAKRIDGE, TENN

SAMPLE TEAM MEMBERS M. GORMAN

CARRIER/WAYBILL NO. FED. EXP. #5629371543

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
00818	D.I. WTR EQUIP. RINSATE.	03-29-90 @0930	D.I. WTR.	3-40ml GLASS VOA	2 seal 3-29-90 Rw OK 3-30-90	OKL/SM FO 2°C
00818	D.I. WTR. EQUIP. RINSATE	03-29-90 @0930	D.I. WTR	3-40ml GLASS AMBER VOA PLASTIC		
00818	D.I. WTR. EQUIP. RINSATE	03-29-90 @0930	D.I. WTR	3-40ml GLASS VOA		
00818	D.I. WTR. EQUIP. RINSATE	03-29-90 @0930	D.I. WTR	4-800g AMBER GLASS		
00818	D.I. WTR. EQUIP. RINSATE	03-29-90 @0930	D.I. WTR.	1-1l PLASTIC		

Special Instructions: Add Metals & Mercury per client

Possible Sample Hazards: RADIONUCLIDES

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Mark Gorman ASI, 3-29-90, 0938
   Received By: Walter Zierick-IT- 03-29-90 @0938.
2. Relinquished By: Walter Zierick-IT- 03-29-90 @1500.
   Received By: T. Delgado 3-30-90 OKL/SM 0930
3. Relinquished By:
   Received by:
4. Relinquished By:
   Received By:

WHITE - To accompany samples
YELLOW - Field copy

000158

IT FERNALD RI/FS

ADV 35888

REQUEST FOR ANALYSIS

R/A Control No. 40055
C/C Control No. 40349

PROJECT NAME: RI/FS FERNALD
PROJECT NUMBER: 602.09.24
PROJECT MANAGER: H. WINDECKER
BILL TO: ASI
2620 SAN MATEO, N.E. - SUITE D
ALBUQ., N.M. 87110
PURCHASE ORDER NO. ATTN: ACCT. PAY

DATE SAMPLES SHIPPED: 03-29-90
LAB DESTINATION: IT/RSL OAKRIDGE, TENN.
LABORATORY CONTACT: J. HARVEY - S. MILLS
SEND LAB REPORT TO: C. DANIELS C/O ASI
11003 HAMILTON CLEVES RD.
ROSS, OHIO 45061
DATE REPORT REQUIRED * APRIL 13-1990
PROJECT CONTACT: C. DANIELS
PROJECT CONTACT PHONE NO. 513-738-3100

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	BOTTLE#	Special Instructions
00817	SOIL	40ml	NONE @ 4°C.	SCREEN -	(1 of 7)	RUSH
00817	SOIL	120ml	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 of 7)	ANAL.
00817	SOIL	1500ml	NONE @ 4°C	↓ ↓	(5-6-7 of 7)	↓
00812	SOIL	40ml	NONE @ 4°C	SCREEN -	(1 of 7)	
00812	SOIL	120ml	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 of 7)	
00812	SOIL	1500ml	NONE @ 4°C	↓ ↓	(5-6-7 of 7)	
00816	SOIL	40ml	NONE @ 4°C	SCREEN -	(1 of 7)	
00816	SOIL	120ml	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 of 7)	
00816	SOIL	1500ml	NONE @ 4°C	↓ ↓	(5-6-7 of 7)	↓

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)
Normal _____ Rush ✓ (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)
Nonhazard _____ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other ORGAN. - INORGAN. - RADIONUCLIDES. (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)
Return to Client _____ Disposal by Lab ✓

FOR LAB USE ONLY
Received By [signature] Date/Time 3-30-90 0930

WHITE - Original, to accompany samples
YELLOW - Field copy

000159

000159

IT FERNALD RI/FS

ADV 35888

CHAIN-OF-CUSTODY RECORD

R/A Control No. 40054

C/C Control No. 40350

PROJECT NAME/NUMBER RI/FS FERNALD - 602.09.24

LAB DESTINATION IT/RSL OAKRIDGE, TENN

SAMPLE TEAM MEMBERS M.SWANSON, M.GORMAN, C.MELROY, D.WEICK

CARRIER/WAYBILL NO. FEDERAL EXPRESS # 5629371543

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Bottle #	Condition on Receipt (Name and Date)	Disposal Record No.
00810	MH-180-1, SOIL, 24-30 IN.	03-28-90 @ 1130	SOIL	1-40ml GLASS VOA	(1 OF 7)	Rec OK 3-30-90 ORK/SM	
00810	MH-180-1, SOIL, 24-30 IN.	03-28-90 @ 1130	SOIL	3-40ml GLASS VOA	(2,3,4 OF 7)		2°C FP
00810	MH-180-1, SOIL, 24-30 IN.	03-28-90 @ 1130	SOIL	3-500ml AMBER GLASS	(5-6-7 OF 7)		
00813	MH-180-4, SOIL, 24-30 IN.	03-28-90 @ 1320	SOIL	1-40ml GLASS VOA	(1 OF 7)		
00813	MH-180-4, SOIL, 24-30 IN.	03-28-90 @ 1320	SOIL	3-40ml GLASS VOA	(2-3-4 OF 7)		
00813	MH-180-4, SOIL, 24-30 IN.	03-28-90 @ 1320	SOIL	3-500ml AMBER GLASS	(5-6-7 OF 7)		
00811	MH-180-2, SOIL, 24-30 IN.	03-28-90 @ 1406	SOIL	1-40ml GLASS VOA	(1 OF 7)		
00811	MW-180-2, SOIL, 24-30 IN.	03-28-90 @ 1406	SOIL	3-40ml GLASS VOA	(2-3-4 OF 7)		
00811	MW-180-2, SOIL, 24-30 IN.	03-28-90 @ 1406	SOIL	3-500ml AMBER GLASS	(5-6-7 OF 7)		

Special Instructions: RUSH ANALYSIS.

Possible Sample Hazards: RADIONUCLIDES - ORGANICS - INORGANICS

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Walter Weick - IT - 03-29-90 @ 1500

   Received By: F. Delgado 3-30-90 ORK/SM 0930

2. Relinquished By: _____

   Received By: _____

3. Relinquished By: _____

   Received by: _____

4. Relinquished By: _____

   Received By: _____

WHITE - To accompany samples
YELLOW - Field copy

000160

IT FERNALD RI/FS

ADV 35888

REQUEST FOR ANALYSIS

R/A Control No. 40056
C/C Control No. 40348

PROJECT NAME: RI/FS FERNALD
PROJECT NUMBER: 602.09.24
PROJECT MANAGER: H. WINDECKER
BILL TO: ASI
2620 SAN MATEO N.E. - SUITE D
ALBUQ., N.M. 87110
PURCHASE ORDER NO.: ATTN: ACCT. PAY.

DATE SAMPLES SHIPPED: 03-29-90
LAB DESTINATION: IT/RSL OAKRIDGE, TENN
LABORATORY CONTACT: J. HARVEY - S. MILLS
SEND LAB REPORT TO: C. DANIELS C/O ASI
11003 HAMILTON CLEVES RD
ROSS, OHIO 45061
DATE REPORT REQUIRED: * APRIL 13 - 1990
PROJECT CONTACT: C. DANIELS.
PROJECT CONTACT PHONE NO.: 513-738-3100

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	BOTTLE	Special Instructions
00815	SOIL	40 ml	NONE @ 4°C	SCREEN -	(1 OF 7)	RUSH
00815	SOIL	120 ml	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 OF 7)	ANAL.
00815	SOIL	1500 ml	NONE @ 4°C	↓ ↓	(5-6-7 OF 7)	↓
00814	SOIL	40 ml	NONE @ 4°C	SCREEN -	(1 OF 7)	
00814	SOIL	120 ml	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 OF 7)	
00814	SOIL	1500 ml.	NONE @ 4°C	↓ ↓	(5-6-7 OF 7)	↓

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)
Normal _____ Rush ✓ (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)
Nonhazard _____ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other ORGAN - INORGAN. - RADIONUCLIDES (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)
Return to Client _____ Disposal by Lab ✓

FOR LAB USE ONLY
Received By [signature] Date/Time 3-30-90 0930

WHITE - Original, to accompany samples
YELLOW - Field copy

000161

1028

FERNALD RI/FS

ADV 35888

CHAIN-OF-CUSTODY RECORD

R/A Control No. 40056

C/C Control No. 40348

PROJECT NAME/NUMBER RI/FS FERNALD - 602.09.24

LAB DESTINATION IT/RSL OAKRIDGE, TENN.

SAMPLE TEAM MEMBERS W. WEICK, M. SWANSON, M. GORMAN, C. MELROY

CARRIER/WAYBILL NO. FED. EXP. # 5629371543

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	BOTTLE # Condition on Receipt (Name and Date)	Disposal Record No.
00815	MH-180-6, SOIL, 0-6 IN.	03-28-90 @ 1608	SOIL	1-40ml GLASS VOA	(1 of 7) Rec OK 3-30-90	OH/SM
00815	MH-180-6, SOIL, 0-6 IN.	03-28-90 @ 1608	SOIL	3-40ml GLASS VOA	(2-3-4 of 7)	2 °C FP
00815	MH-180-6, SOIL, 0-6 IN.	03-28-90 @ 1608	SOIL	3-500ml GLASS AMBER	(5-6-7 of 7)	
00814	MH-180-5, SOIL, 0-6 IN.	03-28-90 @ 1635	SOIL	1-40ml GLASS VOA	(1 of 7)	
00814	MH-180-5, SOIL, 0-6 IN.	03-28-90 @ 1635	SOIL	3-40ml GLASS VOA	(2-3-4 of 7)	
00814	MH-180-5, SOIL, 0-6 IN.	03-28-90 @ 1635	SOIL	3-500ml AMBER GLASS	(5-6-7 of 7)	

Special Instructions: RUSH ANALYSIS

Possible Sample Hazards: RADIONUCLIDES - ORGAN - INORGAN.

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Walter Weick - IT - 03-29-90 @ 1500

   Received By: F. Delgado 3-30-90 3-30-90 ORYSM 0930

2. Relinquished By: _____

   Received By: _____

3. Relinquished By: _____

   Received by: _____

4. Relinquished By: _____

   Received By: _____

WHITE - To accompany samples
YELLOW - Field copy

000162

IT FERNALD RI/FS

ADV 35888
CHAIN-OF-CUSTODY RECORD

R/A Control No. 40055

C/C Control No. 40349

PROJECT NAME/NUMBER RI/FS FERNALD, 602.09.24

LAB DESTINATION IT/RSL OAKRIDGE, TENN.

SAMPLE TEAM MEMBERS C. MELROY, M. SWANSON, M. GORMAN, W. WEICK

CARRIER/WAYBILL NO. FEDERAL EXP. # 5629371543

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	BOTTLE # Condition on Receipt (Name and Date)	Disposal Record No.
00817	MH-180-2, (DUP.) SOIL, 24-30 IN.	03-28-90 @ 1425	SOIL	1-40ml GLASS VOA	(1 OF 7) LW OK 3-30-90 ORR/SM	
00817	MH-180-2, (DUP.) SOIL, 24-30 IN.	03-28-90 @ 1425	SOIL	3-40ml GLASS VOA	(2-3-4 OF 7)	2°C RD
00817	MH-180-2 (DUP), SOIL, 24-30 IN.	03-28-90 @ 1425	SOIL	3-500ml AMBER GLASS	(5-6-7 OF 7)	
00812	MH-180-3, SOIL, 24-30 IN.	03-28-90 @ 1502	SOIL	1-40ml GLASS VOA	(1 OF 7)	
00812	MH-180-3, SOIL, 24-30 IN.	03-28-90 @ 1502	SOIL	3-40ml GLASS VOA	(2-3-4 OF 7)	
00812	MH-180-3, SOIL - 24-30 IN.	03-28-90 @ 1502	SOIL.	3-500ml AMBER GLASS	(5-6-7 OF 7)	
00816	MH-180-7, SOIL, 0-6 IN	03-28-90 @ 1540	SOIL	1-40ml GLASS VOA	(1 OF 7)	
00816	MH-180-7, SOIL, 0-6 IN.	03-28-90 @ 1540	SOIL	3-40ml GLASS VOA	(2-3-4 OF 7)	
00816	MH-180-7, SOIL, 0-6 IN.	03-28-90 @ 1540	SOIL	3-500ml AMBER GLASS	(5-6-7 OF 7)	

Special Instructions: RUSH ANALYSIS

Possible Sample Hazards: RADIONUCLIDES - ORGAN. - INORGAN.

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Walter Weick - IT 03-29-90 @ 1500.
   Received By: F. Delgado ORR/SM 3-30-90 0930
2. Relinquished By: _____
   Received By: _____
3. Relinquished By: _____
   Received by: _____
4. Relinquished By: _____
   Received By: _____

WHITE - To accompany samples
YELLOW - Field copy

0001163

1028

FERNALD RI/FS

ADV 35888
REQUEST FOR ANALYSIS

R/A Control No. 40054
C/C Control No. 40350

PROJECT NAME: RI/FS FERNALD
PROJECT NUMBER: 602.09.24
PROJECT MANAGER: H. WINDECKER
BILL TO: ASI
2620 SAN MATEO, N.E. - SUITE D
ALBUQ, N.M. 87110
PURCHASE ORDER NO.: ATTN: ACCT. PAY.

DATE SAMPLES SHIPPED: 03-29-90
LAB DESTINATION: IT/RSL OAKRIDGE, TENN
LABORATORY CONTACT: J. HARVEY - S. MILLS
SEND LAB REPORT TO: C. DANIELS C/O ASI
11003 HAMILTON CLEVES RD.
ROSS, OHIO 45061
DATE REPORT REQUIRED: APRIL 13-1990
PROJECT CONTACT: C. DANIELS
PROJECT CONTACT PHONE NO.: 513-738-3100

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	BOTTLE #	Special Instructions
00810	SOIL	40 ml.	NONE @ 4°C	SCREEN. –	(1 of 7)	RUSH.
00810	SOIL	120 ml.	NONE @ 4°C	FULL HSL & FULL RAD.	(2-3-4 of 7)	ANAL.
00810	SOIL	1500 ml.	NONE @ 4°C	↓ ↓	(5-6-7 of 7)	↓
00813	SOIL	40 ml.	NONE @ 4°C	SCREEN –	(1 of 7)	
00813	SOIL	120 ml	NONE @ 4°C	FULL HSL & FULL RAD.	(2-3-4 of 7)	
00813	SOIL	1500 ml.	NONE @ 4°C	↓ ↓	(5-6-7 of 7)	
00811	SOIL	40 ml	NONE @ 4°C	SCREEN. –	(1 of 7)	
00811	SOIL	120 ml	NONE @ 4°C	FULL HSL & FULL RAD.	(2-3-4 of 7)	
00811	SOIL	1500 ml.	NONE @ 4°C	↓ ↓	(5-6-7 of 7)	

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)
Normal _____ Rush ✓ (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances) ORGAN. - / INORGAN. -
Nonhazard _____ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other RADIONUCLIDES (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)
Return to Client _____ Disposal by Lab ✓

FOR LAB USE ONLY
Received By: Frank E. Delgado ORH/SM Date/Time: 3-30-90 0930

WHITE - Original, to accompany samples
YELLOW - Field copy

000164

IT FERNALD RI/FS

ADV 35888
CHAIN-OF-CUSTODY RECORD

R/A Control No. 40055

C/C Control No. 40349

PROJECT NAME/NUMBER RI/FS FERNALD, 602.09.24

LAB DESTINATION IT/RSL OAKRIDGE, TENN.

SAMPLE TEAM MEMBERS C. MELROY, M. SWANSON, M. GORMIAN, W. WEICK

CARRIER/WAYBILL NO. FEDERAL EXP. # 5629371543

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	BOTTLE # Condition on Receipt (Name and Date)	Disposal Record No.
00817	MH-180-2, (DUP.) SOIL, 24-30 IN.	03-28-90 @ 1425	SOIL	1-40ml GLASS VOA	(1 OF 7) RW OK 3-30-90 ORISM	
00817	MH-180-2, (DUP.) SOIL, 24-30 IN.	03-28-90 @ 1425	SOIL	3-40ml GLASS VOA	(2-3-4 OF 7) 2°C FD	
00817	MH-180-2 (DUP.), SOIL, 24-30 IN.	03-28-90 @ 1425	SOIL	3-500ml AMBER GLASS	(5-6-7 OF 7)	
00812	MH-180-3, SOIL, 24-30 IN.	03-28-90 @ 1502	SOIL	1-40ml GLASS VOA	(1 OF 7)	
00812	MH-180-3, SOIL, 24-30 IN.	03-28-90 @ 1502	SOIL	3-40ml GLASS VOA	(2-3-4 OF 7)	
00812	MH-180-3, SOIL - 24-30 IN.	03-28-90 @ 1502	SOIL	3-500ml AMBER GLASS	(5-6-7 OF 7)	
00816	MH-180-7, SOIL, 0-6 IN	03-28-90 @ 1540	SOIL	1-40ml GLASS VOA	(1 OF 7)	
00816	MH-180-7, SOIL, 0-6 IN.	03-28-90 @ 1540	SOIL	3-40ml GLASS VOA	(2-3-4 OF 7)	
00816	MH-180-7, SOIL, 0-6 IN.	03-28-90 @ 1540	SOIL	3-500ml AMBER GLASS	(5-6-7 OF 7)	

Special Instructions: RUSH ANALYSIS

Possible Sample Hazards: RADIONUCLIDES-ORGAN.-INORGAN.

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Walter Weick - IT 03-29-90 @ 1500.

   Received By: F. Delgado ORISM 3-30-90 0930

2. Relinquished By: _____

   Received By: _____

3. Relinquished By: _____

   Received by: _____

4. Relinquished By: _____

   Received By: _____

WHITE - To accompany samples
YELLOW - Field copy

000165

1028

IT FERNALD RI/FS

ADV 35888

REQUEST FOR ANALYSIS

R/A Control No. 40055
C/C Control No. 40349

PROJECT NAME: RI/FS FERNALD
PROJECT NUMBER: 602.09.24
PROJECT MANAGER: H. WINDECKER
BILL TO: ASI
2620 SAN MATEO, N.E. - SUITE D
ALBUQ., N.M. 87110
PURCHASE ORDER NO.: ATTN: ACCT. PAY

DATE SAMPLES SHIPPED: 03-29-90
LAB DESTINATION: IT/KSL OAKRIDGE, TENN.
LABORATORY CONTACT: J. HARVEY - S. MILLS
SEND LAB REPORT TO: C. DANIELS C/O ASI
11003 HAMILTON CLEVES RD.
ROSS, OHIO 45061
DATE REPORT REQUIRED *: APRIL 13-1990
PROJECT CONTACT: C. DANIELS
PROJECT CONTACT PHONE NO.: 513-738-3100

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	BOTTLE #	Special Instructions
00817	SOIL	40ml	NONE @ 4°C.	SCREEN -	(1 of 7)	RUSH
00817	SOIL	120ml.	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 of 7)	ANAL.
00817	SOIL	1500ml	NONE @ 4°C	↓ ↓	(5-6-7 of 7)	↓
00812	SOIL	40ml	NONE @ 4°C	SCREEN -	(1 of 7)	
00812	SOIL	120ml	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 of 7)	
00812	SOIL	1500ml.	NONE @ 4°C	↓ ↓	(5-6-7 of 7)	
00816	SOIL	40ml	NONE @ 4°C	SCREEN -	(1 of 7)	
00816	SOIL	120 ml	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 of 7)	
00816	SOIL	1500 ml.	NONE @ 4°C	↓ ↓	(5-6-7 of 7)	↓

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)
Normal _____ Rush ✓ (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)
Nonhazard _____ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other ORGAN. - INORGAN. - RADIONUCLIDES. (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)
Return to Client _____ Disposal by Lab ✓

FOR LAB USE ONLY
Received By [signature] Date/Time 3-30-90 0830

WHITE - Original, to accompany samples
YELLOW - Field copy

000166

FERNALD RI/FS

ADV 35888

CHAIN-OF-CUSTODY RECORD

R/A Control No. 40056

C/C Control No. 40348

PROJECT NAME/NUMBER RI/FS FERNALD - 602.09.24

LAB DESTINATION IT/RSL OAKRIDGE, TENN.

SAMPLE TEAM MEMBERS W. WEICK, M. SWANSON, M. GORMAN, C. MELROY

CARRIER/WAYBILL NO. FED. EXP. # 5629371543

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	BOTTLE # Condition on Receipt (Name and Date)	Disposal Record No.
00815	MH-180-6, SOIL, 0-6 IN.	03-28-90 @ 1608	SOIL	1-40ml GLASS VOA	(1 of 7) Rec OK 3-30-90 ORL/SM	
00815	MH-180-6, SOIL, 0-6 IN.	03-28-90 @ 1608	SOIL	3-40ml GLASS VOA	(2-3-4 of 7)	2 °C FP
00815	MH-180-6, SOIL, 0-6 IN.	03-28-90 @ 1608	SOIL	3-500ml GLASS AMBER	(5-6-7 of 7)	
00814	MH-180-5, SOIL, 0-6 IN.	03-28-90 @ 1635	SOIL	1-40ml GLASS VOA	(1 of 7)	
00814	MH-180-5, SOIL, 0-6 IN.	03-28-90 @ 1635	SOIL	3-40ml GLASS VOA	(2-3-4 of 7)	
00814	MH-180-5, SOIL, 0-6 IN.	03-28-90 @ 1635	SOIL	3-500ml AMBER GLASS	(5-6-7 of 7)	

Special Instructions: RUSH ANALYSIS

Possible Sample Hazards: RADIONUCLIDES - ORGAN - INORGAN.

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Walter Weick - IT - 03-29-90 @ 1500

   Received By: F. Delgado 3-30-90 3-30-90 ORL/SM 0930

2. Relinquished By: _____

   Received By: _____

3. Relinquished By: _____

   Received by: _____

4. Relinquished By: _____

   Received By: _____

WHITE - To accompany samples
YELLOW - Field copy

000167

1028

IT FERNALD RI/FS

ADV 35888 REQUEST FOR ANALYSIS

R/A Control No. 40056
C/C Control No. 40348

PROJECT NAME: RI/FS FERNALD
PROJECT NUMBER: 602.09.24
PROJECT MANAGER: H. WINDECKER
BILL TO: ASI
2620 SAN MATEO N.E. - SUITE D
ALBUQ, N.M. 87110
PURCHASE ORDER NO. ATTN: ACCT. PAY.

DATE SAMPLES SHIPPED: 03-29-90
LAB DESTINATION: IT/RSL OAKRIDGE, TENN
LABORATORY CONTACT: J. HARVEY - S. MILLS
SEND LAB REPORT TO: C. DANIELS C/O ASI
11003 HAMILTON CLEVES RD
ROSS, OHIO 45061
DATE REPORT REQUIRED * APRIL 13 - 1990
PROJECT CONTACT: C. DANIELS.
PROJECT CONTACT PHONE NO. 513-738-3100

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	BOTTLE #	Special Instructions
00815	SOIL	40 ml	NONE @ 4°C	SCREEN -	(1 OF 7)	RUSH
00815	SOIL	120 ml	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 OF 7)	ANAL.
00815	SOIL	1500 ml	NONE @ 4°C	↓ ↓	(5-6-7 OF 7)	↓
00814	SOIL	40 ml	NONE @ 4°C.	SCREEN -	(1 OF 7)	
00814	SOIL	120 ml	NONE @ 4°C	FULL RAD & FULL HSL	(2-3-4 OF 7)	
00814	SOIL	1500 ml.	NONE @ 4°C	↓ ↓	(5-6-7 OF 7)	↓

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)

Normal _____ Rush ✓ (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)

Nonhazard _____ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other ORGAN - INORGAN. - RADIONUCLIDES (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)

Return to Client _____ Disposal by Lab ✓

FOR LAB USE ONLY

Received By [signature] Date/Time 3-30-90 0930

WHITE - Original, to accompany samples
YELLOW - Field copy

000168