

START 13476.0714

W0034-17C-055

from 6-21-94 3005

0045258



INTERNATIONAL TECHNOLOGY CORPORATION

RECORD COPY



Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Dear J.A. Lerch

Thank you for purchasing analytical testing services from IT Corporation. It is our intention to supply our clients with data packages which not only meet the industry's highest standards for quality, but are also easy to use. Features which we point out are:

1. A Data Summary Packet which allows you to review your data without searching through the complete data package.

Your Data Summary Packet contains the following items:

- Case Narrative: listing of sample identifications, analyses performed, explanation of any problem associated with samples, corrective action taken.
 - Quality control sample identifications and analyses performed.
 - Data summary.
2. A data package which meets the specific requirements you requested and is easy to use as well. The package is organized in accordance with the Table of Contents which you will find at the beginning of each section. Sections are separated by color-coded tabs, making it easy to find individual analytical parameters which may be of particular interest to you. The data package is custody-sealed at the laboratory - your assurance that parts of the package are not missing.

We are constantly searching for ways to improve our service to you. This current product has many of the features which you have told us are important to you. Your suggestions regarding additional improvements will be appreciated.

Please contact me with any questions or suggestions.

Sincerely,

Sheree' Schneider
Project Manager

Regional Office

5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

IT Corporation is a wholly owned subsidiary of International Technology Corporation

9613476.0715

DON'T SAY IT --- Write It!

DATE: January 13, 1995

TO: W0034-ITC-055

FROM: Pat Reich

H4-14

Telephone: 372-2785

CC:

SUBJECT: SUMMARY VALIDATION REPORT

The Validation Summary Report for this data package 200-UP-1 Project, Round 1 Soil Sampling Task is filed in W0004-ITC-022.

Pat Reich
SDLA

9613476.0716

DON'T SAY IT --- Write It!

DATE June 20, 1994

To W0034, samples BOBJ05, BOBJ07, BOBJ08,
BOBJ10 and BOBJ11

FROM Jeff Lerch H4-23
Telephone 372-2596

cc: Doris Ayres
Briana Colley
Chris Koerner
Sandy Walls

SUBJECT Carbon-14 data not reported

Due to an insufficient presence of carbon in the samples (described on page 0008A of the radiochemistry laboratory case narrative), data for C-14 will not be reported for samples BOBJ05, BOBJ07, BOBJ08, BOBJ10 and BOBJ11.



ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

June 13, 1994

Job Number: 389; 422; 466

This is the Certificate of Analysis for the following samples:

SDG:	W0034
Client Project ID:	WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1
Date Received by Lab:	April 20, 22 & 30, 1994
Number of Samples:	Eight (8)
Sample Type:	Soil

I. Introduction

On April 20, 22 & 30, 1994, eight (8) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.



American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

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KNOXVILLE, TN

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Hewlett-Packard 5970 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07. All QC results were within method specified limits.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07 All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

- U - Compound analyzed for but not detected; value given is quantitation limit.
- E - Compound exceeded calibration range.
- D - Compound analyzed at a secondary dilution factor.
- J - Compound detected but below quantitation limit; value estimated.
- S - Spiked compound.
- B - Compound found in method blank.
- A - Suspected aldol condensation product.
- Y - Indistinguishable isomer in tentatively identified compounds.
- N - Presumptive evidence of compound presence.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

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III. Quality Control (Continued)

The samples for work order #389 were digested on May 25, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 25, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBJ07. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. A cyanide post digestion spike was not performed.

The samples for work order #422 were digested on May 20, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 20, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

The samples for work order #466 were digested on May 11, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 9, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 12 through May 16, 1994; the remaining metals were analyzed by ICP on May 24, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

Data were reported with qualifiers as follows:

"C" Qualifiers

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"O" Qualifiers

- * - Duplicate analysis outside control limits.
- N - Spiked sample recovery outside control limits.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
- S - The reported value was determined by method of standard additions.

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June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

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KNOXVILLE, TN

III. Quality Control (Continued)

"M" Qualifiers

- P - Analysis performed by ICP.
- V - Analysis performed by CVAA.
- F - Analysis performed by GFAA.
- C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

- D - Duplicate.
- S - Spike.
- NR - Not required.
- G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
- X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed on May 6 and May 12, 1994 for nitrate/nitrite. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, nitrite, nitrate, phosphate and sulfate by EPA method 300.0 from May 12 through May 16, 1994. A matrix spike and matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

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June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN**III. Quality Control (Continued)**

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6903	W404315-01A	BOBJ05	VOC
AA6904	W404315-01B	"	SVOC
AA6905	W404315-01C	"	METALS-T
AA6906	W404315-01D	"	CYANIDE
AA6907	W404315-01E	"	ANIONS
AA6908	W404315-01F	"	NO2NO3
J.C. 6/10/94 AA6909 AA6909	W404315-02A	BOBJ07	VOC
AA6910	W404315-02B	"	SVOC
AA6911	W404315-02C	"	METALS-T
AA6912	W404315-02D	"	CYANIDE
AA6913	W404315-02E	"	ANIONS
AA6914	W404315-02F	"	NO2NO3
AA6915	W404315-03A	BOBJ08	VOC
AA6916	W404315-03B	"	SVOC
AA6917	W404315-03C	"	METALS-T
AA6918	W404315-03D	"	CYANIDE
AA6919	W404315-03E	"	ANIONS
AA6920	W404315-03F	"	NO2NO3
AA6922	W404315-04A	BOBJ09	VOC

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June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
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KNOXVILLE, TN**III. Quality Control (Continued)**

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6924	W404315-05A	BOBJ06	VOC
AA7333	W404402-01A	BOBJ10	VOC
AA7334	W404402-01B	"	SVOC
AA7335	W404402-01C	"	METALS-T
AA7336	W404402-01D	"	CYANIDE
AA7337	W404402-01E	"	ANIONS
AA7338	W404402-01F	"	NO2NO3
AA7948	404564-01	BOBJ12	VOC
AA7949	404564-02A	BOBJ11	VOC
AA7950	404564-02B	"	SVOC
AA7951	404564-02C	"	METALS-T
AA7952	404564-02D	"	CYANIDE
AA7953	404564-02E	"	ANIONS
AA7954	404564-02F	"	NO2NO3

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or a designee, as verified by the following signature:

Reviewed and Approved:



Sheree' A. Schneider
Project Manager

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA6903
 Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY09
 Level: (low/med) LOW Date Received: 04/14/94
 % Moisture: not dec. 13 Date Analyzed: 04/25/94
 GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	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	2	J
67-64-1	Acetone	5	BJ
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	3	J

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6903

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY09

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 13 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.59	21	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ06

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6924

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY05

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 2 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	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	2	J
67-64-1	-----Acetone	7	BJ
75-15-0	-----Carbon Disulfide	10	U
75-35-4	-----1,1-Dichloroethene	10	U
75-34-3	-----1,1-Dichloroethane	10	U
540-59-0	-----1,2-Dichloroethene (total)	10	U
67-66-3	-----Chloroform	10	U
107-06-2	-----1,2-Dichloroethane	10	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	10	U
56-23-5	-----Carbon Tetrachloride	10	U
75-27-4	-----Bromodichloromethane	10	U
78-87-5	-----1,2-Dichloropropane	10	U
10061-01-5	-----cis-1,3-Dichloropropene	10	U
79-01-6	-----Trichloroethene	10	U
124-48-1	-----Dibromochloromethane	10	U
79-00-5	-----1,1,2-Trichloroethane	10	U
71-43-2	-----Benzene	10	U
10061-02-6	-----trans-1,3-Dichloropropene	10	U
75-25-2	-----Bromoform	10	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	10	U
79-34-5	-----1,1,2,2-Tetrachloroethane	10	U
108-88-3	-----Toluene	10	U
108-90-7	-----Chlorobenzene	10	U
100-41-4	-----Ethylbenzene	10	U
100-42-5	-----Styrene	10	U
1330-20-7	-----Xylene (total)	10	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ06

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6924

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY05

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 2 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6909

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY06

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 0 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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	2	J
67-64-1-----	Acetone	3	BJ
75-15-0-----	Carbon Disulfide	10	U
75-35-4-----	1,1-Dichloroethene	10	U
75-34-3-----	1,1-Dichloroethane	10	U
540-59-0-----	1,2-Dichloroethene (total)	10	U
67-66-3-----	Chloroform	10	U
107-06-2-----	1,2-Dichloroethane	10	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	10	U
56-23-5-----	Carbon Tetrachloride	10	U
75-27-4-----	Bromodichloromethane	10	U
78-87-5-----	1,2-Dichloropropane	10	U
10061-01-5-----	cis-1,3-Dichloropropene	10	U
79-01-6-----	Trichloroethene	10	U
124-48-1-----	Dibromochloromethane	10	U
79-00-5-----	1,1,2-Trichloroethane	10	U
71-43-2-----	Benzene	10	U
10061-02-6-----	trans-1,3-Dichloropropene	10	U
75-25-2-----	Bromoform	10	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	10	U
79-34-5-----	1,1,2,2-Tetrachloroethane	10	U
108-88-3-----	Toluene	10	U
108-90-7-----	Chlorobenzene	10	U
100-41-4-----	Ethylbenzene	10	U
100-42-5-----	Styrene	10	U
1330-20-7-----	Xylene (total)	10	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6909

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY06

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 0 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.60	110	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6915

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY10

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 10 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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

CAS NO. COMPOUND (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	2	J
67-64-1	-----Acetone	5	BJ
75-15-0	-----Carbon Disulfide	11	U
75-35-4	-----1,1-Dichloroethene	11	U
75-34-3	-----1,1-Dichloroethane	11	U
540-59-0	-----1,2-Dichloroethene (total)	11	U
67-66-3	-----Chloroform	11	U
107-06-2	-----1,2-Dichloroethane	11	U
78-93-3	-----2-Butanone	11	U
71-55-6	-----1,1,1-Trichloroethane	11	U
56-23-5	-----Carbon Tetrachloride	11	U
75-27-4	-----Bromodichloromethane	11	U
78-87-5	-----1,2-Dichloropropane	11	U
10061-01-5	-----cis-1,3-Dichloropropene	11	U
79-01-6	-----Trichloroethene	11	U
124-48-1	-----Dibromochloromethane	11	U
79-00-5	-----1,1,2-Trichloroethane	11	U
71-43-2	-----Benzene	11	U
10061-02-6	-----trans-1,3-Dichloropropene	11	U
75-25-2	-----Bromoform	11	U
108-10-1	-----4-Methyl-2-Pentanone	11	U
591-78-6	-----2-Hexanone	11	U
127-18-4	-----Tetrachloroethene	11	U
79-34-5	-----1,1,2,2-Tetrachloroethane	11	U
108-88-3	-----Toluene	11	U
108-90-7	-----Chlorobenzene	11	U
100-41-4	-----Ethylbenzene	11	U
100-42-5	-----Styrene	11	U
1330-20-7	-----Xylene (total)	11	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6915

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY10

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 10 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.65	8	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ09

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6922

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY11

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 27 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	UG/KG
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	7	BJ
75-15-0	Carbon Disulfide	14	U
75-35-4	1,1-Dichloroethene	14	U
75-34-3	1,1-Dichloroethane	14	U
540-59-0	1,2-Dichloroethene (total)	14	U
67-66-3	Chloroform	14	U
107-06-2	1,2-Dichloroethane	14	U
78-93-3	2-Butanone	14	U
71-55-6	1,1,1-Trichloroethane	14	U
56-23-5	Carbon Tetrachloride	14	U
75-27-4	Bromodichloromethane	14	U
78-87-5	1,2-Dichloropropane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
79-01-6	Trichloroethene	14	U
124-48-1	Dibromochloromethane	14	U
79-00-5	1,1,2-Trichloroethane	14	U
71-43-2	Benzene	14	U
10061-02-6	trans-1,3-Dichloropropene	14	U
75-25-2	Bromoform	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	14	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	14	U
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	14	U
100-42-5	Styrene	14	U
1330-20-7	Xylene (total)	14	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ09

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA6922
 Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY11
 Level: (low/med) LOW Date Received: 04/14/94
 % Moisture: not dec. 27 Date Analyzed: 04/25/94
 GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.66	16	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7333

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY12

Level: (low/med) LOW Date Received: 04/22/94

% Moisture: not dec. 12 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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	2	J
67-64-1-----	Acetone	6	BJ
75-15-0-----	Carbon Disulfide	11	U
75-35-4-----	1,1-Dichloroethene	11	U
75-34-3-----	1,1-Dichloroethane	11	U
540-59-0-----	1,2-Dichloroethene (total)	11	U
67-66-3-----	Chloroform	11	U
107-06-2-----	1,2-Dichloroethane	11	U
78-93-3-----	2-Butanone	11	U
71-55-6-----	1,1,1-Trichloroethane	11	U
56-23-5-----	Carbon Tetrachloride	11	U
75-27-4-----	Bromodichloromethane	11	U
78-87-5-----	1,2-Dichloropropane	11	U
10061-01-5-----	cis-1,3-Dichloropropene	11	U
79-01-6-----	Trichloroethene	11	U
124-48-1-----	Dibromochloromethane	11	U
79-00-5-----	1,1,2-Trichloroethane	11	U
71-43-2-----	Benzene	11	U
10061-02-6-----	trans-1,3-Dichloropropene	11	U
75-25-2-----	Bromoform	11	U
108-10-1-----	4-Methyl-2-Pentanone	11	U
591-78-6-----	2-Hexanone	11	U
127-18-4-----	Tetrachloroethene	11	U
79-34-5-----	1,1,2,2-Tetrachloroethane	11	U
108-88-3-----	Toluene	11	U
108-90-7-----	Chlorobenzene	11	U
100-41-4-----	Ethylbenzene	11	U
100-42-5-----	Styrene	11	U
1330-20-7-----	Xylene (total)	11	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7333
 Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY12
 Level: (low/med) LOW Date Received: 04/22/94
 % Moisture: not dec. 12 Date Analyzed: 04/25/94
 GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.58	19	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7949

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AED05

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: not dec. 38 Date Analyzed: 05/04/94

GC Column: DB-625 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	-----Chloromethane	16	U
74-83-9	-----Bromomethane	16	U
75-01-4	-----Vinyl Chloride	16	U
75-00-3	-----Chloroethane	16	U
75-09-2	-----Methylene Chloride	4	BJ
67-64-1	-----Acetone	12	BJ
75-15-0	-----Carbon Disulfide	16	U
75-35-4	-----1,1-Dichloroethene	16	U
75-34-3	-----1,1-Dichloroethane	16	U
540-59-0	-----1,2-Dichloroethene (total)	16	U
67-66-3	-----Chloroform	16	U
107-06-2	-----1,2-Dichloroethane	16	U
78-93-3	-----2-Butanone	16	U
71-55-6	-----1,1,1-Trichloroethane	16	U
56-23-5	-----Carbon Tetrachloride	16	U
75-27-4	-----Bromodichloromethane	16	U
78-87-5	-----1,2-Dichloropropane	16	U
10061-01-5	-----cis-1,3-Dichloropropene	16	U
79-01-6	-----Trichloroethene	16	U
124-48-1	-----Dibromochloromethane	16	U
79-00-5	-----1,1,2-Trichloroethane	16	U
71-43-2	-----Benzene	16	U
10061-02-6	-----trans-1,3-Dichloropropene	16	U
75-25-2	-----Bromoform	16	U
108-10-1	-----4-Methyl-2-Pentanone	16	U
591-78-6	-----2-Hexanone	16	U
127-18-4	-----Tetrachloroethene	16	U
79-34-5	-----1,1,2,2-Tetrachloroethane	16	U
108-88-3	-----Toluene	3	J
108-90-7	-----Chlorobenzene	16	U
100-41-4	-----Ethylbenzene	16	U
100-42-5	-----Styrene	16	U
1330-20-7	-----Xylene (total)	16	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7949

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AED05

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: not dec. 38 Date Analyzed: 05/04/94

GC Column: DB-625 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.71	110	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ12

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7948

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AED04

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: not dec. 26 Date Analyzed: 05/04/94

GC Column: DB-625 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	-----Chloromethane	14	U
74-83-9	-----Bromomethane	14	U
75-01-4	-----Vinyl Chloride	14	U
75-00-3	-----Chloroethane	14	U
75-09-2	-----Methylene Chloride	4	BJ
67-64-1	-----Acetone	4	BJ
75-15-0	-----Carbon Disulfide	14	U
75-35-4	-----1,1-Dichloroethene	14	U
75-34-3	-----1,1-Dichloroethane	14	U
540-59-0	-----1,2-Dichloroethene (total)	14	U
67-66-3	-----Chloroform	14	U
107-06-2	-----1,2-Dichloroethane	14	U
78-93-3	-----2-Butanone	14	U
71-55-6	-----1,1,1-Trichloroethane	14	U
56-23-5	-----Carbon Tetrachloride	14	U
75-27-4	-----Bromodichloromethane	14	U
78-87-5	-----1,2-Dichloropropane	14	U
10061-01-5	-----cis-1,3-Dichloropropene	14	U
79-01-6	-----Trichloroethene	14	U
124-48-1	-----Dibromochloromethane	14	U
79-00-5	-----1,1,2-Trichloroethane	14	U
71-43-2	-----Benzene	14	U
10061-02-6	-----trans-1,3-Dichloropropene	14	U
75-25-2	-----Bromoform	14	U
108-10-1	-----4-Methyl-2-Pentanone	14	U
591-78-6	-----2-Hexanone	14	U
127-18-4	-----Tetrachloroethene	14	U
79-34-5	-----1,1,2,2-Tetrachloroethane	14	U
108-88-3	-----Toluene	3	J
108-90-7	-----Chlorobenzene	14	U
100-41-4	-----Ethylbenzene	14	U
100-42-5	-----Styrene	14	U
1330-20-7	-----Xylene (total)	14	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ12

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7948

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AED04

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: not dec. 26 Date Analyzed: 05/04/94

GC Column: DB-625 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6904

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6904

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 13 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl) Ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2'-oxybis(1-Chloropropane)	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-Di-n-Propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
111-91-1	bis(2-Chloroethoxy)Methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-Methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	920	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	920	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U
99-09-2	3-Nitroaniline	920	U
83-32-9	Acenaphthene	380	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA6904
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6904
 Level: (low/med) LOW Date Received: 04/19/94
 % Moisture: 13 decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 8.4

CONCENTRATION UNITS:

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

51-28-5-----	2,4-Dinitrophenol	920	U
100-02-7-----	4-Nitrophenol	920	U
132-64-9-----	Dibenzofuran	380	U
121-14-2-----	2,4-Dinitrotoluene	380	U
84-66-2-----	Diethylphthalate	380	U
7005-72-3-----	4-Chlorophenyl-phenylether	380	U
86-73-7-----	Fluorene	380	U
100-01-6-----	4-Nitroaniline	920	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	920	U
86-30-6-----	N-Nitrosodiphenylamine (1)	380	U
101-55-3-----	4-Bromophenyl-phenylether	380	U
118-74-1-----	Hexachlorobenzene	380	U
87-86-5-----	Pentachlorophenol	920	U
85-01-8-----	Phenanthrene	380	U
120-12-7-----	Anthracene	380	U
86-74-8-----	Carbazole	380	U
84-74-2-----	Di-n-Butylphthalate	380	U
206-44-0-----	Fluoranthene	380	U
129-00-0-----	Pyrene	380	U
85-68-7-----	Butylbenzylphthalate	380	U
91-94-1-----	3,3'-Dichlorobenzidine	380	U
56-55-3-----	Benzo(a)Anthracene	380	U
218-01-9-----	Chrysene	380	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	380	U
117-84-0-----	Di-n-Octyl Phthalate	380	U
205-99-2-----	Benzo(b) Fluoranthene	380	U
207-08-9-----	Benzo(k) Fluoranthene	380	U
50-32-8-----	Benzo(a) Pyrene	380	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	380	U
53-70-3-----	Dibenz(a,h)Anthracene	380	U
191-24-2-----	Benzo(g,h,i)Perylene	380	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6904

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6904

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 13 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 17

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 589-90-2	CYCLOHEXANE, 1,4-DIMETHYL-	1.93	150	BJN
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.28	410	BAJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.13	11000	BAJN
4.	UNKNOWN	4.20	88	BJ
5.	UNKNOWN	7.73	80	BJ
6.	UNKNOWN	16.57	160	BJ
7.	UNKNOWN	19.28	320	BJ
8.	UNKNOWN	20.02	620	BJ
9.	UNKNOWN	20.73	870	BJ
10.	UNKNOWN	21.40	1100	BJ
11.	UNKNOWN	22.07	910	BJ
12.	UNKNOWN	22.70	620	BJ
13.	UNKNOWN	23.30	640	BJ
14.	UNKNOWN	23.90	400	J
15.	UNKNOWN	24.50	340	J
16.	UNKNOWN	25.17	130	J
17.	UNKNOWN	25.90	84	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA6910
 Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6910
 Level: (low/med) LOW Date Received: 04/19/94
 % Moisture: 0 decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 9.4

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
95-50-1-----	1,2-Dichlorobenzene	330	U
95-48-7-----	2-Methylphenol	330	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	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
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	790	U
91-58-7-----	2-Chloronaphthalene	330	U
88-74-4-----	2-Nitroaniline	790	U
131-11-3-----	Dimethylphthalate	330	U
208-96-8-----	Acenaphthylene	330	U
606-20-2-----	2,6-Dinitrotoluene	330	U
99-09-2-----	3-Nitroaniline	790	U
83-32-9-----	Acenaphthene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6910

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6910

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

CONCENTRATION UNITS:

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

51-28-5-----	2,4-Dinitrophenol	790	U
100-02-7-----	4-Nitrophenol	790	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	790	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	790	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	790	U
85-01-8-----	Phenanthrene	330	U
120-12-7-----	Anthracene	330	U
86-74-8-----	Carbazole	330	U
84-74-2-----	Di-n-Butylphthalate	47	J
206-44-0-----	Fluoranthene	330	U
129-00-0-----	Pyrene	330	U
85-68-7-----	Butylbenzylphthalate	330	U
91-94-1-----	3,3'-Dichlorobenzidine	330	U
56-55-3-----	Benzo(a)Anthracene	330	U
218-01-9-----	Chrysene	330	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	74	J
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

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6910

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6910

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

Number TICs found: 18

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 589-90-2	CYCLOHEXANE, 1,4-DIMETHYL-	1.87	140	BJN
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.22	320	BAJN
3.	UNKNOWN	2.57	73	J
4. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.08	9300	BAJN
5.	UNKNOWN	4.13	100	AJ
6.	UNKNOWN	4.40	66	J
7.	UNKNOWN	5.98	89	J
8.	UNKNOWN	7.67	70	J
9.	UNKNOWN	16.50	120	J
10.	UNKNOWN	18.03	330	J
11.	UNKNOWN	18.70	89	J
12.	UNKNOWN	19.22	83	BJ
13.	UNKNOWN	19.93	89	BJ
14.	UNKNOWN	20.65	160	BJ
15.	UNKNOWN	21.33	120	BJ
16.	UNKNOWN	21.98	130	BJ
17.	UNKNOWN	22.62	100	BJ
18.	UNKNOWN	23.23	83	BJ

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA6916
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6916
 Level: (low/med) LOW Date Received: 04/19/94
 % Moisture: 10 decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/05/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 8.4

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

CAS NO.

COMPOUND

Q

108-95-2-----Phenol	370	U
111-44-4-----bis(2-Chloroethyl) Ether	370	U
95-57-8-----2-Chlorophenol	370	U
541-73-1-----1,3-Dichlorobenzene	370	U
106-46-7-----1,4-Dichlorobenzene	370	U
95-50-1-----1,2-Dichlorobenzene	370	U
95-48-7-----2-Methylphenol	370	U
108-60-1-----2,2'-oxybis(1-Chloropropane)	370	U
106-44-5-----4-Methylphenol	370	U
621-64-7-----N-Nitroso-Di-n-Propylamine	370	U
67-72-1-----Hexachloroethane	370	U
98-95-3-----Nitrobenzene	370	U
78-59-1-----Isophorone	370	U
88-75-5-----2-Nitrophenol	370	U
105-67-9-----2,4-Dimethylphenol	370	U
111-91-1-----bis(2-Chloroethoxy)Methane	370	U
120-83-2-----2,4-Dichlorophenol	370	U
120-82-1-----1,2,4-Trichlorobenzene	370	U
91-20-3-----Naphthalene	370	U
106-47-8-----4-Chloroaniline	370	U
87-68-3-----Hexachlorobutadiene	370	U
59-50-7-----4-Chloro-3-Methylphenol	370	U
91-57-6-----2-Methylnaphthalene	370	U
77-47-4-----Hexachlorocyclopentadiene	370	U
88-06-2-----2,4,6-Trichlorophenol	370	U
95-95-4-----2,4,5-Trichlorophenol	890	U
91-58-7-----2-Chloronaphthalene	370	U
88-74-4-----2-Nitroaniline	890	U
131-11-3-----Dimethylphthalate	370	U
208-96-8-----Acenaphthylene	370	U
606-20-2-----2,6-Dinitrotoluene	370	U
99-09-2-----3-Nitroaniline	890	U
83-32-9-----Acenaphthene	370	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA6916
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6916
 Level: (low/med) LOW Date Received: 04/19/94
 % Moisture: 10 decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/05/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 8.4

CONCENTRATION UNITS:

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

51-28-5-----	2,4-Dinitrophenol	890	U
100-02-7-----	4-Nitrophenol	890	U
132-64-9-----	Dibenzofuran	370	U
121-14-2-----	2,4-Dinitrotoluene	370	U
84-66-2-----	Diethylphthalate	370	U
7005-72-3-----	4-Chlorophenyl-phenylether	370	U
86-73-7-----	Fluorene	370	U
100-01-6-----	4-Nitroaniline	890	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	890	U
86-30-6-----	N-Nitrosodiphenylamine (1)	370	U
101-55-3-----	4-Bromophenyl-phenylether	370	U
118-74-1-----	Hexachlorobenzene	370	U
87-86-5-----	Pentachlorophenol	890	U
85-01-8-----	Phenanthrene	370	U
120-12-7-----	Anthracene	370	U
86-74-8-----	Carbazole	370	U
84-74-2-----	Di-n-Butylphthalate	49	J
206-44-0-----	Fluoranthene	370	U
129-00-0-----	Pyrene	370	U
85-68-7-----	Butylbenzylphthalate	370	U
91-94-1-----	3,3'-Dichlorobenzidine	370	U
56-55-3-----	Benzo(a)Anthracene	370	U
218-01-9-----	Chrysene	370	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	370	U
117-84-0-----	Di-n-Octyl Phthalate	370	U
205-99-2-----	Benzo(b)Fluoranthene	370	U
207-08-9-----	Benzo(k)Fluoranthene	370	U
50-32-8-----	Benzo(a)Pyrene	370	U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	370	U
53-70-3-----	Dibenz(a,h)Anthracene	370	U
191-24-2-----	Benzo(g,h,i)Perylene	370	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6916

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6916

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/05/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 15

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 589-90-2	CYCLOHEXANE, 1,4-DIMETHYL-	1.88	130	BJN
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.23	270	BAJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.07	8500	BAJN
4.	UNKNOWN	4.15	89	J
5.	UNKNOWN	16.50	140	J
6.	UNKNOWN	19.22	160	BJ
7.	UNKNOWN	19.95	300	BJ
8.	UNKNOWN	20.67	580	BJ
9.	UNKNOWN	21.35	530	BJ
10.	UNKNOWN	22.00	600	BJ
11.	UNKNOWN	22.63	520	J
12.	UNKNOWN	23.25	500	J
13.	UNKNOWN	23.85	240	J
14.	UNKNOWN	24.45	240	J
15.	UNKNOWN	25.10	78	J

9613476.0749

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7334

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA7334

Level: (low/med) LOW Date Received: 04/22/94

% Moisture: 12 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl) Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	910	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	910	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	910	U
83-32-9	Acenaphthene	370	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7334
 Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA7334
 Level: (low/med) LOW Date Received: 04/22/94
 % Moisture: 12 decanted: (Y/N) N Date Extracted: 04/25/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 8.2

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

CAS NO.	COMPOUND	UG/KG	Q
51-28-5-----	2,4-Dinitrophenol	910	U
100-02-7-----	4-Nitrophenol	910	U
132-64-9-----	Dibenzofuran	370	U
121-14-2-----	2,4-Dinitrotoluene	370	U
84-66-2-----	Diethylphthalate	370	U
7005-72-3-----	4-Chlorophenyl-phenylether	370	U
86-73-7-----	Fluorene	370	U
100-01-6-----	4-Nitroaniline	910	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	910	U
86-30-6-----	N-Nitrosodiphenylamine (1)	370	U
101-55-3-----	4-Bromophenyl-phenylether	370	U
118-74-1-----	Hexachlorobenzene	370	U
87-86-5-----	Pentachlorophenol	910	U
85-01-8-----	Phenanthrene	370	U
120-12-7-----	Anthracene	370	U
86-74-8-----	Carbazole	370	U
84-74-2-----	Di-n-Butylphthalate	370	U
206-44-0-----	Fluoranthene	370	U
129-00-0-----	Pyrene	370	U
85-68-7-----	Butylbenzylphthalate	370	U
91-94-1-----	3,3'-Dichlorobenzidine	370	U
56-55-3-----	Benzo(a)Anthracene	370	U
218-01-9-----	Chrysene	370	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	370	U
117-84-0-----	Di-n-Octyl Phthalate	370	U
205-99-2-----	Benzo(b)Fluoranthene	370	U
207-08-9-----	Benzo(k)Fluoranthene	370	U
50-32-8-----	Benzo(a)Pyrene	370	U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	370	U
53-70-3-----	Dibenz(a,h)Anthracene	370	U
191-24-2-----	Benzo(g,h,i)Perylene	370	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7334

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA7334

Level: (low/med) LOW Date Received: 04/22/94

% Moisture: 12 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 638-04-0	CYCLOHEXANE, 1,3-DIMETHYL-,	2.02	87	BJN
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.20	9100	BJNA
3. 0-00-0	UNKNOWN	19.37	140	J
4. 123-79-5	HEXANEDIOIC ACID, DIOCTYL ES	20.20	4000	JN
5. 0-00-0	UNKNOWN	20.83	320	J
6. 0-00-0	UNKNOWN	23.40	130	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7950

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7950

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: 34 decanted: (Y/N) N Date Extracted: 05/05/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/12/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

CAS NO.

COMPOUND

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

108-95-2-----Phenol	500	U
111-44-4-----bis(2-Chloroethyl) Ether	500	U
95-57-8-----2-Chlorophenol	500	U
541-73-1-----1,3-Dichlorobenzene	500	U
106-46-7-----1,4-Dichlorobenzene	500	U
95-50-1-----1,2-Dichlorobenzene	500	U
95-48-7-----2-Methylphenol	500	U
108-60-1-----2,2'-oxybis(1-Chloropropane)	500	U
106-44-5-----4-Methylphenol	500	U
621-64-7-----N-Nitroso-Di-n-Propylamine	500	U
67-72-1-----Hexachloroethane	500	U
98-95-3-----Nitrobenzene	500	U
78-59-1-----Isophorone	500	U
88-75-5-----2-Nitrophenol	500	U
105-67-9-----2,4-Dimethylphenol	500	U
111-91-1-----bis(2-Chloroethoxy)Methane	500	U
120-83-2-----2,4-Dichlorophenol	500	U
120-82-1-----1,2,4-Trichlorobenzene	500	U
91-20-3-----Naphthalene	500	U
106-47-8-----4-Chloroaniline	500	U
87-68-3-----Hexachlorobutadiene	500	U
59-50-7-----4-Chloro-3-Methylphenol	500	U
91-57-6-----2-Methylnaphthalene	500	U
77-47-4-----Hexachlorocyclopentadiene	500	U
88-06-2-----2,4,6-Trichlorophenol	500	U
95-95-4-----2,4,5-Trichlorophenol	1200	U
91-58-7-----2-Chloronaphthalene	500	U
88-74-4-----2-Nitroaniline	1200	U
131-11-3-----Dimethylphthalate	500	U
208-96-8-----Acenaphthylene	500	U
606-20-2-----2,6-Dinitrotoluene	500	U
99-09-2-----3-Nitroaniline	1200	U
83-32-9-----Acenaphthene	500	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7950

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7950

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: 34 decanted: (Y/N) N Date Extracted: 05/05/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/12/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

CAS NO.

COMPOUND

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

Q

51-28-5-----	2,4-Dinitrophenol	1200	U
100-02-7-----	4-Nitrophenol	1200	U
132-64-9-----	Dibenzofuran	500	U
121-14-2-----	2,4-Dinitrotoluene	500	U
84-66-2-----	Diethylphthalate	500	U
7005-72-3-----	4-Chlorophenyl-phenylether	500	U
86-73-7-----	Fluorene	500	U
100-01-6-----	4-Nitroaniline	1200	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	1200	U
86-30-6-----	N-Nitrosodiphenylamine (1)	500	U
101-55-3-----	4-Bromophenyl-phenylether	500	U
118-74-1-----	Hexachlorobenzene	500	U
87-86-5-----	Pentachlorophenol	1200	U
85-01-8-----	Phenanthrene	500	U
120-12-7-----	Anthracene	500	U
86-74-8-----	Carbazole	500	U
84-74-2-----	Di-n-Butylphthalate	300	BJ
206-44-0-----	Fluoranthene	500	U
129-00-0-----	Pyrene	500	U
85-68-7-----	Butylbenzylphthalate	500	U
91-94-1-----	3,3'-Dichlorobenzidine	500	U
56-55-3-----	Benzo(a)Anthracene	500	U
218-01-9-----	Chrysene	500	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	73	BJ
117-84-0-----	Di-n-Octyl Phthalate	500	U
205-99-2-----	Benzo(b)Fluoranthene	500	U
207-08-9-----	Benzo(k)Fluoranthene	500	U
50-32-8-----	Benzo(a)Pyrene	500	U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	500	U
53-70-3-----	Dibenz(a,h)Anthracene	500	U
191-24-2-----	Benzo(g,h,i)Perylene	500	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7950

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7950

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: 34 decanted: (Y/N) N Date Extracted: 05/05/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/12/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	19.18	130	J

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO389 SAS No.: SDG No.:W0034
SOW No.: ILM02

Table with 2 columns: EPA Sample No. and Lab Sample ID. Rows include BOBJ05 (AA6905), BOBJ07 (AA6911), BOBJ07D (AA6912D), BOBJ07S (AA6912S), BOBJ08 (AA6917), BOBJ08 (AA6918).

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

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. 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.

Signature: Christopher Kauker Name: Christopher Kauker
Date: June 3, 1994 Title: Chemist

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO466 SAS No.: SDG No.:W0034
SOW No.: ILM02

Table with 2 columns: EPA Sample No. and Lab Sample ID. Contains entries for BOBJ11 with sample IDs AA7951 and AA7952.

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

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above.

Signature: Christopher Kanker Name: Christopher Kanker
Date: June 8, 1994 Title: Chemist

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	389
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/12/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6181	2.5	U
BOBJ05	AA6908	14	+
BOBJ07	AA6914	2.5	U
BOBJ08	AA6920	11	+

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	422
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6181	2.5	U
BOBJ10	AA7338	95	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	466
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/12/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6181	2.5	U
BOBJ11	AA7954	22	+

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	389
Client Sample ID:	BOBJ05	Preparation Date:	05/12/94
Lab Sample ID:	AA6907	Analysis Date:	05/12/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.65	+	0.40
chloride	5.7	+	0.40
nitrite	0.40	U	0.40
nitrate	59	+	6.0
phosphate	1.0	U	1.0
sulfate	22	+	1.5

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	389
Client Sample ID:	BOBJ07	Preparation Date:	05/12/94
Lab Sample ID:	AA6913	Analysis Date:	05/12/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	1.4	+	0.40
chloride	4.7	+	0.40
nitrite	0.40	U	0.40
nitrate	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	1.5	U	1.5

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	389
Client Sample ID:	BOBJ08	Preparation Date:	05/12/94
Lab Sample ID:	AA6919	Analysis Date:	05/12/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.65	+	0.40
chloride	8.4	+	0.80
nitrite	0.40	U	0.40
nitrate	58	+	5.60
phosphate	1.0	U	1.0
sulfate	23	+	0.4

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	422
Client Sample ID:	BOBJ10	Preparation Date:	05/16/94
Lab Sample ID:	AA7337	Analysis Date:	05/16/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.66	+	0.40
chloride	2.9	+	0.40
nitrite	0.40	U	0.40
nitrate	320	+	40
phosphate	1.0	U	1.0
sulfate	22	+	1.5

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	466
Client Sample ID:	BOBJ11	Preparation Date:	05/16/94
Lab Sample ID:	AA7953	Analysis Date:	05/16/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.49	+	0.40
chloride	4.4	+	0.40
nitrite	0.40	U	0.40
nitrate	170	+	20
phosphate	1.0	U	1.0
sulfate	12	+	1.5

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

RECORD COPY



Analytical Data Package Prepared for

WESTINGHOUSE HANFORD

Chemical Analysis By

IT Analytical Services
Middlebrook Laboratory

Sample Delivery Group Number: W0034

WHC IDENTIFICATION
NUMBER

ITAS RICHLAND ID
NUMBER

KNOXVILLE ID
NUMBER

* See attached Table I.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN**III. Quality Control** (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6903	W404315-01A	BOBJ05	VOC
AA6904	W404315-01B	"	SVOC
AA6905	W404315-01C	"	METALS-T
AA6906	W404315-01D	"	CYANIDE
AA6907	W404315-01E	"	ANIONS
AA6908	W404315-01F	"	NO2NO3
AA6909 ^{AA6909} ↓ c w/ 10/94	W404315-02A	BOBJ07	VOC
AA6910	W404315-02B	"	SVOC
AA6911	W404315-02C	"	METALS-T
AA6912	W404315-02D	"	CYANIDE
AA6913	W404315-02E	"	ANIONS
AA6914	W404315-02F	"	NO2NO3
AA6915	W404315-03A	BOBJ08	VOC
AA6916	W404315-03B	"	SVOC
AA6917	W404315-03C	"	METALS-T
AA6918	W404315-03D	"	CYANIDE
AA6919	W404315-03E	"	ANIONS
AA6920	W404315-03F	"	NO2NO3
AA6922	W404315-04A	BOBJ09	VOC

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN**III. Quality Control (Continued)**

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6924	W404315-05A	BOBJ06	VOC
AA7333	W404402-01A	BOBJ10	VOC
AA7334	W404402-01B	"	SVOC
AA7335	W404402-01C	"	METALS-T
AA7336	W404402-01D	"	CYANIDE
AA7337	W404402-01E	"	ANIONS
AA7338	W404402-01F	"	NO2NO3
AA7948	404564-01	BOBJ12	VOC
AA7949	404564-02A	BOBJ11	VOC
AA7950	404564-02B	"	SVOC
AA7951	404564-02C	"	METALS-T
AA7952	404564-02D	"	CYANIDE
AA7953	404564-02E	"	ANIONS
AA7954	404564-02F	"	NO2NO3

WO#389



INTERNATIONAL
TECHNOLOGY
CORPORATION

Regional Office
330 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 4/18/94 1030 Client Name WHC

Project/Client # 94-046 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) WHC-19

1. Condition of shipping container? ok

2. Custody Seals on cooler intact? Yes No

3. Custody Seals dated and signed? Yes No

4. Chain of Custody record is taped on inside of cooler lid? Yes No

5. Vermiculite/packing material is: Wet Dry each sample is

6. Each sample is in a plastic bag? Yes No wet.

7. Number of sample containers in cooler: 26

8. Samples have: ✓ custody seals ✓ appropriate sample labels

9. Samples are: ✓ in good condition _____ leaking
_____ broken _____ have air bubbles
_____ other

10. Coolant present? Yes No
Sample temperature 6°C

11. The following paperwork should be accounted for (N/A if not applicable):
Chain of Custody #'(s) N/A
Request for analysis #'(s) N/A
Airbill # N/A Carrier N/A

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Tom Gilmore Date/Time 4/18/94 1030

WO 422



Regional Office
1800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

1 Per Shipping Container

Date/Time Received 4-21-94 1225 Client Name WHC

Project/Client # 94-046 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) WHC 19

- 1. Condition of shipping container? 8/25 4-21-94 OK
- 2. Custody Seals on cooler intact? Yes No
- 3. Custody Seals dated and signed? Yes No
- 4. Chain of Custody record is taped on inside of cooler lid? Yes No
- 5. Vermiculite/packing material is: Wet Dry
- 6. Each sample is in a plastic bag? Yes No
- 7. Number of sample containers in cooler: 8
- 8. Samples have: _____ tape _____ hazard labels
 custody seals appropriate sample labels

- 9. Samples are: in good condition _____ leaking
_____ broken _____ have air bubbles
_____ other

10. Coolant present? Yes No
Sample temperature 3°C

11. The following paperwork should be accounted for (N/A if not applicable):
Chain of Custody #'(s) N/A
Request for analysis #'(s) N/A
Airbill # N/A Carrier _____

- 12. Have any anomalies been identified above? Yes No
- 13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature R. Boyd R. Boyd Date/Time 4-21-94 1225



INTERNATIONAL
TECHNOLOGY
CORPORATION

Regional Office
1300 George Washington Way
Richland, Washington 99352

W0#466

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 4-29-94 12:10 Client Name WHC

Project/Client # 94-046 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) SM260

1. Condition of shipping container? OK.

2. Custody Seals on cooler intact? Yes No

3. Custody Seals dated and signed? Yes No

4. Chain of Custody record is taped on inside of cooler lid? Yes No

5. Vermiculite/packing material is: Wet Dry

6. Each sample is in a plastic bag? Yes No

7. Number of sample containers in cooler: 10

8. Samples have: tape _____ hazard labels

custody seals _____ appropriate sample labels

9. Samples are: in good condition _____ leaking

_____ broken _____ have air bubbles

_____ other

10. Coolant present? Yes No

Sample temperature 60C

11. The following paperwork should be accounted for (N/A if not applicable):

Chain of Custody #' (s) 117

Request for analysis #' (s) 117

Airbill # 117 Carrier 117

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature [Signature] Date/Time 4-29-94
12:10

W024 3597

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page <u>1</u> of <u>1</u>		
Collector W. V. SETZER		Company Contact W. V. SETZER					Telephone No. (509) 376-2413					Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal		
Project Designation 200 UP-1		Sampling Location 399-W19-34B					SAF No. 94-046 046 WWS 3-14-94							
Ice Chest No. WNC-19		Field Logbook No. EFL-1118					Method of Shipment BY DOE VEHICLE							
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-					Bill of Lading/Air Bill No.							
Possible Sample Hazards/Remarks NONE OBSERVED		Preservative		COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
		Type of Container		aGs	aG	G	P/G	G	P/G	P/G	P/G	P/G	P/G	P/G
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE		No. of Container(s)		1	1	1	1	1	1	1	1	1	1	1
		Volume		120ml	500ml	500ml	250ml	250ml	120ml	1000ml	500ml	250ml	120ml	40ml
SAMPLE ANALYSIS 404315		VOA (CLP)	SEMIVOA (CLP)	ICP MTL (CLP)	Cn (CLP)	ANIONS (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)
		A	B	C	D	E	F	404316	*1	*1				
Sample No.	Matrix*	Date Sampled	Time Sampled	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BOBJ05	01 S	4-14-94	0950	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	05A
BOBJ06	S	4-14-94	0630											✓
BOBJ07	02 S	4-14-94	0915	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BOBJ08	03 S	4-14-94	1050	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	04A
BOBJ09	S	4-14-94	1050											✓

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix*	
Relinquished By	Date/Time	Received By	Date/Time	*1- GROSS ALPHA, BETA (ITAS-RD-3222) Am-241, Cm 243/244 (ITAS-RD-3302) Np-237 (ITAS-RD-3208) Pu-238, 239/240 (ITAS-RD-3209) U-234, 235, 238 (ITAS-RD-3234) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (ITAS-RD-3219) Sr-90 (ITAS-RD-3204) C-14 (ITAS-RD-3247) Tc-99 (ITAS-IT-RS-0001)		S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other	
Relinquished By	Date/Time	Received By	Date/Time				
Relinquished By	Date/Time	Received By	Date/Time				
Relinquished By	Date/Time	Received By	Date/Time				
				LOWEST HOLDING TIME = 7DAYS			

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9613476.0782

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wo 412

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page 1 of 1			
Collector W. V. SETZER		Company Contact W. V. SETZER					Telephone No. (509) 376-2413					Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal			
Project Designation 200 UP-1		Sampling Location 399-019-34B					SAF No. 94-045 046 WVS A-21-94								
Ice Chest No.		Field Logbook No. EFL-1118					Method of Shipment BY DOE VEHICLE								
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-					Bill of Lading/Air Bill No.								
Possible Sample Hazards/Remarks		Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	
None OBSERVED		Type of Container	aGs	aG	G	P/G	G	P/G	P/G	P/G	P/G	P/G	P/G	aGs	
		No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1	1	
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE		Volume	120ml	500ml	500ml	250ml	250ml	120ml	1000ml	500ml				40ml	
SAMPLE ANALYSIS		VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cd (CLP)	ANIONS NO2, NO3 IC-F, Cl EPA(353 SD4, NO2 .2) NO3, PO4					*1	*1		VOA TRIP (CLP)	
404-4201															
Sample No.	Matrix*	Date Sampled	Time Sampled												
RLB-510	S	4-18-94	0815	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
CHAIN OF POSSESSION		Sign/Print Names					SPECIAL INSTRUCTIONS					Matrix*			
Relinquished By	Date/Time	Received By	Date/Time	*1- GROSS ALPHA, BETA (ITAS-RD-3222) Am-241, Cm 243/244 (ITAS-RD-3302) Np-237 (ITAS-RD-3208) Pu-238, 239/240 (ITAS-RD-3209) U-234, 235, 238 (ITAS-RD-3234) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (ITAS-RD-3219) Sr-90 (ITAS-RD-3204) C-14 (ITAS-RD-3247) Tc-99 (ITAS-IT-R5-0001)					LOWEST HOLDING TIME = 7DAYS					S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other	
Relinquished By	Date/Time	Received By	Date/Time												
Relinquished By	Date/Time	Received By	Date/Time												
Relinquished By	Date/Time	Received By	Date/Time												
LABORATORY SECTION	Received By	Title					Date/Time								
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By					Date/Time								

9613476-0783

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PT1TD

W0#466

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page <u>1</u> of <u>1</u>			
Collector W. V. SETZER		Company Contact W. V. SETZER				Telephone No. (509) 376-2413						Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal			
Project Designation 200 UP-1		Sampling Location 299-W19-34B				SAF No. 94-046									
Ice Chest No. SML-60		Field Logbook No. EFL-1118				Method of Shipment BY COMPANY VEHICLE									
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-				Bill of Lading/Air Bill No.									
Possible Sample Hazards/Remarks		Preservative													
NONE OBSERVED		COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4			COOL 4	COOL 4		
		Type of Container	aGs	aG	G	G	G	G	P/G			aG	aGs		
		No. of Container(s)	1	1	1	1	1	1	1			1	1		
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE <i>refrigerate</i>		Volume													
		125ml	500ml	500ml	250ml	250ml	125ml	1500ml			<i>NUS</i>	<i>180ml</i>	<i>40ml</i>		
SAMPLE ANALYSIS <i>404564</i>		VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS NO2, NO3 IC-F, CL EPA(353 SO4, NO2, NO3, PO4						VOA (TRIP)	ACTIVIT SCAN		
		A	B	C	D	E	F			<i>*1 40456501</i>		<i>01A</i>			
Sample No.	Matrix*	Date Sampled	Time Sampled												
<i>BOBJ12 01</i>	<i>B</i>	<i>4-26-94</i>	<i>0700</i>									<input checked="" type="checkbox"/>			
<i>BOBJ11 02</i>	<i>S</i>	<i>4-26-94</i>	<i>0805</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		
<i>NUS</i>															
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS						Matrix*			
Relinquished By <i>W.V. Setzer</i>		Date/Time <i>4-28-94 1350</i>		Received By <i>ASSIMPSON</i>		Date/Time <i>4/23/94 1353</i>		*1- GROSS ALPHA, BETA (EP-60,070,170) Am-241, Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60,Cs-137, Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251)Tc-99 (EP-020,540), I-129						S = Soil SE = Sediment SO = Solid SL = Skudge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other	
Relinquished By <i>AG SIMPSON</i>		Date/Time <i>4/27/94 1027</i>		Received By <i>Sweeney</i>		Date/Time <i>4-27-94 1030</i>		STANDALONE DELIVERABLES							
Relinquished By <i>Sweeney</i>		Date/Time <i>4-28-94 1210</i>		Received By <i>K...</i>		Date/Time <i>4/24/94 1210</i>		LOWEST HOLDING TIME = 7DAYS						<i>SDG-W0034</i>	
LABORATORY SECTION		Received By				Title				Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method				Disposed By				Date/Time					

9613476.0794

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W0#389

#1 END CARRIED

Contractor <i>WESTINGHOUSE MANFOLD COMPANY</i>	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W94-0-0448#20
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PART I - TO BE COMPLETED BY ORIGINATOR

Department <i>ENVIRONMENTAL</i>	Section <i>ENV. FIELD SERVICES</i>	Unit <i>ENV. MARKS & SAMPLING</i>
The following items are to be shipped from		<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor
Routing		<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor
Shipped to <i>INTERNATIONAL TECHNOLOGIES 5800 GEORGE WASHINGTON WAY RICHMOND, VA 23234</i>		Off-site Custodian <i>TAMMY HEDLITZ</i>
		Full Title <i>PROJECT COORDINATOR</i>
Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
<i>1</i>	<i>WORKING COPY COTEL. Soil samples, packed in wet ice and coolers and double bagged samples are NON-HAZARDOUS.</i>	<i>NA</i>
<i>SAMPLE #'S: 150, 151, 152, 153, 154, 155, 156, 157, 158, 159</i>		

Classified Unclassified Shipped Under DOE Contract Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

To support drilling + sampling at 500 y-1.

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release <i>Chanda Intes</i>	RM Survey No. <i>157777</i>	Date <i>4-17-94</i>
Location of Property (Area & Bldg.) <i>206-22</i>	Contact <i>WU SEITZ</i>	Phone <i>571-2415</i>
Date Ready for Shipment <i>4-18-94</i>	Cost Code to be Charged <i>PT2EA</i>	Approximate Date This Property will be Returned
Originated By <i>RELIANCE</i> <i>W.D. [Signature]</i>	Date <i>4-18-94</i>	Authorized By <i>[Signature]</i>
Signature and Name of Property Control	Custodian Date	Property Management Approval <i>[Signature]</i>
		Date <i>4/18/94</i>

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date				

DISTRIBUTION

<p>By Originator</p> <p>White, Green, Yellow, Pink - Property Management Goldenrod - Retain</p>	<p>Shipping Operation - Sign all Copies and Forward to:</p> <p>White - Property Management Green - Property Control Custodian (Issuing Office) Yellow - Retain Pink - Originator</p>
--	---

Contractor <i>INTERNATIONAL TECHNOLOGIES</i> <i>300 W. LUCE BLVD. WYOMING</i>	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) <i>W941-0-0448-29</i>
--	--------------------------------------	--

PART I - TO BE COMPLETED BY ORIGINATOR

Department <i>ENVIRONMENTAL</i>	Section <i>ENV. FIELD SERVICES</i>	Unit <i>ENVIRONMENTAL SERVICES</i>
---------------------------------	------------------------------------	------------------------------------

The following items are to be shipped from Contractor Vendor

Routing Contractor Vendor

Shipped to <i>INTERNATIONAL TECHNOLOGIES</i> <i>300 W. LUCE BLVD. WYOMING</i> <i>WYOMING, WY 82002</i>	Off-site Custodian <i>Tommy Dieckhoff</i>
	Full Title <i>Project Coordinator</i>

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
<i>1</i>	<i>July 2001. Contains soil samples that are white-tagged marked as site - removable. samples are marked as follows - FILE # : 1500710</i>	<i>2.00</i>

Classified Unclassified Shipped Under DOE Contract Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property
To support building + analysis - 2001-1

BEST AVAILABLE COPY

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release <i>TR</i>	RM Survey No. <i>150</i>	Date <i>1.21.04</i>
Location of Property (Area & Bldg.) <i>25002</i>	Contact <i>TRU. DIECKHOFF</i>	Phone <i>307-5413</i>
Date Ready for Shipment <i>1.21.04</i>	Cost Code to be Charged <i>1720A</i>	Approximate Date This Property will be Returned
Originated By <i>[Signature]</i>	Date	Authorized By <i>[Signature]</i>
Signature and Name of Property Control	Custodian Date	Property Management Approval <i>[Signature]</i>
		Date <i>1/21/04</i>

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient <i>[Signature]</i>	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date <i>1.21.04</i>	<i>025</i>			

DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	Shipping Operation - Sign all Copies and Forward to: White - Property Management Green - Property Control Custodian (Issuing Office) Yellow - Retain Pink - Originator
--	---

revised:

WO#466

Contractor WHC	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) 103466518-22
--------------------------	--------------------------------------	--

PART I - TO BE COMPLETED BY ORIGINATOR

Department ER Eng Support	Section Field & Analytical Supp	Unit ER Field Sampling
The following items are to be shipped from		<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor
Routing		<input checked="" type="checkbox"/> Contractor <input type="checkbox"/> Vendor
Shipped to IT Analytical Services 2800 George Washington Way Richland, WA 99352	Off-site Custodian Full Title	

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: B0F512, B0F511 Cooler ID: S2122 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: NA Cooler ID: NA Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

Classified Unclassified Shipped Under DOE Contract Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the **DCC AREA**

Bill of lading # N/A

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release R Nelson	RM Survey No. 157785	Date 4-29-94
Location of Property (Area & Bldg.) DCC-111-1	Contact P. H. Butcher	Phone (509) 376-4388
Date Ready for Shipment 4-29-94	Cost Code to be Charged 8B410 PT11DD	Approximate Date This Property will be Returned N/A
Originated By PH Butcher	Date 4/29/94	Authorized By [Signature]
Signature and Name of Property Control	Custodian Date [Signature]	Date 4/29/94

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date				

DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	Shipping Operation - Sign all Copies and Forward to: White - Property Management Yellow - Retain	Green - Property Control Custodian (Issuing Office) Pink - Originator
--	---	--

Project Name/No. 1 94-040
 Sample Team Members 2 _____
 Profit Center No. 3 4632
 Project Manager 4 Van Petten
 Purchase Order No. 6 _____
 Required Report Date 11 5/3/94

Samples Shipment Date 7 4/18/94
 Lab Destination 8 Middlebrook
 Lab Contact 9 _____
 Project Contact/Phone 12 _____
 Carrier/Waybill No. 13 112 8244 266

Bill to: 5 ITAS Richland
 Report to: 10 ITAS Richland

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
W40431501A	BOBJ05 /soil	4/14/94 0950	Glass	120ml	4°C	Voa	2°C 8P 4/12/94	
B				500ml		SemiVoa	FOR LAB USE ONLY	
C						metals, Hg		
D			Poly	250ml		CN		
E			Glass			Anions		
F				120ml		NO2/NO3		
02A	BOBJ07 /soil/	4/14/94 0915				Voa	FOR LAB USE ONLY	
B				500ml		Semi Voa		

Special Instructions: 23 Samples 1 & 3 are CAT II.

Possible Hazard Identification: 24
 Non-hazard Flammable Skin Irritant Poison B Unknown Sample Disposal: 25
 Return to Client Disposal by Lab Archive _____ (mos.)

Turnaround Time Required: 26
 Normal Rush GC Level: 27
 I. II. III. Project Specific (specify): SDG W0034

1. Relinquished by 28 (Signature/Affiliation) <u>[Signature] ITAS</u>	Date: <u>4/18/94</u> Time: <u>1600</u>	1. Received by 28 (Signature/Affiliation) <u>[Signature] ITASKR</u>	Date: <u>4/19/94</u> Time: <u>08:55</u>
2. Relinquished by (Signature/Affiliation)	Date: _____ Time: _____	2. Received by (Signature/Affiliation)	Date: _____ Time: _____
3. Relinquished by (Signature/Affiliation)	Date: _____ Time: _____	3. Received by (Signature/Affiliation)	Date: _____ Time: _____

Comments: 29

9613476.0788

0000032

WO# 389

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No. ³⁰ 340384

Page 2 of 2

Project Name _____

Project No. 94-046

Samples Shipment Date 4/18/94

ONE CONTAINER PER LINE

Sample 14 Number	Sample 15 Description/Type	Date/Time 16 Collected	Container 17 Type	Sample 18 Volume	Pre-19 servative	Requested Testing 20 Program	Condition on 21 Receipt	Disposal 22 Record No.	
W40431502C	BOB507 /soil	4/14/94 0915	Glass	500ml	4°C	Metals	2°C 4/18/94		
D			Poly	250ml		CN	FOR LAB USE ONLY		
E			Glass	.1		ANIONS			
F				120ml		NO2/NO3			
03A	BGBJ08 /soil	4/14/94 1050		.1		Voa	FOR LAB USE ONLY		
B				500ml		Semi Voa			
C						metals			
D			Poly	250ml		CN	FOR LAB USE ONLY		
E			Glass			ANIONS			
F				120ml		N/O2/NO3			
04A	BOBJ09 /soil			250ml		Voa	FOR LAB USE ONLY		
05A	BOBJ06 /soil	4/14/94 0630		120ml		Voa			
06A	Trip Blank #70	4/18/94		40ml		Voa			
B							FOR LAB USE ONLY		
@ 4/18/94								FOR LAB USE ONLY	
/									FOR LAB USE ONLY

White: To accompany samples Yellow: Field copy * See back of form for special instructions.

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0000033



COC NO.
0001516

Kept Lot: 534
ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

W0422

Reference Document No. 340393
Page 1 of 1

Project Name/No. 1 94-046 Samples Shipment Date 7 4-21-94 Bill to: 5 IT
 Sample Team Members 2 _____ Lab Destination 8 Middlebrook Rickland
 Profit Center No. 3 4632 Lab Contact 9 _____
 Project Manager 4 Van Petty Project Contact/Phone 12 _____ Report to: 10 IT
 Purchase Order No. 6 _____ Carrier/Waybill No. 13 Rickland
 Required Report Date 11 _____

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
40440201 A	BOBTIO / wood	4-18-94 0815	QSS	120ml	COOL 40	VOA	Rec'd at 3 rd KKK 4-22-94	
B			ag	500ml		Semi VOA	FOR LAB USE ONLY	
C			G	500ml		Metals ICP GFAA Hg		
D			PIG	250ml		Cyanide		
E			G	250ml		Drugs		
F			PIG	120ml		EPA 353.2		
								FOR LAB USE ONLY

Special Instructions: 23

Possible Hazard Identification: 24
 Non-hazard Flammable Skin Irritant Poison B Unknown
 Sample Disposal: 25
 Return to Client Disposal by Lab Archive _____ (mos.)

Turnaround Time Required: 26
 Normal Rush
 QC Level: 27
 I. II. III. Project Specific (specify): SD6 W0034

1. Relinquished by 28
 (Signature/Affiliation) R. Boyd ST Date: 4-21-94 Time: 1600
 1. Received by 28
 (Signature/Affiliation) Kerry Klemm ITAS-KN Date: 4-22-94 Time: 08:55

2. Relinquished by
 (Signature/Affiliation) Date: _____ Time: _____
 2. Received by
 (Signature/Affiliation) Date: _____ Time: _____

3. Relinquished by
 (Signature/Affiliation) Date: _____ Time: _____
 3. Received by
 (Signature/Affiliation) Date: _____ Time: _____

Comments: 29

Write: 10 accompany samples

Yellow: Field copy

Other labels in this kit specify their contents.

9613476.0290

0000034



INTERNATIONAL
TECHNOLOGY
CORPORATION

COC NO.



**ANALYSIS REQUEST AND
CHAIN OF CUSTODY RECORD***

WO# 466
RL# 589

Reference Document No. 453615
Page 1 of 1

Project Name/No. 1 SAF-94-046
Sample Team Members 2
Profit Center No. 3 4632
Project Manager 4 Van Petter
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 4-29-94
Lab Destination 8 Middlebrook
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13 150 9933 241

Bill to: 5 IT
Richard
Report to: 10 IT
Richard

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
40456401A	BOBJ12 / soil	4/26 0700	TH 4/24/94 12 ab	120ml	Cool 40	Voa	4°C BPS 4/30/94	
02A	BOBJ11 / soil	4/26 0805	ab-s	125ml		Voa	FOR LAB USE ONLY	
B			ab	500ml		Semi Voa		
C			G	↓		ICP, GFAA, Hg		
D			G	250ml		Cn		
E			G	↓		ANIONS, SO4, NO2, NO3 PO4		
F			G	125ml		NO2, NO3		
JH 4/29/94								

Special Instructions: 23 As per WHC Contract

Possible Hazard Identification: 24
 Non-hazard Flammable Skin Irritant Poison B Unknown
 Sample Disposal: 25
 Return to Client Disposal by Lab Archive _____ (mos.)

Turnaround Time Required: 26
 Normal Rush
 QC Level: 27
 I. II. III. Project Specific (specify): SD6 W0034

1. Relinquished by 28 (Signature/Affiliation) <i>Heidelberg IT</i>	Date: 4-29-94 Time: 16:00	1. Received by 28 (Signature/Affiliation) <i>Ryan Blomquist ITASKN</i>	Date: 4/30/94 Time: 9:35
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

Writes: To accompany samples
Yellow: Field copy
* See back of form for special instructions.

9613476.0791

0000035

W07389

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Received Date	Time	Screening Date	Prep Time	Count Date	Mnts. Cntd	BACKGROUND		
WHC			41894		418	10	Alpha	Beta	Mnts
							6	61	60

Category II

Customer ID	pH <2	RESIDUE Wght (mGrms)	Vol. Anal. mG	Sample Size mL	SMPL CNT DATA			Net Sample		DPM / Aliquot		uCi per Sample		2 Sigma Error		pCi/(Gm or L)		Category 1 Yes/No	Aliquot to Cat 1 Gm or Ltr	
					Hldr Num.	Total Alpha	Counts Beta	Counts/Minute Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta		Alpha	Beta
BOBJ05		91.8	92	950.0	47	11	74	1.00	6.38	9.8E+00	1.5E+01	4.6E-02	7.0E-02	3.4E-05	2.1E-05	4.8E+01	7.3E+01	No	2.1E+02	1.4E+03
BOBJ08		93.3	93	1000.0	48	4	40	0.30	2.98	2.9E+00	7.2E+00	1.4E-02	3.5E-02	1.9E-05	1.4E-05	1.4E+01	3.5E+01	No	7.1E+02	2.9E+03
BOBJ07		96.9	97	1350.0	49	2	20	0.10	0.98	1.0E+00	2.4E+00	6.3E-03	1.5E-02	1.4E-05	2.4E-05	4.8E+00	1.1E+01	Yes	2.2E+03	9.0E+03
TOTAL	uCi							-0.10	-1.02	-4E-01	-2E+00	6.6E-02	1.2E-01	ERR	ERR	ERR	ERR	No	ERR	ERR

Category I

JRN 18 Apr 94

9613476.0792

0000036

W#466

Customer Code	Recieved		Screening Prep		Count		Mnts.		BACKGROUND			
	Date	Time	Date	Time	Date	Cntd	Alpha	Beta	Mnts	Alpha	Beta	Mnts
WHC			42994		429	10	18	227	240			

Customer ID WHC/SOIL	pH <2 Rcvd/Relq	RESIDUE Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPL CNT DATA			Net Sample		DPM / Aliquot		uCi per Sample		2 Sigma Error		pCi/(Gm or L)		Category	Aliquot to Cat		
					Hldr	Total	Counts	Counts/Minute	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	1	Alpha	Beta
					Num.	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta	
B0BJ11		99.8	100	1150.0	8	8	31	0.73	2.15	7.7E+00	4.7E+00	4.0E-02	2.4E-02	3.4E-05	1.3E-05	3.5E+01	2.1E+01	No	2.9E+02	4.7E+	

Category II
JRN
29 Apr 94

9613476.0793

9613476.0794

0000038

WG#389

SAMPLE STATUS REPORT FOR E 5526. E-BLANK B0BJ05 TIME: 4/15/94 8:32
 DISPATCHED: 3/ 8/94 10:38 SAMPLE HAS NOT BEEN SLURPED
 RECEIVED: 4/14/94 14:34

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pci/G	N	Y	VOGEL

END OF REPORT

9613476.0795

0000039

Wo#389

WUS 3-18-94
B0B506
~~B0B105~~

SAMPLE STATUS REPORT FOR E 5526. E-BLANK
DISPATCHED: 3/ 8/94 10:38 TIME: 4/15/94 8:32
RECEIVED: 4/14/94 14:34 SAMPLE HAS NOT BEEN SLURPED

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

9613476.1796

0000040

WJ#389

SAMPLE STATUS REPORT FOR E 5528. E-BLANK BOBJ07 TIME: 4/15/94 8:32
DISPATCHED: 3/ 8/94 10:39 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/14/94 14:34

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pci/g	N	Y	VOGEL

END OF REPORT

9613476.0797

0000041

WO#389

SAMPLE STATUS REPORT FOR E 5529. E-BLANK BOBJ08 TIME: 4/15/94 8:32
DISPATCHED: 3/ 8/94 10:40 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/14/94 14:34

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

B6BJ09 WWS 4-18-94 W0#389
~~808708~~

SAMPLE STATUS REPORT FOR E 5529. E-BLANK
DISPATCHED: 3/ 8/94 10:40 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/14/94 14:34

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	*****	*****	***	***	*****
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

9613476.0799

0000043

WO#422

SAMPLE STATUS REPORT FOR E 5531. E-BLANK BOBJ10 TIME: 4/19/94 8:44
DISPATCHED: 3/ 8/94 10:41 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/18/94 15:29

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
***	*****	*****	***	***	*****
271	TOT-ACT	< 5.00000E 01 pci/G	N	Y	VOGEL

END OF REPORT

9613476-0800

0000044

04/27/94 08:09 373 3178

2225 3B

--- ENV FIELD SVC

002

WC #466

SAMPLE STATUS REPORT FOR E 5532. E-BLANK BOBJ11 TIME: 4/27/94 8:35
DISPATCHED: 3/ 8/94 10:41 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/26/94 14:52

EXT. DETER. RESULTS OR STATUS
**** *****
4271 TOT-ACT < 5.00000E 01 pci/G

OUT OF GOOD CHARGE
RANGE? ANS? CODE
*** **
N Y VOGEL

END OF REPORT

BOBJ12

BOBJ11

LCS

4/29/94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Category I
JRN 21 Apr 94

0054

Customer Code	Received Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND		
WHC			42194		421	10	Alpha	Beta	Mnts
							11	178	180

Customer ID	pH <2	RESIDUE Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPL CNT DATA			Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1	Aliquot to Cat 1 Gm or Ltr	
WHC/SOIL	Rcvd/Relq				Hldr Num	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta
B0BJ10		99.6	100	1350.0	10	2	27	0.14	1.71	1.4E+00	4.2E+00	8.5E-03	2.6E-02	1.6E-05	1.4E-05	6.3E+00	1.9E+01	Yes	1.6E+03	5.3E+03

1080 9/15/96

Analytical Data Package Prepared For

Westinghouse Hanford

Radiochemical Analysis By
IT Analytical Services
Richland Laboratory



Sample Delivery Group Number: W0034

WHC IDENTIFICATION NUMBER

ITAS RICHLAND ID NUMBER

B0BJ05

40431601

B0BJ07

40431602

B0BJ08

40431603

B0BJ10

40440301

B0BJ11

40456501





CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
 P.O. Box 1970
 Richland, WA 99352

June 17, 1994

Attention: J.A.Lerch

SAF Number	:	94-046
Date SDG Closed	:	May 2, 1994
Number of Samples	:	Five (5)
Sample Type	:	Soil
SDG Number	:	W0034
Data Deliverable	:	Stand Alone

I. Introduction

On April 18, 21, and 29, 1994, five soil samples were received by ITAS-Richland for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

<u>ITAS-Richland ID</u>	<u>WHC ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
404316-01A	B0BJ05	Soil	4/18/94
404316-02A	B0BJ07	Soil	4/18/94
404316-03A	B0BJ08	Soil	4/18/94
404403-01A	B0BJ10	Soil	4/21/94
404565-01A	B0BJ11	Soil	4/29/94

Westinghouse Hanford Company
June 17, 1994
Page 2

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, the analytical result(s) and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302

Neptunium-237 by method ITAS-RD-3208

Plutonium-238, 239/40 by method ITAS-RD-3209

Uranium-234, 235, 238 by method ITAS-RD-3234

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219

Iodine-129 by method ITAS-RD-3219

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222

Gross Beta by method ITAS-RD-3222

Strontium-90 by method ITAS-RD-3204

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247

Technetium-99 by method ITAS-IT-RS-0001

III. Quality Control

The analytical results for each analysis performed under SDG W0034 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate.

Quality control sample results are reported in the same units as sample results except for gross alpha and gross beta quality control sample results which are reported in pCi/sample.

IV. Comments

The initial radioactivity screening of the samples classified samples B0BJ07 and B0BJ10 as Category I, and samples B0BJ05, B0BJ08, and B0BJ11 as Category II.

Westinghouse Hanford Company

June 17, 1994

Page 3

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302

The blank result is accepted and reported with possible low-level contamination below the contractual detection limit (the result is less than the contract limit, but greater than 1/2 the contract limit). The sample results are all less than the contract limit. The LCS, sample and sample duplicate (duplicate of sample B0BJ11) results are within contractual requirements.

Neptunium-237 by method ITAS-RD-3208

The analysis of the duplicate of sample B0BJ11 was "lost" during step 5.8.11 of procedure RD3208 due to technician error. Two matrix spikes were analyzed with this batch; their results are out of contract limits (low). The LCS had a recovery of 95.2%, therefore, the matrix spikes are reported as low due to a matrix effect. The LCS and batch blank results are within contractual requirements.

Plutonium-238, 239/40 by method ITAS-RD-3209

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ11) results are within contractual requirements.

Uranium-234, 235, 238 by method ITAS-RD-3234

The sample batch was reanalyzed because of a low LCS tracer yield and radiochemical recoveries that were out of limits. The results of the reanalysis show that the original results are acceptable (within 3 sigma of the original sample results) and that the problem with the LCS was not related to the original analysis of the samples. The original analysis is reported rather than the reanalysis due to low sample yields on the reanalysis. The original batch blank, sample and sample duplicate (duplicate of sample B0BJ08) results are within contractual requirements.

Westinghouse Hanford Company
June 17, 1994
Page 4

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219

The detection limit was not met for one or more isotopes for sample B0BJ08 and the duplicate of B0BJ11. An Ottawa sand matrix blank met the detection limits for all isotopes, therefore, the sample data are accepted. The gamma nuclide library had not been updated to allow reporting of U-238 based on the Th-234 found rather than Pb-214, therefore, the result is reported as Th-234 using a half-life of 24 days. This does not take into account that the Th-234 may be in equilibrium with U-238. The effect on the Th-234 results reported is that the results may be elevated due to an inappropriate decay correction. The library has since been updated to report the U-238 result as U-238DLP and uses Th-234 assuming that the Th-234 and U-238 are in equilibrium. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ11) results are within contractual requirements.

Iodine-129 by method ITAS-RD-3219

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ11) results are within contractual requirements.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ07) results are within contractual requirements.

Gross Beta by method ITAS-RD-3222

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ07) results are within contractual requirements.

Strontium-90 by method ITAS-RD-3204

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ05) results are within contractual requirements.

Westinghouse Hanford Company
June 17, 1994
Page 5

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247

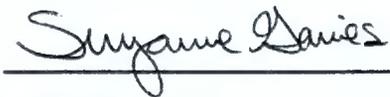
Carbon-14 results are not reportable for these samples due to an insufficient presence of carbon in the samples to perform the analysis. The carbon-14 method requires that 2 grams of carbon be present in each sample. The samples produced insufficient carbon dioxide during sample preparation. Two separate attempts were made to extrude carbon from the sample matrices. The sample results are considered unreportable due to a matrix effect (lack of carbon in the matrix).

Technetium-99 by method ITAS-IT-RS-0001

The matrix spike, LCS, batch blank, sample and sample duplicate (duplicate of sample BOBJ11) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:



Suzanne Gaines
Project Manager

**IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131**

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND

SDG NO.: W0034

LAB SAMPLE ID: 40431601

MATRIX: SOIL

WHC ID: BOBJ05

DATE RECEIVED 4/18/94

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	5.26E-01	9.84E-02	1.27E-01	2.45E-02	0.791	RD3302
CM-242	-4.46E-04	8.93E-04	8.96E-04	2.25E-02	0.791	RD3302
CM-244	-3.69E-04	7.38E-04	7.40E-04	1.85E-02	0.791	RD3302
NP-237	4.16E-03	8.32E-03	8.37E-03	1.13E-02	1	RD3208
PU239/40	1.26E-03	1.36E-02	1.36E-02	4.34E-02	0.659	RD3209
PU-238	-1.26E-03	2.53E-03	2.54E-03	3.03E-02	0.659	RD3209
U-234	1.04E+00	1.73E-01	2.26E-01	3.56E-02	0.583	RD3234
U-235	6.14E-02	4.29E-02	4.38E-02	4.03E-02	0.583	RD3234
U-238DA	7.76E-01	1.49E-01	1.85E-01	3.56E-02	0.583	RD3234
CO-60	-3.44E-03	6.98E-03	6.99E-03	1.13E-02	N/A	RD3219
FE-59	-1.87E-02	2.17E-02	2.18E-02	3.49E-02	N/A	RD3219
EU-152	1.44E-01	3.11E-02	3.43E-02	6.11E-02	N/A	RD3219
MN-54	1.91E-02	7.92E-03	8.14E-03	N/A	N/A	RD3219
CO-58	3.91E-03	7.57E-03	7.58E-03	1.27E-02	N/A	RD3219
CS-137DA	-3.81E-04	6.50E-03	6.50E-03	1.04E-02	N/A	RD3219
RA-224DA	1.14E+00	2.23E-02	1.16E-01	N/A	N/A	RD3219
EU-155	8.24E-02	1.94E-02	2.10E-02	3.12E-02	N/A	RD3219
EU-154	6.09E-03	2.22E-02	2.22E-02	3.64E-02	N/A	RD3219
RA-226DA	8.24E-01	3.06E-02	8.78E-02	N/A	N/A	RD3219
TH-234	6.41E+00	2.90E+00	2.97E+00	N/A	N/A	RD3219
RA-228DA	1.19E+00	5.88E-02	1.33E-01	N/A	N/A	RD3219
ALPHA	1.37E+01	5.34E+00	5.54E+00	5.33E+00	1	RD3222
BETA	2.61E+01	3.64E+00	4.03E+00	3.68E+00	1	RD3222
TOTAL-SR	1.03E-01	5.88E-02	6.39E-02	1.44E-01	0.821	RD3204
TC-99	5.95E-01	2.30E-01	1.06E+00	5.11E-01	1	ITAS-IT-RS-0001

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0034
 LAB SAMPLE ID: 40431602 MATRIX: SOIL
 WHC ID: BOBJ07 DATE RECEIVED 4/18/94
 REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	6.89E-01	1.15E-01	1.57E-01	2.20E-02	0.751	RD3302
CM-242	-4.69E-04	9.39E-04	9.41E-04	2.36E-02	0.751	RD3302
CM-244	-1.16E-03	1.34E-03	1.36E-03	2.42E-02	0.751	RD3302
NP-237	4.17E-03	8.33E-03	8.38E-03	1.13E-02	1	RD3208
PU239/40	0.00E+00	0.00E+00	3.24E-02	2.92E-02	0.385	RD3209
PU-238	0.00E+00	0.00E+00	3.24E-02	2.93E-02	0.385	RD3209
U-234	8.26E-02	4.61E-02	4.73E-02	3.80E-02	0.677	RD3234
U-235	4.18E-03	1.24E-02	1.25E-02	3.28E-02	0.677	RD3234
U-238DA	1.26E-01	5.64E-02	5.88E-02	3.64E-02	0.677	RD3234
K-40	5.24E-01	7.79E-02	9.39E-02	N/A	N/A	RD3219
CO-60	-3.03E-04	2.79E-03	2.79E-03	4.74E-03	N/A	RD3219
FE-59	6.48E-03	6.88E-03	6.91E-03	1.28E-02	N/A	RD3219
EU-152	2.11E-02	1.30E-02	1.31E-02	2.56E-02	N/A	RD3219
CO-58	2.25E-03	2.85E-03	2.86E-03	5.15E-03	N/A	RD3219
CS-137DA	2.31E-04	2.52E-03	2.52E-03	4.14E-03	N/A	RD3219
RA-224DA	1.25E-01	8.28E-03	1.50E-02	N/A	N/A	RD3219
EU-155	9.13E-03	6.85E-03	6.91E-03	1.18E-02	N/A	RD3219
EU-154	2.77E-03	7.45E-03	7.46E-03	1.31E-02	N/A	RD3219
RA-226DA	8.68E-02	1.20E-02	1.48E-02	N/A	N/A	RD3219
RA-228DA	1.01E-01	2.14E-02	2.37E-02	N/A	N/A	RD3219
ALPHA	7.25E-01	2.16E+00	2.16E+00	5.11E+00	1	RD3222
BETA	2.43E+00	1.83E+00	1.84E+00	3.67E+00	1	RD3222
TOTAL-SR	1.82E-01	6.01E-02	7.58E-02	1.24E-01	0.93	RD3204
TC-99	1.17E-01	2.20E-01	1.02E+00	5.11E-01	1	ITAS-IT-RS-0001

**IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131**

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0034
 LAB SAMPLE ID: 40431603 MATRIX: SOIL
 WHC ID: BOBJ08 DATE RECEIVED 4/18/94
 REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	6.97E-01	1.18E-01	1.61E-01	2.28E-02	0.728	RD3302
CM-242	6.06E-03	1.21E-02	1.22E-02	1.64E-02	0.728	RD3302
CM-244	-4.01E-04	8.01E-04	8.04E-04	2.02E-02	0.728	RD3302
NP-237	1.25E-02	1.44E-02	1.46E-02	1.12E-02	1	RD3208
PU239/40	4.09E-03	8.17E-03	8.19E-03	1.11E-02	1.018	RD3209
PU-238	-1.64E-03	2.31E-03	2.32E-03	2.31E-02	1.018	RD3209
U-234	9.62E-01	1.74E-01	2.22E-01	4.82E-02	0.535	RD3234
U-235	2.87E-02	3.13E-02	3.16E-02	4.16E-02	0.535	RD3234
U-238DA	9.56E-01	1.73E-01	2.21E-01	4.40E-02	0.535	RD3234
K-40	1.79E+01	5.51E-01	1.87E+00	N/A	N/A	RD3219
CO-60	7.45E-04	1.14E-02	1.14E-02	1.90E-02	N/A	RD3219
FE-59	2.06E-02	3.79E-02	3.79E-02	6.58E-02	N/A	RD3219
EU-152	1.45E-01	5.08E-02	5.28E-02	1.04E-01	N/A	RD3219
CO-58	-4.11E-03	1.37E-02	1.37E-02	2.27E-02	N/A	RD3219
CS-137DA	-1.09E-03	1.07E-02	1.07E-02	1.72E-02	N/A	RD3219
RA-224DA	1.12E+00	3.83E-02	1.18E-01	N/A	N/A	RD3219
EU-155	6.49E-02	3.37E-02	3.43E-02	5.43E-02	N/A	RD3219
EU-154	4.86E-03	4.08E-02	4.08E-02	6.78E-02	N/A	RD3219
RA-226DA	8.98E-01	5.13E-02	1.03E-01	N/A	N/A	RD3219
TH-234	8.39E+00	5.30E+00	5.36E+00	N/A	N/A	RD3219
RA-228DA	1.16E+00	9.87E-02	1.52E-01	N/A	N/A	RD3219
ALPHA	1.75E+01	6.00E+00	6.29E+00	5.64E+00	1	RD3222
BETA	2.89E+01	3.78E+00	4.23E+00	3.60E+00	1	RD3222
TOTAL-SR	2.45E-01	7.05E-02	9.26E-02	1.40E-01	0.841	RD3204
TC-99	2.70E-01	2.26E-01	1.04E+00	5.11E-01	1	ITAS-IT-RS-0001

9613476.0811

**IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131**

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0034
 LAB SAMPLE ID: 40440301 MATRIX: SOIL
 WHC ID: BOBJ10 DATE RECEIVED 4/21/94
 REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	6.25E-01	1.06E-01	1.42E-01	1.80E-02	0.811	RD3302
CM-242	0.00E+00	0.00E+00	1.60E-02	1.45E-02	0.811	RD3302
CM-244	4.49E-03	8.98E-03	9.00E-03	1.22E-02	0.811	RD3302
NP-237	1.66E-02	1.66E-02	1.70E-02	1.12E-02	1	RD3208
PU239/40	-1.14E-03	2.28E-03	2.29E-03	2.73E-02	0.729	RD3209
PU-238	-2.28E-03	3.23E-03	3.25E-03	3.23E-02	0.729	RD3209
U-234	2.07E+00	3.09E-01	4.61E-01	6.50E-02	0.362	RD3234
U-235	9.02E-02	6.51E-02	6.68E-02	5.25E-02	0.362	RD3234
U-238DA	1.90E+00	2.96E-01	4.31E-01	5.73E-02	0.362	RD3234
K-40	9.96E+00	4.77E-01	1.10E+00	N/A	N/A	RD3219
CO-60	-1.06E-03	1.17E-02	1.17E-02	1.99E-02	N/A	RD3219
FE-59	6.07E-03	2.96E-02	2.96E-02	5.17E-02	N/A	RD3219
EU-152	1.20E-01	5.32E-02	5.46E-02	1.07E-01	N/A	RD3219
CO-58	8.62E-03	1.19E-02	1.19E-02	2.14E-02	N/A	RD3219
CS-137DA	-9.82E-03	1.11E-02	1.12E-02	1.73E-02	N/A	RD3219
RA-224DA	8.65E-01	3.79E-02	9.44E-02	N/A	N/A	RD3219
EU-155	6.40E-02	3.36E-02	3.42E-02	5.47E-02	N/A	RD3219
EU-154	2.61E-02	3.23E-02	3.24E-02	5.67E-02	N/A	RD3219
RA-226DA	8.01E-01	5.31E-02	9.61E-02	N/A	N/A	RD3219
RA-228DA	8.08E-01	8.23E-02	1.15E-01	N/A	N/A	RD3219
ALPHA	4.98E+00	3.60E+00	3.64E+00	5.43E+00	1	RD3222
BETA	1.85E+01	3.14E+00	3.37E+00	3.53E+00	1	RD3222
TOTAL-SR	3.16E-01	7.01E-02	1.07E-01	1.22E-01	0.96	RD3204
TC-99	3.96E-01	2.27E-01	1.05E+00	5.11E-01	1	ITAS-IT-RS-0001

0012

**IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131**

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0034
 LAB SAMPLE ID: 40456501 MATRIX: SOIL
 WHC ID: BOBJ11 DATE RECEIVED 4/29/94
 REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	4.90E-01	9.63E-02	1.22E-01	1.90E-02	0.769	RD3302
CM-242	-1.31E-03	1.51E-03	1.53E-03	2.72E-02	0.769	RD3302
CM-244	0.00E+00	0.00E+00	1.42E-02	1.28E-02	0.769	RD3302
NP-237	4.91E-02	2.88E-02	3.07E-02	1.90E-02	1	RD3208
PU239/40	0.00E+00	0.00E+00	1.88E-02	1.69E-02	0.666	RD3209
PU-238	0.00E+00	0.00E+00	1.88E-02	1.69E-02	0.666	RD3209
U-234	9.04E-01	1.54E-01	1.97E-01	3.27E-02	0.634	RD3234
U-235	3.68E-02	3.22E-02	3.26E-02	3.71E-02	0.634	RD3234
U-238DA	1.11E+00	1.71E-01	2.28E-01	1.78E-02	0.634	RD3234
K-40	1.76E+01	5.52E-01	1.84E+00	N/A	N/A	RD3219
CO-60	-3.14E-03	1.12E-02	1.13E-02	1.90E-02	N/A	RD3219
FE-59	-8.31E-03	3.00E-02	3.00E-02	5.09E-02	N/A	RD3219
EU-152	8.02E-02	4.06E-02	4.14E-02	8.33E-02	N/A	RD3219
CO-58	-3.66E-03	1.05E-02	1.05E-02	1.77E-02	N/A	RD3219
CS-137DA	2.82E-02	1.65E-02	1.67E-02	N/A	N/A	RD3219
RA-224DA	7.68E-01	3.12E-02	8.29E-02	N/A	N/A	RD3219
EU-155	2.83E-02	2.57E-02	2.58E-02	4.41E-02	N/A	RD3219
EU-154	-5.21E-02	3.66E-02	3.70E-02	5.65E-02	N/A	RD3219
RA-226DA	4.42E-01	4.77E-02	6.50E-02	N/A	N/A	RD3219
RA-228DA	7.69E-01	8.71E-02	1.16E-01	N/A	N/A	RD3219
I-129LP	2.79E-01	4.58E-01	4.59E-01	8.28E-01	N/A	RD3219
ALPHA	2.04E+01	6.46E+00	6.83E+00	5.93E+00	1	RD3222
BETA	3.22E+01	4.01E+00	4.54E+00	3.88E+00	1	RD3222
TOTAL-SR	3.56E-01	7.93E-02	1.18E-01	1.43E-01	0.859	RD3204
TC-99	6.08E-02	2.20E-01	1.02E+00	5.11E-01	1	ITAS-IT-RS-0001



DUE DATE 5/23/94 ^{6/6/94}
JK
5-24-94

REANALYSIS **RECOUNT**
CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Gamma
CUSTOMER WHC
MATRIX Soil

NAME/DATE JK 5-24-94
SAMPLE DELIVERY GROUP W0034
BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) L043161X		Cal 827 -200min
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

JK
5-24-94

REANALYSIS

REFERENCED QC

ITAS ID - BLANK _____
ITAS ID - SPIKE _____
CLIENT CODE _____

ACTIONS (Initial & Date)

PREP LAB RECEIVED _____
SAMPLE REMAINDER
RETURNED TO SCG (CHECK ONE)
NO SAMPLE REMAINING
SEPARATION LAB _____
COUNTING/MEASUREMENT _____
DATA REVIEWED _____
ANALYTICAL PREP STORED _____

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT JK 5-25-94
DATA REVIEWED JK 5-27-94
ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

Fine Ottawa Sand MA geometry



DUE DATE 6-3

REANALYSIS / RECOUNT
CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Uiso

NAME/DATE mmn / 5-30-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0034

MATRIX soil

BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) 40431601	ESI16008	
2) 02	16009	
3) 03	16010	
4) 4044037	16011	sample lost in analysis
5) 40456501	16012	
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ESI16007

ITAS ID - BLANK L04316 2B

EQIE064

ITAS ID - SPIKE L04316 2S

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED 5/31/94 Bm

SAMPLE REMAINDER

RETURNED TO SCG Bm (CHECK ONE)

NO SAMPLE REMAINING

RO 3221 5/31/94 Bm
SEPARATION LAB 06/01/94 Euc

COUNTING/MEASUREMENT AS 6/6/94

DATA REVIEWED mmn 6-2-94

ANALYTICAL PREP STORED mmn 6-2-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

Do not use this data

*M. Kelly
6-10-94*



TO: 200-UP-1 Round 1 Soil, Project QA Record

December 9, 1994

FR: Kent Angelos, Golder Associates Inc. *add for*

RE: VOLATILES DATA VALIDATION SUMMARY FOR
 DATA PACKAGE: W0034-ITC-055, (943-1610.037, 055VOA.UP1)

INTRODUCTION

This memo presents the results of data validation on data package W0034-ITC-055 prepared by the Quanterra Laboratory. Sample information is provided in the following table.

SAMPLE ID	MEDIA	ANALYSIS	COMMENTS
BOBJ05	Soil	Volatiles	none
BOBJ06	Soil	Volatiles	Trip Blank
BOBJ07*	Soil	Volatiles	Equip. Blank
BOBJ08	Soil	Volatiles	Duplicate of BOBJ05
BOBJ09	Soil	Volatiles	Field Blank
BOBJ10	Soil	Volatiles	none
BOBJ11	Soil	Volatiles	none
BOBJ12	Soil	Volatiles	Trip Blank

* Indicates sample results which were 100% recalculated.

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information:

- Attachment 1. Glossary of Data Reporting Qualifiers
- Attachment 2. Summary of Data Qualifications
- Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
- Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
- Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of eight (8)

*Revised
12/9/94*

samples were validated in this data package with a total of 264 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets the work plan completeness objective of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Blanks

- Acetone, methylene chloride and 2-hexanone were detected in the method blanks resulting in qualification of acetone as undetected in samples B0BJ05, B0BJ06, B0BJ07, B0BJ08, B0BJ09 and B0BJ10 and qualification of methylene chloride and acetone as undetected in samples B0BJ11 and B0BJ12. No qualification was necessary for 2-hexanone. Attachments 2 and 5 provide supporting documentation.

FIELD QC

- Sample B0BJ06 and B0BJ12 were identified as trip blanks. Methylene chloride (2 J ug/Kg) was detected in sample B0BJ06 but was not detected in the associated method blank. Toluene (3 J ug/Kg) was detected in sample B0BJ12 and not detected in the associated method blank. Qualification was not applied based on field QC results in accordance with the data validation procedures.
- Sample B0BJ09 was identified as a field blank. Methylene chloride (4 J ug/Kg) and an unknown TIC (16 JN ug/Kg) were detected in the sample but were not detected in the associated method blank. Qualification was not applied based on field QC results in accordance with the data validation procedures.
- Sample B0BJ07 was identified as an equipment blank. Methylene chloride (2 J ug/Kg) and an unknown TIC (110 JN ug/Kg) were detected in the sample but were not detected in the associated method blank. Qualification was not applied based on field QC results in accordance with the data validation procedures.
- Sample B0BJ08 was identified as a field duplicate of sample B0BJ05. Xylenes (3 J ug/Kg) was detected in sample B0BJ05 but not in the field duplicate. Methylene chloride was detected in both samples at 2 J ug/Kg. Detection limits for all remaining TCL constituents were comparable (11 U ug/Kg).

TENTATIVELY IDENTIFIED COMPOUNDS

Tentatively identified compounds (TICs) reported by the laboratory were evaluated during validation and qualified as follows:

- TICs were detected in the samples and determined to be valid, resulting in qualification of the associated results as presumptive and valid (JN).

REFERENCES

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington.

WHC 1993, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1. GLOSSARY OF DATA REPORTING QUALIFIERS

- B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.
- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.
- NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.
- N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.
- JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.
- UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.
- UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

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ATTACHMENT 3 - QUALIFIED DATA SUMMARY AND
ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0034-ITC-055

Parameter	Samp#	BOBJ05		BOBJ06		BOBJ07		BOBJ08		BOBJ09		BOBJ10	
	Date	4-14-94		4-14-94		4-14-94		4-14-94		4-14-94		4-18-94	
	Location	299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B	
	Depth	168.00 - 170.50		---		---		168.00 - 170.50		---		186.00 - 188.50	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments			TRIP BLANK		EQUIP		DUPLI		FIELD BLANK			
Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
CHLOROMETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
BROMOMETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
VINYL CHLORIDE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
CHLOROETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
METHYLENE CHLORIDE	UG/KG	2.000	J	2.000	J	2.000	J	2.000	J	4.000	J	2.000	J
ACETONE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
CARBON DISULFIDE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
1,1-DICHLOROETHENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
1,1-DICHLOROETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
CHLOROFORM	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
1,2-DICHLOROETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
2-BUTANONE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
1,1,1-TRICHLOROETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
CARBON TETRACHLORIDE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
BROMODICHLOROMETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
1,2-DICHLOROPROPANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
CIS-1,3-DICHLOROPROPENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
TRICHLOROETHENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
DIBROMOCHLOROMETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
1,1,2-TRICHLOROETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
BENZENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
BROMOFORM	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
4-METHYL-2-PENTANONE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
2-HEXANONE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
TETRACHLOROETHENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
TOLUENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
CHLOROBENZENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
ETHYLBENZENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
STYRENE	UG/KG	11.000	U	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U
XYLENES (TOTAL)	UG/KG	3.000	J	10.000	U	10.000	U	11.000	U	14.000	U	11.000	U

The decimal places shown do not reflect the precision reported by the laboratory

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*Reviewed
 12/19/94*

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6903

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY09

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 13 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	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	2	J
67-64-1	Acetone	11	B U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	3	J

Handwritten signature and date: 11/11/94

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6903

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY09

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 13 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.59	21	JN

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11/11/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ06

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6924

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY05

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 2 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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	2	J
67-64-1	-----Acetone	10	BJ U
75-15-0	-----Carbon Disulfide	10	U
75-35-4	-----1,1-Dichloroethene	10	U
75-34-3	-----1,1-Dichloroethane	10	U
540-59-0	-----1,2-Dichloroethene (total)	10	U
67-66-3	-----Chloroform	10	U
107-06-2	-----1,2-Dichloroethane	10	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	10	U
56-23-5	-----Carbon Tetrachloride	10	U
75-27-4	-----Bromodichloromethane	10	U
78-87-5	-----1,2-Dichloropropane	10	U
10061-01-5	-----cis-1,3-Dichloropropene	10	U
79-01-6	-----Trichloroethene	10	U
124-48-1	-----Dibromochloromethane	10	U
79-00-5	-----1,1,2-Trichloroethane	10	U
71-43-2	-----Benzene	10	U
10061-02-6	-----trans-1,3-Dichloropropene	10	U
75-25-2	-----Bromoform	10	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	10	U
79-34-5	-----1,1,2,2-Tetrachloroethane	10	U
108-88-3	-----Toluene	10	U
108-90-7	-----Chlorobenzene	10	U
100-41-4	-----Ethylbenzene	10	U
100-42-5	-----Styrene	10	U
1330-20-7	-----Xylene (total)	10	U

10 ~~7~~ BJ U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ06

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6924

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY05

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 2 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

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11/11/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6909

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADV06

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 0 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	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	2	J
67-64-1	Acetone	10 3	BJ U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6909

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY06

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 0 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.60	110	JN

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4/25/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6915

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY10

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 10 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>		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	2	J	
67-64-1	-----Acetone	5	B3	<i>u</i>
75-15-0	-----Carbon Disulfide	11	U	
75-35-4	-----1,1-Dichloroethene	11	U	
75-34-3	-----1,1-Dichloroethane	11	U	
540-59-0	-----1,2-Dichloroethene (total)	11	U	
67-66-3	-----Chloroform	11	U	
107-06-2	-----1,2-Dichloroethane	11	U	
78-93-3	-----2-Butanone	11	U	
71-55-6	-----1,1,1-Trichloroethane	11	U	
56-23-5	-----Carbon Tetrachloride	11	U	
75-27-4	-----Bromodichloromethane	11	U	
78-87-5	-----1,2-Dichloropropane	11	U	
10061-01-5	-----cis-1,3-Dichloropropene	11	U	
79-01-6	-----Trichloroethene	11	U	
124-48-1	-----Dibromochloromethane	11	U	
79-00-5	-----1,1,2-Trichloroethane	11	U	
71-43-2	-----Benzene	11	U	
10061-02-6	-----trans-1,3-Dichloropropene	11	U	
75-25-2	-----Bromoform	11	U	
108-10-1	-----4-Methyl-2-Pentanone	11	U	
591-78-6	-----2-Hexanone	11	U	
127-18-4	-----Tetrachloroethene	11	U	
79-34-5	-----1,1,2,2-Tetrachloroethane	11	U	
108-88-3	-----Toluene	11	U	
108-90-7	-----Chlorobenzene	11	U	
100-41-4	-----Ethylbenzene	11	U	
100-42-5	-----Styrene	11	U	
1330-20-7	-----Xylene (total)	11	U	

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6915

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY10

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 10 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.65	8	J/N

[Handwritten signature]
4/25/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ09

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6922

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY11

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 27 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	-----Chloromethane	14	U
74-83-9	-----Bromomethane	14	U
75-01-4	-----Vinyl Chloride	14	U
75-00-3	-----Chloroethane	14	U
75-09-2	-----Methylene Chloride	4	J
67-64-1	-----Acetone	14	B U
75-15-0	-----Carbon Disulfide	14	U
75-35-4	-----1,1-Dichloroethene	14	U
75-34-3	-----1,1-Dichloroethane	14	U
540-59-0	-----1,2-Dichloroethene (total)	14	U
67-66-3	-----Chloroform	14	U
107-06-2	-----1,2-Dichloroethane	14	U
78-93-3	-----2-Butanone	14	U
71-55-6	-----1,1,1-Trichloroethane	14	U
56-23-5	-----Carbon Tetrachloride	14	U
75-27-4	-----Bromodichloromethane	14	U
78-87-5	-----1,2-Dichloropropane	14	U
10061-01-5	-----cis-1,3-Dichloropropene	14	U
79-01-6	-----Trichloroethene	14	U
124-48-1	-----Dibromochloromethane	14	U
79-00-5	-----1,1,2-Trichloroethane	14	U
71-43-2	-----Benzene	14	U
10061-02-6	-----trans-1,3-Dichloropropene	14	U
75-25-2	-----Bromoform	14	U
108-10-1	-----4-Methyl-2-Pentanone	14	U
591-78-6	-----2-Hexanone	14	U
127-18-4	-----Tetrachloroethene	14	U
79-34-5	-----1,1,2,2-Tetrachloroethane	14	U
108-88-3	-----Toluene	14	U
108-90-7	-----Chlorobenzene	14	U
100-41-4	-----Ethylbenzene	14	U
100-42-5	-----Styrene	14	U
1330-20-7	-----Xylene (total)	14	U

14 ~~7~~ ~~B~~ U

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4/11/94

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ09

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6922

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY11

Level: (low/med) LOW Date Received: 04/14/94

% Moisture: not dec. 27 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.66	16	<i>JN</i>

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11/11/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7333
 Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY12
 Level: (low/med) LOW Date Received: 04/22/94
 % Moisture: not dec. 12 Date Analyzed: 04/25/94
 GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	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	2	J
67-64-1	-----Acetone	6	B3
75-15-0	-----Carbon Disulfide	11	U
75-35-4	-----1,1-Dichloroethene	11	U
75-34-3	-----1,1-Dichloroethane	11	U
540-59-0	-----1,2-Dichloroethene (total)	11	U
67-66-3	-----Chloroform	11	U
107-06-2	-----1,2-Dichloroethane	11	U
78-93-3	-----2-Butanone	11	U
71-55-6	-----1,1,1-Trichloroethane	11	U
56-23-5	-----Carbon Tetrachloride	11	U
75-27-4	-----Bromodichloromethane	11	U
78-87-5	-----1,2-Dichloropropane	11	U
10061-01-5	-----cis-1,3-Dichloropropene	11	U
79-01-6	-----Trichloroethene	11	U
124-48-1	-----Dibromochloromethane	11	U
79-00-5	-----1,1,2-Trichloroethane	11	U
71-43-2	-----Benzene	11	U
10061-02-6	-----trans-1,3-Dichloropropene	11	U
75-25-2	-----Bromoform	11	U
108-10-1	-----4-Methyl-2-Pentanone	11	U
591-78-6	-----2-Hexanone	11	U
127-18-4	-----Tetrachloroethene	11	U
79-34-5	-----1,1,2,2-Tetrachloroethane	11	U
108-88-3	-----Toluene	11	U
108-90-7	-----Chlorobenzene	11	U
100-41-4	-----Ethylbenzene	11	U
100-42-5	-----Styrene	11	U
1330-20-7	-----Xylene (total)	11	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7333

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY12

Level: (low/med) LOW Date Received: 04/22/94

% Moisture: not dec. 12 Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.58	19	19 <i>JN</i>

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7949

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AED05

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: not dec. 38 Date Analyzed: 05/04/94

GC Column: DB-625 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	Chloromethane	16	U
74-83-9	Bromomethane	16	U
75-01-4	Vinyl Chloride	16	U
75-00-3	Chloroethane	16	U
75-09-2	Methylene Chloride	16	U
67-64-1	Acetone	16	U
75-15-0	Carbon Disulfide	16	U
75-35-4	1,1-Dichloroethene	16	U
75-34-3	1,1-Dichloroethane	16	U
540-59-0	1,2-Dichloroethene (total)	16	U
67-66-3	Chloroform	16	U
107-06-2	1,2-Dichloroethane	16	U
78-93-3	2-Butanone	16	U
71-55-6	1,1,1-Trichloroethane	16	U
56-23-5	Carbon Tetrachloride	16	U
75-27-4	Bromodichloromethane	16	U
78-87-5	1,2-Dichloropropane	16	U
10061-01-5	cis-1,3-Dichloropropene	16	U
79-01-6	Trichloroethene	16	U
124-48-1	Dibromochloromethane	16	U
79-00-5	1,1,2-Trichloroethane	16	U
71-43-2	Benzene	16	U
10061-02-6	trans-1,3-Dichloropropene	16	U
75-25-2	Bromoform	16	U
108-10-1	4-Methyl-2-Pentanone	16	U
591-78-6	2-Hexanone	16	U
127-18-4	Tetrachloroethene	16	U
79-34-5	1,1,2,2-Tetrachloroethane	16	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	16	U
100-41-4	Ethylbenzene	16	U
100-42-5	Styrene	16	U
1330-20-7	Xylene (total)	16	U

16-4 BJ U
16-12 BJ U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7949

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AED05

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: not dec. 38 Date Analyzed: 05/04/94

GC Column: DB-625 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.71	110	<i>JTW</i>

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05/11/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ12

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7948

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AED04

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: not dec. 26 Date Analyzed: 05/04/94

GC Column: DB-625 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	Chloromethane	14	U
74-83-9	Bromomethane	14	U
75-01-4	Vinyl Chloride	14	U
75-00-3	Chloroethane	14	U
75-09-2	Methylene Chloride	14	U
67-64-1	Acetone	14	U
75-15-0	Carbon Disulfide	14	U
75-35-4	1,1-Dichloroethene	14	U
75-34-3	1,1-Dichloroethane	14	U
540-59-0	1,2-Dichloroethene (total)	14	U
67-66-3	Chloroform	14	U
107-06-2	1,2-Dichloroethane	14	U
78-93-3	2-Butanone	14	U
71-55-6	1,1,1-Trichloroethane	14	U
56-23-5	Carbon Tetrachloride	14	U
75-27-4	Bromodichloromethane	14	U
78-87-5	1,2-Dichloropropane	14	U
10061-01-5	cis-1,3-Dichloropropene	14	U
79-01-6	Trichloroethene	14	U
124-48-1	Dibromochloromethane	14	U
79-00-5	1,1,2-Trichloroethane	14	U
71-43-2	Benzene	14	U
10061-02-6	trans-1,3-Dichloropropene	14	U
75-25-2	Bromoform	14	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
127-18-4	Tetrachloroethene	14	U
79-34-5	1,1,2,2-Tetrachloroethane	14	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	14	U
100-41-4	Ethylbenzene	14	U
100-42-5	Styrene	14	U
1330-20-7	Xylene (total)	14	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ12

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7948

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AED04

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: not dec. 26 Date Analyzed: 05/04/94

GC Column: DB-625 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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4/11/94

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ATTACHMENT 4 - LABORATORY NARRATIVE AND
CHAIN-OF-CUSTODY DOCUMENTATION



ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

June 13, 1994

Job Number: 389; 422; 466

This is the Certificate of Analysis for the following samples:

SDG:	W0034
Client Project ID:	WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1
Date Received by Lab:	April 20, 22 & 30, 1994
Number of Samples:	Eight (8)
Sample Type:	Soil

I. Introduction

On April 20, 22 & 30, 1994, eight (8) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.



IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Hewlett-Packard 5970 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07. All QC results were within method specified limits.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

- U - Compound analyzed for but not detected; value given is quantitation limit.
- E - Compound exceeded calibration range.
- D - Compound analyzed at a secondary dilution factor.
- J - Compound detected but below quantitation limit; value estimated.
- S - Spiked compound.
- B - Compound found in method blank.
- A - Suspected aldol condensation product.
- Y - Indistinguishable isomer in tentatively identified compounds.
- N - Presumptive evidence of compound presence.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

The samples for work order #389 were digested on May 25, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 25, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBJ07. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. A cyanide post digestion spike was not performed.

The samples for work order #422 were digested on May 20, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 20, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

The samples for work order #466 were digested on May 11, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 9, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 12 through May 16, 1994; the remaining metals were analyzed by ICP on May 24, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

Data were reported with qualifiers as follows:

"C" Qualifiers

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"O" Qualifiers

- * - Duplicate analysis outside control limits.
- N - Spiked sample recovery outside control limits.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
- S - The reported value was determined by method of standard additions.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

"M" Qualifiers

- P - Analysis performed by ICP.
- V - Analysis performed by CVAA.
- F - Analysis performed by GFAA.
- C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

- D - Duplicate.
- S - Spike.
- NR - Not required.
- G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
- X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed on May 6 and May 12, 1994 for nitrate/nitrite. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, nitrite, nitrate, phosphate and sulfate by EPA method 300.0 from May 12 through May 16, 1994. A matrix spike and matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN**III. Quality Control** (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6903	W404315-01A	BOBJ05	VOC
AA6904	W404315-01B	"	SVOC
AA6905	W404315-01C	"	METALS-T
AA6906	W404315-01D	"	CYANIDE
AA6907	W404315-01E	"	ANIONS
AA6908	W404315-01F	"	NO2NO3
J.C. 6/16/94 AA6909 AA6909	W404315-02A	BOBJ07	VOC
AA6910	W404315-02B	"	SVOC
AA6911	W404315-02C	"	METALS-T
AA6912	W404315-02D	"	CYANIDE
AA6913	W404315-02E	"	ANIONS
AA6914	W404315-02F	"	NO2NO3
AA6915	W404315-03A	BOBJ08	VOC
AA6916	W404315-03B	"	SVOC
AA6917	W404315-03C	"	METALS-T
AA6918	W404315-03D	"	CYANIDE
AA6919	W404315-03E	"	ANIONS
AA6920	W404315-03F	"	NO2NO3
AA6922	W404315-04A	BOBJ09	VOC

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES

5815 MIDDLEBROOK PIKE

KNOXVILLE, TN

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6924	W404315-05A	BOBJ06	VOC
AA7333	W404402-01A	BOBJ10	VOC
AA7334	W404402-01B	"	SVOC
AA7335	W404402-01C	"	METALS-T
AA7336	W404402-01D	"	CYANIDE
AA7337	W404402-01E	"	ANIONS
AA7338	W404402-01F	"	NO2NO3
AA7948	404564-01	BOBJ12	VOC
AA7949	404564-02A	BOBJ11	VOC
AA7950	404564-02B	"	SVOC
AA7951	404564-02C	"	METALS-T
AA7952	404564-02D	"	CYANIDE
AA7953	404564-02E	"	ANIONS
AA7954	404564-02F	"	NO2NO3

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

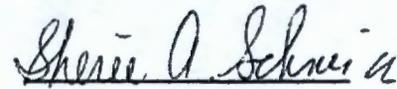
Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or a designee, as verified by the following signature:

Reviewed and Approved:



Sheree' A. Schneider
Project Manager

W0th 357

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page 1 of 1			
Collector W. V. SETZER		Company Contact W. V. SETZER				Telephone No. (509) 376-2413				Date Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal					
Project Designation 200 UP-1		Sampling Location 299-W19-34B				SAF No. 94-046 046 WWS 3-14-94				Method of Shipment BY DOE VEHICLE					
Ice Chest No. WMC-19		Field Logbook No. EFL-1118				Offsite Property No. W94-0-				Bill of Lading/Air Bill No.					
Shipped To INTERNATIONAL TECHNOLOGIES		Preservative		COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4		
Possible Sample Hazards/Remarks NONE OBSERVED		Type of Container	aGs	aG	G	P/G	G	P/G	P/G	P/G	P/G	P/G	P/G		
		No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1		
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE		Volume	120ml	500ml	500ml	250ml	250ml	120ml	1000ml	500ml					
SAMPLE ANALYSIS 404315		VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cr (CLP)	ANIONS NO2, NO3 IC-F, CL EPA(353 SO4, NO2, 2) NO3, PO4			*1	*1					
			A	B	C	D	E	F	404316						
Sample No.	Matrix*	Date Sampled	Time Sampled												
BOBJ05	01 S	4-14-94	0950	✓	✓	✓	✓	✓	✓	✓	✓	✓	05A		
BOBJ06	S	4-14-94	0630										✓		
BOBJ07	02 S	4-14-94	0915	✓	✓	✓	✓	✓	✓	✓	✓	✓			
BOBJ08	03 S	4-14-94	1050	✓	✓	✓	✓	✓	✓	✓	✓	✓	04A		
BOBJ09	S	4-14-94	1050										✓		
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS						Matrix*			
Relinquished By <i>W.V. Setzer</i>		Date/Time 7-18-94 0915		Received By <i>Tom G... 4/18/94</i>		Date/Time 4/18/94		*1- GROSS ALPHA, BETA (ITAS-RD-3222) Am-241, Cm 243/244 (ITAS-RD-3302) Np-237 (ITAS-RD-3208) Pu-238, 239/240 (ITAS-RD-3209) U-234, 235, 238 (ITAS-RD-3234) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (ITAS-RD-3219) Sr-90 (ITAS-RD-3204) C-14 (ITAS-RD-3247) Tc-99 (ITAS-IT-RS-0001) LOWEST HOLDING TIME = 7DAYS						S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other	
Relinquished By		Date/Time		Received By		Date/Time									
Relinquished By		Date/Time		Received By		Date/Time									
Relinquished By		Date/Time		Received By		Date/Time									
LABORATORY SECTION		Received By				Title				Date/Time					
FINAL SAMPLE DISPOSITION		Disposal Method				Disposed By				Date/Time					

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Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page 1 of 1		
Collector W. V. SETZER		Company Contact W. V. SETZER					Telephone No. (509) 376-2413					Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal		
Project Designation 200 UP-1		Sampling Location 299-014-34B					SAF No. 94-045 046 203 9-21-74							
Ice Chest No.		Field Logbook No. EFL-1118					Method of Shipment BY DOE VEHICLE							
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-					Bill of Lading/Air Bill No							
Possible Sample Hazards/Remarks		Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
None CAPTURED		Type of Container	aGs	aG	G	P/G	G	P/G	P/G	P/G				aGs
		No. of Container(s)	1	1	1	1	1	1	1	1				1
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE		Volume	120ml	500ml	500ml	250ml	250ml	120ml	1000ml	500ml				40ml
SAMPLE ANALYSIS		VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS IC-F, CL SO4, NO2, NO3, PO4	NO2, NO3 EPA(353 .2)		*1	*1				VOA TRIP (CLP)
4094-10201														
Sample No.	Matrix*	Date Sampled	Time Sampled	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
ACB 510	S	4-18-94	0815	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CHAIN OF POSSESSION		Sign/Print Names					SPECIAL INSTRUCTIONS					Matrix*		
Relinquished By	Date/Time	Received By	Date/Time	*1- GROSS ALPHA, BETA (ITAS-RD-3222) Am-241, Cm 243/244 (ITAS-RD-3302) Hp-237 (ITAS-RD-3208) Pu-238, 239/240 (ITAS-RD-3209) U-234, 235, 238 (ITAS-RD-3234) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (ITAS-RD-3219) Sr-90 (ITAS-RD-3204) C-14 (ITAS-RD-3247) Tc-99 (ITAS-IT-RS-0001)					S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipes L = Liquid V = Vegetation X = Other					
Relinquished By	Date/Time	Received By	Date/Time	LOWEST HOLDING TIME = 7DAYS										
Relinquished By	Date/Time	Received By	Date/Time											
Relinquished By	Date/Time	Received By	Date/Time											
LABORATORY SECTION	Received By	Title					Date/Time							
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By					Date/Time							

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W#466

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page 1 of 1	
Collector W. V. SETZER		Company Contact W. V. SETZER				Telephone No. (509) 376-2413				Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal			
Project Designation 200 UP-1		Sampling Location 299-W19-34B				SAF No. 94-046							
Ice Chest No. SML-60		Field Logbook No. EFL-1118				Method of Shipment BY COMPANY VEHICLE							
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-				Bill of Lading/Air Bill No.							
Possible Sample Hazards/Remarks		Preservative		COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
NONE OBSERVED		Type of Container	aGs	aG	G	G	G	G	P/G			aG	aGs
		No. of Container(s)	1	1	1	1	1	1	1			1	1
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE Refrig. 2C		Volume	125ml	500ml	500ml	250ml	250ml	125ml	1500ml			125ml	40ml
SAMPLE ANALYSIS 404564		VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)			VOA (TRIP)	ACTIVIT SCAN
AJS 4/25/94 1400		A	B	C	D	E	F					OIA	
Sample No.	Matrix*	Date Sampled	Time Sampled										
BOB J12 01	S	4-26-94	0700									✓	
BOB J11 02	S	4-26-94	0805	✓	✓	✓	✓	✓	✓	✓			✓
W/S													
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix*			
Relinquished By W.V. Setzer		Date/Time 4-28-94 1350	Received By A. Simpson		Date/Time 4/28/94 1353	*1- GROSS ALPHA, BETA (EP-60,070,170) Am-241, Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60, Cs-137, Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251) Tc-99 (EP-020,540), I-129				S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other			
Relinquished By A. Simpson		Date/Time 4/27/94 1027	Received By L. Sweeney		Date/Time 4-27-94 1030								
Relinquished By L. Sweeney		Date/Time 4-28-94 1210	Received By K. Stettin		Date/Time 4/28/94 1210								
Relinquished By		Date/Time	Received By		Date/Time								
LABORATORY SECTION		Received By		Title		STANDALONE DELIVERABLES							
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		LOWEST HOLDING TIME = 7 DAYS				SDX-W0034			

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ATTACHMENT 5 - DATA VALIDATION SUPPORTING DOCUMENTATION

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GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	<u>D</u>	E
PROJECT: 200-UP-1 Round 1 Soil			DATA PACKAGE: W0034-ITC-055		
VALIDATOR: K. Angelos		LAB: Quanterra		DATE: November 11, 1994	
CASE:			SDG: W0034		
ANALYSES PERFORMED					
X CLP Volatiles	<input type="checkbox"/> SW-846 8240 (cap column)	<input type="checkbox"/> SW-846 8260 (packed column)	<input type="checkbox"/> CLP Semivolatiles	<input type="checkbox"/> SW-846 8270 (cap column)	<input type="checkbox"/> SW-846 (packed column)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX: BOBJ05, BOBJ06, BOBJ07, BOBJ08, BOBJ09, BOBJ10, BOBJ11, BOBJ12 all soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? [Yes] No N/A

Is a case narrative present? [Yes] No N/A

Comments: NO COMMENTS

2. HOLDING TIMES

Are sample holding times acceptable? [Yes] No N/A

Comments: samples BOBJ05 -> BOBJ09 collected 4/14/94, analyzed: 4/25/94 (11 days), BOBJ10 collected 4/18/94, analyzed: 4/25/94 (7 days), BOBJ11 and BOBJ12 collected 4/26/94, analyzed: 5/4/94 (9 days). All samples analyzed in <14 days.

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? [Yes] No N/A
 Are initial calibrations acceptable? [Yes] No N/A
 Are continuing calibrations acceptable? [Yes] No N/A

Comments: NO COMMENTS

4. BLANKS

Were laboratory blanks analyzed? [Yes] No N/A
 Are laboratory blank results acceptable? Yes [No] N/A
 Were field/trip blanks analyzed? [Yes] No N/A
 Are field/trip blank results acceptable? Yes [No] N/A

Comments: Acetone detected in laboratory blank, associated sample results less than 10x the blank concentration were qualified as undetected.

No qualification for field or trip blank results.

Methylene chloride and toluene detected in one or more trip blanks.

Methylene chloride detected in field blank.

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? [Yes] No N/A
 Are surrogate/System Monitoring Compound recoveries acceptable [Yes] No N/A
 Were MS/MSD samples analyzed? [Yes] No N/A
 Are MS/MSD results acceptable? [Yes] No N/A

Comments: no comments

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? [Yes] No N/A
 Are field duplicate RPD values acceptable? Yes [No] N/A
 Are field split RPD values acceptable? Yes No [N/A]

Comments: BOBJ08 is field duplicate of BOBJ05, xylene detected in BOBJ05 but not in BOBJ08. Methylene chloride results similar. Detection limits comparable.

7. SYSTEM PERFORMANCE

Were internal standards analyzed? [Yes] No N/A
 Are internal standard areas acceptable? [Yes] No N/A
 Are internal standard retention times acceptable? [Yes] No N/A

Comments: no comments

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? [Yes] No N/A
 Is compound quantitation acceptable? [Yes] No N/A

Comments: no comments

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? [Yes] No N/A
 Are all results supported in the raw data? [Yes] No N/A
 Do results meet the CRQLs? [Yes] No N/A
 Has the laboratory properly identified and coded all TIC? . . [Yes] No N/A

Comments: no comments

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKAA7368

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7368

Sample wt/vol: 5.0 (g/mL) G Lab File ID: ADY04

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

% Moisture: not dec. _____ Date Analyzed: 04/25/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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	10	U
67-64-1	-----Acetone	2	J $\times 10 = 20$
75-15-0	-----Carbon Disulfide	10	U
75-35-4	-----1,1-Dichloroethene	10	U
75-34-3	-----1,1-Dichloroethane	10	U
540-59-0	-----1,2-Dichloroethene (total)	10	U
67-66-3	-----Chloroform	10	U
107-06-2	-----1,2-Dichloroethane	10	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	10	U
56-23-5	-----Carbon Tetrachloride	10	U
75-27-4	-----Bromodichloromethane	10	U
78-87-5	-----1,2-Dichloropropane	10	U
10061-01-5	-----cis-1,3-Dichloropropene	10	U
79-01-6	-----Trichloroethene	10	U
124-48-1	-----Dibromochloromethane	10	U
79-00-5	-----1,1,2-Trichloroethane	10	U
71-43-2	-----Benzene	10	U
10061-02-6	-----trans-1,3-Dichloropropene	10	U
75-25-2	-----Bromoform	10	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	1	J $\times 5 = 5$
127-18-4	-----Tetrachloroethene	10	U
79-34-5	-----1,1,2,2-Tetrachloroethane	10	U
108-88-3	-----Toluene	10	U
108-90-7	-----Chlorobenzene	10	U
100-41-4	-----Ethylbenzene	10	U
100-42-5	-----Styrene	10	U
1330-20-7	-----Xylene (total)	10	U

FORM I VOA

3/90

Assoc w/ BOB J05, J06, J07, J08, J09, J10

Handwritten signature/initials

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKAA8111

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA8111

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AED03

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

% Moisture: not dec. _____ Date Analyzed: 05/04/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	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	3	J <i>x10 = 30</i>
67-64-1	-----Acetone	6	J <i>x10 = 60</i>
75-15-0	-----Carbon Disulfide	10	U
75-35-4	-----1,1-Dichloroethene	10	U
75-34-3	-----1,1-Dichloroethane	10	U
540-59-0	-----1,2-Dichloroethene (total)	10	U
67-66-3	-----Chloroform	10	U
107-06-2	-----1,2-Dichloroethane	10	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	10	U
56-23-5	-----Carbon Tetrachloride	10	U
75-27-4	-----Bromodichloromethane	10	U
78-87-5	-----1,2-Dichloropropane	10	U
10061-01-5	-----cis-1,3-Dichloropropene	10	U
79-01-6	-----Trichloroethene	10	U
124-48-1	-----Dibromochloromethane	10	U
79-00-5	-----1,1,2-Trichloroethane	10	U
71-43-2	-----Benzene	10	U
10061-02-6	-----trans-1,3-Dichloropropene	10	U
75-25-2	-----Bromoform	10	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	10	U
79-34-5	-----1,1,2,2-Tetrachloroethane	10	U
108-88-3	-----Toluene	10	U
108-90-7	-----Chlorobenzene	10	U
100-41-4	-----Ethylbenzene	10	U
100-42-5	-----Styrene	10	U
1330-20-7	-----Xylene (total)	10	U

*Mut
11/6/94*

041

RECORD COPY

MEMORANDUM



TO: 200-UP-1 Round 1 Soil, Project QA Record

FR: Kent Angelos, Golder Associates Inc. *KA*

RE: SEMIVOLATILES DATA VALIDATION SUMMARY FOR
DATA PACKAGE: W0034-ITC-055, (943-1610.037, 055SVOA.UP1)

INTRODUCTION

This memo presents the results of data validation on data package W0034-ITC-055 prepared by the Quanterra Laboratory. Sample information is provided in the following table.

SAMPLE ID	MEDIA	ANALYSIS	COMMENTS
BOBJ05	Soil	Semivolatiles	none
BOBJ07*	Soil	Semivolatiles	equip. blank
BOBJ08	Soil	Semivolatiles	duplicate of BOBJ05
BOBJ10	Soil	Semivolatiles	none
BOBJ11	Soil	Semivolatiles	none

* Indicates sample results which were 100% recalculated.

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information:

- Attachment 1. Glossary of Data Reporting Qualifiers
- Attachment 2. Summary of Data Qualifications
- Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
- Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
- Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of five (5) samples were validated in this data package with a total of 320 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets the work plan completeness objective of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Blanks

- Di-n-butylphthalate and bis(2-Ethylhexyl) Phthalate were detected in the method blank associated with sample B0BJ11, resulting in qualification of the associated sample results as undetected. Attachments 2 and 5 provide supporting documentation.

FIELD QC

- Sample B0BJ07 was identified as an equipment blank. Di-n-butylphthalate (47 J ug/Kg) and bis(2-Ethylhexyl)Phthalate (74 J ug/Kg) and several unknown TICs were detected in the sample. No qualification was applied in accordance with the data validation procedures.
- Sample B0BJ08 was identified as a field duplicate of sample B0BJ05. Di-n-butylphthalate (49 J ug/Kg) was detected in the duplicate but not in the primary sample. Detection limits for the TCL constituents were comparable as were the concentrations of unknown TICs.

TENTATIVELY IDENTIFIED COMPOUNDS

Tentatively identified compounds (TICs) reported by the laboratory were evaluated during validation and qualified as follows:

- TICs were detected in the samples and associated laboratory blank and were common laboratory contaminants, resulting in qualification of the TICs as unusable (UR) as shown in Attachment 3.
- TICs were detected in the sample and identified as common laboratory contaminants, resulting in qualification of the results as unusable (R) as shown in Attachment 3.
- TICs were detected in the samples and associated laboratory blank and have been qualified due to associated blank contamination and have been determined to be presumptive and estimated (UJN).
- TICs were detected in the samples and determined to be valid, resulting in qualification of the results as presumptive and estimated (JN).

Revised
12/9/04

REFERENCES

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington.

WHC 1993, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1. GLOSSARY OF DATA REPORTING QUALIFIERS

- B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.
- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.
- NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.
- N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.
- JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.
- UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.
- UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

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ATTACHMENT 3 - QUALIFIED DATA SUMMARY AND
ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0034-ITC-055

Parameter	Samp#	BOBJ05		BOBJ07		BOBJ08		BOBJ10		BOBJ11	
	Date	4-14-94		4-14-94		4-14-94		4-18-94		4-26-94	
	Location	299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B	
	Depth	168.00 - 170.50		---		168.00 - 170.50		186.00 - 188.50		242.50 - 244.50	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments			EQUIP		DUPLI					
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2-CHLOROPHENOL	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
1,3-DICHLOROBENZENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
1,4-DICHLOROBENZENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
1,2-DICHLOROBENZENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2-METHYLPHENOL	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
4-METHYLPHENOL	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
HEXACHLOROETHANE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
NITROBENZENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
ISOPHORONE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2-NITROPHENOL	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2,4-DIMETHYLPHENOL	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2,4-DICHLOROPHENOL	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
NAPHTHALENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
4-CHLOROANILINE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
HEXACHLOROBUTADIENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2-METHYLNAPHTHALENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	920.000	U	790.000	U	890.000	U	910.000	U	1200.000	U
2-CHLORONAPHTHALENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2-NITROANILINE	UG/KG	920.000	U	790.000	U	890.000	U	910.000	U	1200.000	U
DIMETHYLPHTHALATE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
ACENAPHTHYLENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2,6-DINITROTOLUENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
3-NITROANILINE	UG/KG	920.000	U	790.000	U	890.000	U	910.000	U	1200.000	U
ACENAPHTHENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
2,4-DINITROPHENOL	UG/KG	920.000	U	790.000	U	890.000	U	910.000	U	1200.000	U
4-NITROPHENOL	UG/KG	920.000	U	790.000	U	890.000	U	910.000	U	1200.000	U
DIBENZOFURAN	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U

The decimal places shown do not reflect the precision reported by the laboratory

*Reviewed
12/19/95*

9613476.0862

Validated Data Summary, Data Package: W0034-ITC-055

Parameter	Samp#	BOBJ05		BOBJ07		BOBJ08		BOBJ10		BOBJ11	
	Date	4-14-94		4-14-94		4-14-94		4-18-94		4-26-94	
	Location	299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B	
	Depth	168.00 - 170.50		---		168.00 - 170.50		186.00 - 188.50		242.50 - 244.50	
	Type	SOIL		---		SOIL		SOIL		SOIL	
	Comments			SOIL EQUIP		DUPLI					
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,4-DINITROTOLUENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
DIETHYLPHthalate	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
FLUORENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
4-NITROANTILINE	UG/KG	920.000	U	790.000	U	890.000	U	910.000	U	1200.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	920.000	U	790.000	U	890.000	U	910.000	U	1200.000	U
N-NITROSODIPHENYLAMINE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
HEXACHLOROBENZENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
PENTACHLOROPHENOL	UG/KG	920.000	U	790.000	U	890.000	U	910.000	U	1200.000	U
PHENANTHRENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
ANTHRACENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
CARBAZOLE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
DI-N-BUTYLPHthalate	UG/KG	380.000	U	47.000	J	49.000	J	370.000	U	500.000	U
FLUORANTHENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
PYRENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
BUTYLBENZYLPHthalate	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
BENZO(A)ANTHRACENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
CHRYSENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
BIS(2-ETHYLHEXYL)PHthalate	UG/KG	380.000	U	74.000	J	370.000	U	370.000	U	500.000	U
DI-N-OCTYLPHthalate	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
BENZO(B)FLUORANTHENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
BENZO(K)FLUORANTHENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
BENZO(A)PYRENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U
BENZO(G,H,I)PERYLENE	UG/KG	380.000	U	330.000	U	370.000	U	370.000	U	500.000	U

The decimal places shown do not reflect the precision reported by the laboratory

9613476.0863

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*Reviewed
10/19/94*

9613476.0864

0000057

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6904

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6904

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 13 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

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

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl) Ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2'-oxybis(1-Chloropropane)	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-Di-n-Propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
111-91-1	bis(2-Chloroethoxy)Methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-Methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	920	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	920	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U
99-09-2	3-Nitroaniline	920	U
83-32-9	Acenaphthene	380	U

Handwritten signature and date: 11/11/94
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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA6904
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6904
 Level: (low/med) LOW Date Received: 04/19/94
 % Moisture: 13 decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 8.4

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

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

51-28-5-----	2,4-Dinitrophenol	920	U
100-02-7-----	4-Nitrophenol	920	U
132-64-9-----	Dibenzofuran	380	U
121-14-2-----	2,4-Dinitrotoluene	380	U
84-66-2-----	Diethylphthalate	380	U
7005-72-3-----	4-Chlorophenyl-phenylether	380	U
86-73-7-----	Fluorene	380	U
100-01-6-----	4-Nitroaniline	920	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	920	U
86-30-6-----	N-Nitrosodiphenylamine (1)	380	U
101-55-3-----	4-Bromophenyl-phenylether	380	U
118-74-1-----	Hexachlorobenzene	380	U
87-86-5-----	Pentachlorophenol	920	U
85-01-8-----	Phenanthrene	380	U
120-12-7-----	Anthracene	380	U
86-74-8-----	Carbazole	380	U
84-74-2-----	Di-n-Butylphthalate	380	U
206-44-0-----	Fluoranthene	380	U
129-00-0-----	Pyrene	380	U
85-68-7-----	Butylbenzylphthalate	380	U
91-94-1-----	3,3'-Dichlorobenzidine	380	U
56-55-3-----	Benzo(a)Anthracene	380	U
218-01-9-----	Chrysene	380	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	380	U
117-84-0-----	Di-n-Octyl Phthalate	380	U
205-99-2-----	Benzo(b)Fluoranthene	380	U
207-08-9-----	Benzo(k)Fluoranthene	380	U
50-32-8-----	Benzo(a)Pyrene	380	U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	380	U
53-70-3-----	Dibenz(a,h)Anthracene	380	U
191-24-2-----	Benzo(g,h,i)Perylene	380	U

(1) - Cannot be separated from Diphenylamine

Handwritten signature/initials

9613476.0866

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6904

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6904

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 13 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

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

Number TICs found: 17

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1. 589-90-2	CYCLOHEXANE, 1,4-DIMETHYL-	1.93	150	BJN	UR
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.28	410	BAJN	UR
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.13	11000	BAJN	UR
4.	UNKNOWN	4.20	88	BJ	JN
5.	UNKNOWN	7.73	80	BJ	JN
6.	UNKNOWN	16.57	160	BJ	JN
7.	UNKNOWN	19.28	320	BJ	KJA
8.	UNKNOWN	20.02	620	BJ	KJA
9.	UNKNOWN	20.73	870	BJ	KJA
10.	UNKNOWN	21.40	1100	BJ	KJA
11.	UNKNOWN	22.07	910	BJ	KJA
12.	UNKNOWN	22.70	620	BJ	KJA
13.	UNKNOWN	23.30	640	BJ	KJA
14.	UNKNOWN	23.90	400	J	JN
15.	UNKNOWN	24.50	340	J	JN
16.	UNKNOWN	25.17	130	J	JN
17.	UNKNOWN	25.90	84	J	JN

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u/u/94

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6910

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6910

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

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

CAS NO.	COMPOUND	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
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	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
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	790	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	790	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	790	U
83-32-9	Acenaphthene	330	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6910

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6910

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 0 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
51-28-5	2,4-Dinitrophenol	790	U
100-02-7	4-Nitrophenol	790	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	790	U
534-52-1	4,6-Dinitro-2-Methylphenol	790	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	790	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	47	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	74	J
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

Handwritten signature/initials

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA6916
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6916
 Level: (low/med) LOW Date Received: 04/19/94
 % Moisture: 10 decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/05/94
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 8.4

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

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	370	U
111-44-4-----	bis(2-Chloroethyl) Ether	370	U
95-57-8-----	2-Chlorophenol	370	U
541-73-1-----	1,3-Dichlorobenzene	370	U
106-46-7-----	1,4-Dichlorobenzene	370	U
95-50-1-----	1,2-Dichlorobenzene	370	U
95-48-7-----	2-Methylphenol	370	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5-----	4-Methylphenol	370	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	370	U
67-72-1-----	Hexachloroethane	370	U
98-95-3-----	Nitrobenzene	370	U
78-59-1-----	Isophorone	370	U
88-75-5-----	2-Nitrophenol	370	U
105-67-9-----	2,4-Dimethylphenol	370	U
111-91-1-----	bis(2-Chloroethoxy) Methane	370	U
120-83-2-----	2,4-Dichlorophenol	370	U
120-82-1-----	1,2,4-Trichlorobenzene	370	U
91-20-3-----	Naphthalene	370	U
106-47-8-----	4-Chloroaniline	370	U
87-68-3-----	Hexachlorobutadiene	370	U
59-50-7-----	4-Chloro-3-Methylphenol	370	U
91-57-6-----	2-Methylnaphthalene	370	U
77-47-4-----	Hexachlorocyclopentadiene	370	U
88-06-2-----	2,4,6-Trichlorophenol	370	U
95-95-4-----	2,4,5-Trichlorophenol	890	U
91-58-7-----	2-Chloronaphthalene	370	U
88-74-4-----	2-Nitroaniline	890	U
131-11-3-----	Dimethylphthalate	370	U
208-96-8-----	Acenaphthylene	370	U
606-20-2-----	2,6-Dinitrotoluene	370	U
99-09-2-----	3-Nitroaniline	890	U
83-32-9-----	Acenaphthene	370	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA6916

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6916

Level: (low/med) LOW Date Received: 04/19/94

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/21/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/05/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

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

51-28-5-----	2,4-Dinitrophenol	890	U
100-02-7-----	4-Nitrophenol	890	U
132-64-9-----	Dibenzofuran	370	U
121-14-2-----	2,4-Dinitrotoluene	370	U
84-66-2-----	Diethylphthalate	370	U
7005-72-3-----	4-Chlorophenyl-phenylether	370	U
86-73-7-----	Fluorene	370	U
100-01-6-----	4-Nitroaniline	890	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	890	U
86-30-6-----	N-Nitrosodiphenylamine (1)	370	U
101-55-3-----	4-Bromophenyl-phenylether	370	U
118-74-1-----	Hexachlorobenzene	370	U
87-86-5-----	Pentachlorophenol	890	U
85-01-8-----	Phenanthrene	370	U
120-12-7-----	Anthracene	370	U
86-74-8-----	Carbazole	370	U
84-74-2-----	Di-n-Butylphthalate	49	J
206-44-0-----	Fluoranthene	370	U
129-00-0-----	Pyrene	370	U
85-68-7-----	Butylbenzylphthalate	370	U
91-94-1-----	3,3'-Dichlorobenzidine	370	U
56-55-3-----	Benzo(a)Anthracene	370	U
218-01-9-----	Chrysene	370	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	370	U
117-84-0-----	Di-n-Octyl Phthalate	370	U
205-99-2-----	Benzo(b) Fluoranthene	370	U
207-08-9-----	Benzo(k) Fluoranthene	370	U
50-32-8-----	Benzo(a) Pyrene	370	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	370	U
53-70-3-----	Dibenz(a,h)Anthracene	370	U
191-24-2-----	Benzo(g,h,i) Perylene	370	U

(1) - Cannot be separated from Diphenylamine

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ08

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA6916
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6916
 Level: (low/med) LOW Date Received: 04/19/94
 % Moisture: 10 decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/05/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 15 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 589-90-2	CYCLOHEXANE, 1,4-DIMETHYL-	1.88	130	BJN
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.23	270	BAJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.07	8500	BAJN
4.	UNKNOWN	4.15	89	J
5.	UNKNOWN	16.50	140	J
6.	UNKNOWN	19.22	160	BJ
7.	UNKNOWN	19.95	300	BJ
8.	UNKNOWN	20.67	580	BJ
9.	UNKNOWN	21.35	530	BJ
10.	UNKNOWN	22.00	600	BJ
11.	UNKNOWN	22.63	520	J
12.	UNKNOWN	23.25	500	J
13.	UNKNOWN	23.85	240	J
14.	UNKNOWN	24.45	240	J
15.	UNKNOWN	25.10	78	J

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7334

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA7334

Level: (low/med) LOW Date Received: 04/22/94

% Moisture: 12 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

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

CAS NO.	COMPOUND	(ug/L or ug/Kg)	UG/KG	Q
108-95-2	Phenol	370	U	
111-44-4	bis(2-Chloroethyl) Ether	370	U	
95-57-8	2-Chlorophenol	370	U	
541-73-1	1,3-Dichlorobenzene	370	U	
106-46-7	1,4-Dichlorobenzene	370	U	
95-50-1	1,2-Dichlorobenzene	370	U	
95-48-7	2-Methylphenol	370	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U	
106-44-5	4-Methylphenol	370	U	
621-64-7	N-Nitroso-Di-n-Propylamine	370	U	
67-72-1	Hexachloroethane	370	U	
98-95-3	Nitrobenzene	370	U	
78-59-1	Isophorone	370	U	
88-75-5	2-Nitrophenol	370	U	
105-67-9	2,4-Dimethylphenol	370	U	
111-91-1	bis(2-Chloroethoxy)Methane	370	U	
120-83-2	2,4-Dichlorophenol	370	U	
120-82-1	1,2,4-Trichlorobenzene	370	U	
91-20-3	Naphthalene	370	U	
106-47-8	4-Chloroaniline	370	U	
87-68-3	Hexachlorobutadiene	370	U	
59-50-7	4-Chloro-3-Methylphenol	370	U	
91-57-6	2-Methylnaphthalene	370	U	
77-47-4	Hexachlorocyclopentadiene	370	U	
88-06-2	2,4,6-Trichlorophenol	370	U	
95-95-4	2,4,5-Trichlorophenol	910	U	
91-58-7	2-Chloronaphthalene	370	U	
88-74-4	2-Nitroaniline	910	U	
131-11-3	Dimethylphthalate	370	U	
208-96-8	Acenaphthylene	370	U	
606-20-2	2,6-Dinitrotoluene	370	U	
99-09-2	3-Nitroaniline	910	U	
83-32-9	Acenaphthene	370	U	

FORM I SV-1

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7334
 Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA7334
 Level: (low/med) LOW Date Received: 04/22/94
 % Moisture: 12 decanted: (Y/N) N Date Extracted: 04/25/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 8.2

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
51-28-5	2,4-Dinitrophenol	910	U
100-02-7	4-Nitrophenol	910	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	910	U
534-52-1	4,6-Dinitro-2-Methylphenol	910	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	910	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	bis(2-Ethylhexyl) Phthalate	370	U
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b) Fluoranthene	370	U
207-08-9	Benzo(k) Fluoranthene	370	U
50-32-8	Benzo(a) Pyrene	370	U
193-39-5	Indeno(1,2,3-cd) Pyrene	370	U
53-70-3	Dibenz(a,h) Anthracene	370	U
191-24-2	Benzo(g,h,i) Perylene	370	U

(1) - Cannot be separated from Diphenylamine

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ10

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7334

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA7334

Level: (low/med) LOW Date Received: 04/22/94

% Moisture: 12 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

Number TICs found: 6 CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 638-04-0	CYCLOHEXANE, 1,3-DIMETHYL-,	2.02	87	BJN
2. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.20	9100	BJNA
3. 0-00-0	UNKNOWN	19.37	140	J
4. 123-79-5	HEXANEDIOIC ACID, DIOCTYL ES	20.20	4000	JN
5. 0-00-0	UNKNOWN	20.83	320	J
6. 0-00-0	UNKNOWN	23.40	130	J

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Met
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7950
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7950
 Level: (low/med) LOW Date Received: 04/30/94
 % Moisture: 34 decanted: (Y/N) N Date Extracted: 05/05/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/12/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 8.3

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
108-95-2	Phenol	500	U
111-44-4	bis(2-Chloroethyl) Ether	500	U
95-57-8	2-Chlorophenol	500	U
541-73-1	1,3-Dichlorobenzene	500	U
106-46-7	1,4-Dichlorobenzene	500	U
95-50-1	1,2-Dichlorobenzene	500	U
95-48-7	2-Methylphenol	500	U
108-60-1	2,2'-oxybis(1-Chloropropane)	500	U
106-44-5	4-Methylphenol	500	U
621-64-7	N-Nitroso-Di-n-Propylamine	500	U
67-72-1	Hexachloroethane	500	U
98-95-3	Nitrobenzene	500	U
78-59-1	Isophorone	500	U
88-75-5	2-Nitrophenol	500	U
105-67-9	2,4-Dimethylphenol	500	U
111-91-1	bis(2-Chloroethoxy)Methane	500	U
120-83-2	2,4-Dichlorophenol	500	U
120-82-1	1,2,4-Trichlorobenzene	500	U
91-20-3	Naphthalene	500	U
106-47-8	4-Chloroaniline	500	U
87-68-3	Hexachlorobutadiene	500	U
59-50-7	4-Chloro-3-Methylphenol	500	U
91-57-6	2-Methylnaphthalene	500	U
77-47-4	Hexachlorocyclopentadiene	500	U
88-06-2	2,4,6-Trichlorophenol	500	U
95-95-4	2,4,5-Trichlorophenol	1200	U
91-58-7	2-Chloronaphthalene	500	U
88-74-4	2-Nitroaniline	1200	U
131-11-3	Dimethylphthalate	500	U
208-96-8	Acenaphthylene	500	U
606-20-2	2,6-Dinitrotoluene	500	U
99-09-2	3-Nitroaniline	1200	U
83-32-9	Acenaphthene	500	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7950

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7950

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: 34 decanted: (Y/N) N Date Extracted: 05/05/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/12/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

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

CAS NO.	COMPOUND	CONCENTRATION	UNIT
51-28-5	2,4-Dinitrophenol	1200	U
100-02-7	4-Nitrophenol	1200	U
132-64-9	Dibenzofuran	500	U
121-14-2	2,4-Dinitrotoluene	500	U
84-66-2	Diethylphthalate	500	U
7005-72-3	4-Chlorophenyl-phenylether	500	U
86-73-7	Fluorene	500	U
100-01-6	4-Nitroaniline	1200	U
534-52-1	4,6-Dinitro-2-Methylphenol	1200	U
86-30-6	N-Nitrosodiphenylamine (1)	500	U
101-55-3	4-Bromophenyl-phenylether	500	U
118-74-1	Hexachlorobenzene	500	U
87-86-5	Pentachlorophenol	1200	U
85-01-8	Phenanthrene	500	U
120-12-7	Anthracene	500	U
86-74-8	Carbazole	500	U
84-74-2	Di-n-Butylphthalate	500 300	U U
206-44-0	Fluoranthene	500	U
129-00-0	Pyrene	500	U
85-68-7	Butylbenzylphthalate	500	U
91-94-1	3,3'-Dichlorobenzidine	500	U
56-55-3	Benzo(a)Anthracene	500	U
218-01-9	Chrysene	500	U
117-81-7	bis(2-Ethylhexyl)Phthalate	500 73	U U
117-84-0	Di-n-Octyl Phthalate	500	U
205-99-2	Benzo(b)Fluoranthene	500	U
207-08-9	Benzo(k)Fluoranthene	500	U
50-32-8	Benzo(a)Pyrene	500	U
193-39-5	Indeno(1,2,3-cd)Pyrene	500	U
53-70-3	Dibenz(a,h)Anthracene	500	U
191-24-2	Benzo(g,h,i)Perylene	500	U

(1) - Cannot be separated from Diphenylamine

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBJ11

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA7950

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7950

Level: (low/med) LOW Date Received: 04/30/94

% Moisture: 34 decanted: (Y/N) N Date Extracted: 05/05/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/12/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.3

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	19.18	130	3 JN

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**ATTACHMENT 4 - LABORATORY NARRATIVE AND
CHAIN-OF-CUSTODY DOCUMENTATION**

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ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

June 13, 1994

Job Number: 389; 422; 466

This is the Certificate of Analysis for the following samples:

SDG:	W0034
Client Project ID:	WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1
Date Received by Lab:	April 20, 22 & 30, 1994
Number of Samples:	Eight (8)
Sample Type:	Soil

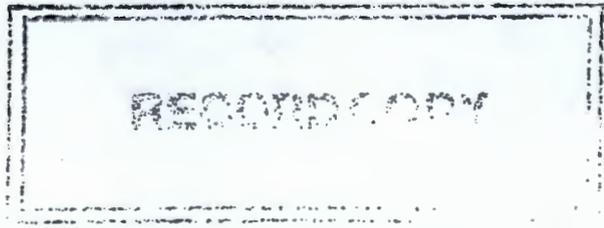
I. Introduction

On April 20, 22 & 30, 1994, eight (8) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.



American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

025

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Hewlett-Packard 5970 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07. All QC results were within method specified limits.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

- U - Compound analyzed for but not detected; value given is quantitation limit.
- E - Compound exceeded calibration range.
- D - Compound analyzed at a secondary dilution factor.
- J - Compound detected but below quantitation limit; value estimated.
- S - Spiked compound.
- B - Compound found in method blank.
- A - Suspected aldol condensation product.
- Y - Indistinguishable isomer in tentatively identified compounds.
- N - Presumptive evidence of compound presence.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

The samples for work order #389 were digested on May 25, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 25, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBJ07. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. A cyanide post digestion spike was not performed.

The samples for work order #422 were digested on May 20, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 20, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

The samples for work order #466 were digested on May 11, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 9, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 12 through May 16, 1994; the remaining metals were analyzed by ICP on May 24, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

Data were reported with qualifiers as follows:

"C" Qualifiers

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"O" Qualifiers

- * - Duplicate analysis outside control limits.
- N - Spiked sample recovery outside control limits.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
- S - The reported value was determined by method of standard additions.

IT Corporation
June 13, 1994
Job Number: 389; 422; 466
Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

"M" Qualifiers

- P - Analysis performed by ICP.
- V - Analysis performed by CVAA.
- F - Analysis performed by GFAA.
- C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

- D - Duplicate.
- S - Spike.
- NR - Not required.
- G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
- X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed on May 6 and May 12, 1994 for nitrate/nitrite. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, nitrite, nitrate, phosphate and sulfate by EPA method 300.0 from May 12 through May 16, 1994. A matrix spike and matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

IT Corporation
 June 13, 1994
 Job Number: 389; 422; 466
 Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
 5815 MIDDLEBROOK PIKE
 KNOXVILLE, TN

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6903	W404315-01A	BOBJ05	VOC
AA6904	W404315-01B	"	SVOC
AA6905	W404315-01C	"	METALS-T
AA6906	W404315-01D	"	CYANIDE
AA6907	W404315-01E	"	ANIONS
AA6908	W404315-01F	"	NO2NO3
<i>J.C. 6/16/94</i> AA6909	W404315-02A	BOBJ07	VOC
AA6910	W404315-02B	"	SVOC
AA6911	W404315-02C	"	METALS-T
AA6912	W404315-02D	"	CYANIDE
AA6913	W404315-02E	"	ANIONS
AA6914	W404315-02F	"	NO2NO3
AA6915	W404315-03A	BOBJ08	VOC
AA6916	W404315-03B	"	SVOC
AA6917	W404315-03C	"	METALS-T
AA6918	W404315-03D	"	CYANIDE
AA6919	W404315-03E	"	ANIONS
AA6920	W404315-03F	"	NO2NO3
AA6922	W404315-04A	BOBJ09	VOC

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN**III. Quality Control** (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6924	W404315-05A	BOBJ06	VOC
AA7333	W404402-01A	BOBJ10	VOC
AA7334	W404402-01B	"	SVOC
AA7335	W404402-01C	"	METALS-T
AA7336	W404402-01D	"	CYANIDE
AA7337	W404402-01E	"	ANIONS
AA7338	W404402-01F	"	NO2NO3
AA7948	404564-01	BOBJ12	VOC
AA7949	404564-02A	BOBJ11	VOC
AA7950	404564-02B	"	SVOC
AA7951	404564-02C	"	METALS-T
AA7952	404564-02D	"	CYANIDE
AA7953	404564-02E	"	ANIONS
AA7954	404564-02F	"	NO2NO3

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

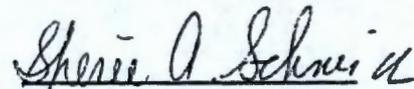
Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or a designee, as verified by the following signature:

Reviewed and Approved:



Sheree' A. Schneider
Project Manager

wo 412

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page <u>1</u> of <u>1</u>		
Collector W. V. SETZER		Company Contact W. V. SETZER					Telephone No. (509) 376-2413					Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal		
Project Designation 200 UP-1		Sampling Location 297-019-34B					SAF No. 94-043 046 203 A-21-74							
Ice Chest No.		Field Logbook No. EFL-1118					Method of Shipment BY DOE VEHICLE							
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-					Bill of Lading/Air Bill No.							
Possible Sample Hazards/Remarks		Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4		
None CAPTURED		Type of Container	aGs	aG	G	P/G	G	P/G	P/G	P/G			aGs	
		No. of Container(s)	1	1	1	1	1	1	1	1			1	
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE		Volume	120ml	500ml	500ml	250ml	250ml	120ml	1000ml	500ml			40ml	
SAMPLE ANALYSIS		VOA (CLP)	SEMI VOA (CLP)	ICP MTL (CLP)	GFAA METALS (CLP)	ANIONS NO2, NO3 (CLP)	IC-F, CL EPA (353 SO4, NO2, NO3, PO4)						VOA TRIP (CLP)	
								*1	*1					
404-10201														
Sample No.	Matrix*	Date Sampled	Time Sampled											
ACB-510	S	4-18-94	0815	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CHAIN OF POSSESSION		Sign/Print Names					SPECIAL INSTRUCTIONS					Matrix*		
Relinquished By <i>[Signature]</i>		Date/Time 4-21-94 1020		Received By <i>R. Bayl</i>		Date/Time 4-21-94 1205		*1- GROSS ALPHA, BETA (ITAS-RD-3222) Am-241, Cm 243/244 (ITAS-RD-3302) Np-237 (ITAS-RD-3208) Pu-238, 239/240 (ITAS-RD-3209) U-234, 235, 238 (ITAS-RD-3234) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (ITAS-RD-3219) Sr-90 (ITAS-RD-3204) C-14 (ITAS-RD-3247) Tc-99 (ITAS-IT-RS-0001)					S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue Wt = Wipe L = Liquid V = Vegetation X = Other	
Relinquished By <i>[Signature]</i>		Date/Time		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
		LOWEST HOLDING TIME = 7DAYS												
LABORATORY SECTION	Received By		Title					Date/Time						
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By					Date/Time						

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PT1DD

W0#466

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page 1 of 1			
Collector W. V. SETZER		Company Contact W. V. SETZER					Telephone No. (509) 376-2413					Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal			
Project Designation 200 UP-1		Sampling Location 299-W19-34B					SAF No. 94-046								
Ice Chest No. SML-60		Field Logbook No. EFL-1118					Method of Shipment BY COMPANY VEHICLE								
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. 494-0-					Bill of Lading/Air Bill No.								
Possible Sample Hazards/Remarks		Preservative													
NONE OBSERVED		Type of Container													
		No. of Container(s)													
		Volume													
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE Petris, ZC		Volume													
SAMPLE ANALYSIS 4045604		VOA (CLP)													
		SEM/VOA (CLP)													
		ICP MTL GFAA METALS Hg (CLP)													
		ANIONS NO2, NO3 (CLP)													
		IC-F, CLP EPA(353 SO4, NO2, NO3, PO4)													
		NO2, NO3 (CLP)													
		NO3, PO4													
		404560501													
		01A													
Sample No.	Matrix*	Date Sampled	Time Sampled	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	
BOB J12 01	B	4-26-94	0700												
BOB J11 02	S	4-26-94	0805	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
N/A															
CHAIN OF POSSESSION		Sign/Print Names					SPECIAL INSTRUCTIONS					Matrix*			
Relinquished By <i>W.V. Setzer</i>		Date/Time 4-28-94 1350		Received By <i>A. Simpson</i>		Date/Time 4/28/94 1353		*1- GROSS ALPHA, BETA (EP-60,070,170) Am-241, Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238,239/240 (EP-60,070,940) U-234,235,238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58,60, Cs-137, Eu-152,154,155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500,519,520) I-129 (EP-024,560) C-14 (EP-060,251) Tc-99 (EP-020,540), I-129					S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other		
Relinquished By <i>A. Simpson</i>		Date/Time 4/27/94 1027		Received By <i>L. Lowrey</i>		Date/Time 4-27-94 1030									
Relinquished By <i>L. Lowrey</i>		Date/Time 4-27-94 1210		Received By <i>K. Stettin</i>		Date/Time 4/27/94 1210									
Relinquished By		Date/Time		Received By		Date/Time									
LABORATORY SECTION		Received By					Title					Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method					Disposed By					Date/Time			

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ATTACHMENT 5 - DATA VALIDATION SUPPORTING DOCUMENTATION

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GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	[D]	E
PROJECT: 200-UP-1 Round 1 Soil			DATA PACKAGE: W0034-ITC-055		
VALIDATOR: K. Angelos		LAB: Quanterra		DATE: November 11, 1994	
CASE:			SDG: W0034		
ANALYSES PERFORMED					
<input type="checkbox"/> CLP Volatiles	<input type="checkbox"/> SW-846 8240 (cap column)	<input type="checkbox"/> SW-846 8260 (packed column)	<input checked="" type="checkbox"/> CLP Semivolatiles	<input type="checkbox"/> SW-846 8270 (cap column)	<input type="checkbox"/> SW-846 (packed column)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX: BOBJ05, BOBJ07, BOBJ08, BOBJ10, BOBJ11, ALL SOIL					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? [Yes] No N/A

Is a case narrative present? [Yes] No N/A

Comments: NO COMMENTS

2. HOLDING TIMES

Are sample holding times acceptable? [Yes] No N/A

Comments: samples BOBJ05, BOBJ07 and BOBJ08 collected 4/14/94, extracted: 4/21/94 (7 days), analyzed 5/4/95 (<40 days). Sample BOBJ10 collected: 4/18/94, extracted 4/25/94 (7 days), analyzed 4/29/94 (<40 days) Sample BOBJ11 collected: 4/26/94, extracted 5/5/94 (9 days), analyzed: 5/12/94 (<40 days). All holding times acceptable.

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? [Yes] No N/A
 Are initial calibrations acceptable? [Yes] No N/A
 Are continuing calibrations acceptable? [Yes] No N/A

Comments: NO COMMENTS

4. BLANKS

Were laboratory blanks analyzed? [Yes] No N/A
 Are laboratory blank results acceptable? Yes [No] N/A
 Were field/trip blanks analyzed? [Yes] No N/A
 Are field/trip blank results acceptable? Yes [No] N/A

Comments: Di-n-butylphthalate and bis(2-ethylhexyl)phthlate detected in the laboratory method blank associated with sample BOBJ11. Associated sample were raised to the SQL and qualified as U.

di-n-butylphthalate and bis(2-Ethylhexyl)Phthalate were detected in the equipment blanks.

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? [Yes] No N/A
 Are surrogate/System Monitoring Compound recoveries acceptable [Yes] No N/A
 Were MS/MSD samples analyzed? [Yes] No N/A
 Are MS/MSD results acceptable? [Yes] No N/A

Comments: no comments

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? [Yes] No N/A
 Are field duplicate RPD values acceptable? [Yes] No N/A
 Are field split RPD values acceptable? Yes No [N/A]

Comments: BOBJ08 is field duplicate of BOBJ05, di-n-butylphthalate detected in duplicate but not in sample. Detection limits and TICs comparable.

7. SYSTEM PERFORMANCE

Were internal standards analyzed? [Yes] No N/A
 Are internal standard areas acceptable? [Yes] No N/A
 Are internal standard retention times acceptable? [Yes] No N/A

Comments: no comments

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? [Yes] No N/A
 Is compound quantitation acceptable? [Yes] No N/A

Comments: no comments

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? [Yes] No N/A
 Are all results supported in the raw data? [Yes] No N/A
 Do results meet the CRQLs? [Yes] No N/A
 Has the laboratory properly identified and coded all TIC? . . [Yes] No N/A

Comments: Aldol TICs were qualified as U due to blank contamination and R since they are artifacts of common lab contaminants. Non-aldol TICs were qualified as UJN since they are present in the blank. The remaining TICs were qualified as JN.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA7026B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7026
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7026
 Level: (low/med) LOW Date Received: _____
 % Moisture: _____ decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: _____

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	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
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	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
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	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

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11/4/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA7026B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7026
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7026
 Level: (low/med) LOW Date Received: _____
 % Moisture: _____ decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: _____

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	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	800	U
534-52-1	4,6-Dinitro-2-Methylphenol	800	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	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	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	330	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

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11/11/94

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKAA7026B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 389 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7026
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7026
 Level: (low/med) LOW Date Received: _____
 % Moisture: _____ decanted: (Y/N) N Date Extracted: 04/21/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: _____

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

Number TICs found: 15

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 589-90-2	CYCLOHEXANE, 1,4-DIMETHYL-	1.93	120	JN
2. 141-79-7	3-PENTEN-2-ONE, 4-METHYL-	2.27	220	AJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.08	6700	AJN
4.	UNKNOWN	18.42	570	J
5.	UNKNOWN	18.50	80	J
6.	UNKNOWN	18.58	150	J
7.	UNKNOWN	19.27	150	J
8.	UNKNOWN	19.93	480	J
9.	UNKNOWN	20.00	150	J
10.	UNKNOWN	20.08	80	J
11.	UNKNOWN	20.70	180	J
12.	UNKNOWN	21.38	160	J
13.	UNKNOWN	22.03	140	J
14.	UNKNOWN	22.67	90	J
15.	UNKNOWN	23.28	77	J

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11/11/94

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA7430B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7430
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7430
 Level: (low/med) LOW Date Received: _____
 % Moisture: _____ decanted: (Y/N) N Date Extracted: 04/25/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94
 Injection Volume: 2.0 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: _____

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
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	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
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	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

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11/11/94
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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA7430B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD
 Lab Code: ITSTU Case No.: 422 SAS No.: _____ SDG No.: W0034
 Matrix: (soil/water) SOIL Lab Sample ID: AA7430
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7430
 Level: (low/med) LOW Date Received: _____
 % Moisture: _____ decanted: (Y/N) N Date Extracted: 04/25/94
 Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: _____

CONCENTRATION UNITS:

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

51-28-5-----	2,4-Dinitrophenol	800	U
100-02-7-----	4-Nitrophenol	800	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	800	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	800	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	800	U
85-01-8-----	Phenanthrene	330	U
120-12-7-----	Anthracene	330	U
86-74-8-----	Carbazole	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	330	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

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044

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKAA7430B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7430

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7430

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

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 638-04-0	CYCLOHEXANE, 1,3-DIMETHYL-,	2.05	120	JN
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.38	400	AJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.23	7100	AJN
4.	UNKNOWN	19.42	140	J

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA8120B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA8120

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA8120

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

% Moisture: _____ decanted: (Y/N) N Date Extracted: 05/05/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/12/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	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
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	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
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	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

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46

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA8120B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA8120

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA8120

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

% Moisture: _____ decanted: (Y/N) N Date Extracted: 05/05/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/12/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	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	800	U
534-52-1	4,6-Dinitro-2-Methylphenol	800	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	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	110	J $\times 10 = 1100$
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl) Phthalate	35	J $\times 10 = 350$
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

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11/11/94 47

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKAA8120B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 466 SAS No.: _____ SDG No.: W0034

Matrix: (soil/water) SOIL Lab Sample ID: AA8120

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA8120

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

% Moisture: _____ decanted: (Y/N) N Date Extracted: 05/05/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/12/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

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

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

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

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RECORD COPY

MEMORANDUM



TO: 200-UP-1 Round 1 Soil, Project QA Record

FR: Kent Angelos, Golder Associates Inc. *WA*

RE: INORGANICS DATA VALIDATION SUMMARY FOR
DATA PACKAGE: W0034-ITC-055, (943-1610.037, 055INO.UP1)

INTRODUCTION

This memo presents the results of data validation on data package W0034-ITC-055 prepared by the Quanterra Laboratory. Sample information is provided in the following table.

SAMPLE ID	MEDIA	ANALYSIS	COMMENTS
B0BJ05	SOIL	METALS/CYANIDE	none
B0BJ07*	SOIL	METALS/CYANIDE	equip. blank
B0BJ08	SOIL	METALS/CYANIDE	duplicate of B0BJ05
B0BJ10	SOIL	METALS/CYANIDE	none
B0BJ11	SOIL	METALS/CYANIDE	none

* Indicates sample results which were 100% recalculated.

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information:

- Attachment 1. Glossary of Data Reporting Qualifiers
- Attachment 2. Summary of Data Qualifications
- Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
- Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
- Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of the minor deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of five (5)

samples were validated in this data package with a total of 125 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets the work plan completeness objective of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Blanks

- Calcium, sodium, and zinc were detected in the preparation blanks. Attachments 2 and 5 provide a summary of the qualifications applied and supporting documentation.

Spike Sample Recovery

- Spike sample recovery for cyanide was less than 75% but greater than 30%, therefore associated sample results have been qualified as estimated (UJ for nondetects). Attachments 2 and 5 provide supporting documentation.

Analytical Spike Recovery

- GFAA analytical spike recoveries were acceptable with the exception of selenium and thallium. Sample results associated with unacceptable analytical spikes have been qualified as estimated (J for detects, UJ for non-detects). Attachments 2 and 5 provide supporting documentation.

FIELD QC

- Sample B0BJ07 was identified as an equipment blank, barium (0.57 B ug/Kg), magnesium (8.3 B ug/Kg), manganese (0.76 B ug/Kg), and thallium (0.50 B ug/Kg) were detected in the sample. No qualification was applied in accordance with the data validation procedures.
- Sample B0BJ08 was identified as a field duplicate of sample B0BJ05. All relative percent differences were less than 35% with the exception of lead (40%). No qualification was applied in accordance with the data validation procedures. Attachment 5 provides supporting documentation.

Revised
12/9/04

REFERENCES

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington.

WHC 1993, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1. GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.
- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.
- BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

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ATTACHMENT 3 - QUALIFIED DATA SUMMARY AND
ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0034-ITC-055

Parameter	Samp#	BOBJ05		BOBJ07		BOBJ08		BOBJ10		BOBJ11	
	Date	4-14-94		4-14-94		4-14-94		4-18-94		4-26-94	
	Location	299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B	
	Depth	168.00 - 170.50		---		168.00 - 170.50		186.00 - 188.50		242.50 - 244.50	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments			EQUIP		DUPLI					
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	MG/KG	10200.000		108.000		8930.000		6330.000		8080.000	
ANTIMONY	MG/KG	11.500	U	10.000	U	11.100	U	11.400	U	15.400	U
ARSENIC	MG/KG	3.900		0.380	U	4.800		2.600		1.900	B
BARIUM	MG/KG	97.100		0.570	B	83.600		81.800		55.700	B
BERYLLIUM	MG/KG	0.760	B	0.200	U	0.710	B	0.580	B	0.510	B
CADMIUM	MG/KG	1.200	U	1.000	U	1.100	U	1.100	U	1.500	U
CALCIUM	MG/KG	13000.000		27.600	U	12300.000		74000.000		3170.000	
CHROMIUM	MG/KG	26.300		2.000	U	21.400		11.600		19.000	
COBALT	MG/KG	12.000		2.000	U	10.900	B	8.800	B	9.700	B
COPPER	MG/KG	17.400		2.000	U	15.900		10.100		13.000	
IRON	MG/KG	21000.000		146.000		18800.000		14800.000		18000.000	
LEAD	MG/KG	6.600		0.380	U	9.900		5.000		6.500	
MAGNESIUM	MG/KG	6900.000		8.300	B	6300.000		4280.000		5460.000	
MANGANESE	MG/KG	315.000		0.760	B	289.000		401.000		331.000	
MERCURY	MG/KG	0.120	U	0.090	U	0.100	U	0.100	U	0.150	U
NICKEL	MG/KG	19.900		4.000	U	17.600		8.200	B	19.800	
POTASSIUM	MG/KG	2210.000		200.000	U	1860.000		784.000	B	1880.000	
SELENIUM	MG/KG	0.440	UJ	0.380	UJ	0.420	UJ	0.430	UJ	0.610	U
SILVER	MG/KG	1.200	U	1.000	U	1.100	U	2.300		1.500	U
SODIUM	MG/KG	199.000	B	35.300	U	182.000	B	184.000	B	230.000	B
THALLIUM	MG/KG	0.750	BJ	0.500	B	0.860	B	1.100	BJ	0.610	U
VANADIUM	MG/KG	39.200		2.000	U	34.600		44.700		24.700	
ZINC	MG/KG	43.900		1.500	U	40.300		21.800		37.800	
CYANIDE	MG/KG	5.700	UJ	4.900	UJ	5.500	UJ	5.600	UJ	1.600	UJ
TITANIUM	MG/KG	1020.000		3.900		872.000		1080.000		---	

The decimal places shown do not reflect the precision reported by the laboratory

9613476-0910

007

*Reviewed
1-15-1994*

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBJ05

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0389 SAS No.: SDG No.: W0034
Matrix (soil/water): SOIL Lab Sample ID: AA6906
Level (low/med): LOW Date Received: 04/19/94
% Solids: 86.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	5.7	U	N	AS

4J

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments: CYANIDE ONLY.

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U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBJ07

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO389 SAS No.: SDG No.: W0034
Matrix (soil/water): SOIL Lab Sample ID: AA6912
Level (low/med): LOW Date Received: 04/19/94
% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	4.9	U	N	AS

UJ

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE ONLY.

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U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

BOBJ08

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
 Lab Code: ITSTU Case No.: W0389 SAS No.: SDG No.: W0034
 Matrix (soil/water): SOIL Lab Sample ID: AA6918
 Level (low/med): LOW Date Received: 04/19/94
 % Solids: 89.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	5.5	U	N	AS

Color Before: _____ Clarity Before: _____ Texture: _____
 Color After: _____ Clarity After: _____ Artifacts: _____

Comments: CYANIDE ONLY.

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ATTACHMENT 4 - LABORATORY NARRATIVE AND
CHAIN-OF-CUSTODY DOCUMENTATION



ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

June 13, 1994

Job Number: 389; 422; 466

This is the Certificate of Analysis for the following samples:

SDG:	W0034
Client Project ID:	WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1
Date Received by Lab:	April 20, 22 & 30, 1994
Number of Samples:	Eight (8)
Sample Type:	Soil

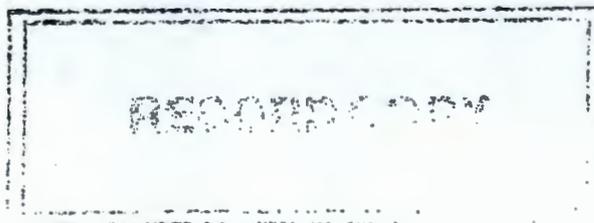
I. Introduction

On April 20, 22 & 30, 1994, eight (8) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.



American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

019

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Hewlett-Packard 5970 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07. All QC results were within method specified limits.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

- U - Compound analyzed for but not detected; value given is quantitation limit.
- E - Compound exceeded calibration range.
- D - Compound analyzed at a secondary dilution factor.
- J - Compound detected but below quantitation limit; value estimated.
- S - Spiked compound.
- B - Compound found in method blank.
- A - Suspected aldol condensation product.
- Y - Indistinguishable isomer in tentatively identified compounds.
- N - Presumptive evidence of compound presence.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

The samples for work order #389 were digested on May 25, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 25, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBJ07. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. A cyanide post digestion spike was not performed.

The samples for work order #422 were digested on May 20, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 20, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

The samples for work order #466 were digested on May 11, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 9, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 12 through May 16, 1994; the remaining metals were analyzed by ICP on May 24, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

Data were reported with qualifiers as follows:

"C" Qualifiers

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"O" Qualifiers

- * - Duplicate analysis outside control limits.
- N - Spiked sample recovery outside control limits.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
- S - The reported value was determined by method of standard additions.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

"M" Qualifiers

- P - Analysis performed by ICP.
- V - Analysis performed by CVAA.
- F - Analysis performed by GFAA.
- C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

- D - Duplicate.
- S - Spike.
- NR - Not required.
- G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
- X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed on May 6 and May 12, 1994 for nitrate/nitrite. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, nitrite, nitrate, phosphate and sulfate by EPA method 300.0 from May 12 through May 16, 1994. A matrix spike and matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN**III. Quality Control** (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6903	W404315-01A	BOBJ05	VOC
AA6904	W404315-01B	"	SVOC
AA6905	W404315-01C	"	METALS-T
AA6906	W404315-01D	"	CYANIDE
AA6907	W404315-01E	"	ANIONS
AA6908	W404315-01F	"	NO2NO3
J.C. 5/10/94 AA6909 AA6909	W404315-02A	BOBJ07	VOC
AA6910	W404315-02B	"	SVOC
AA6911	W404315-02C	"	METALS-T
AA6912	W404315-02D	"	CYANIDE
AA6913	W404315-02E	"	ANIONS
AA6914	W404315-02F	"	NO2NO3
AA6915	W404315-03A	BOBJ08	VOC
AA6916	W404315-03B	"	SVOC
AA6917	W404315-03C	"	METALS-T
AA6918	W404315-03D	"	CYANIDE
AA6919	W404315-03E	"	ANIONS
AA6920	W404315-03F	"	NO2NO3
AA6922	W404315-04A	BOBJ09	VOC

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample Ids.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6924	W404315-05A	BOBJ06	VOC
AA7333	W404402-01A	BOBJ10	VOC
AA7334	W404402-01B	"	SVOC
AA7335	W404402-01C	"	METALS-T
AA7336	W404402-01D	"	CYANIDE
AA7337	W404402-01E	"	ANIONS
AA7338	W404402-01F	"	NO2NO3
AA7948	404564-01	BOBJ12	VOC
AA7949	404564-02A	BOBJ11	VOC
AA7950	404564-02B	"	SVOC
AA7951	404564-02C	"	METALS-T
AA7952	404564-02D	"	CYANIDE
AA7953	404564-02E	"	ANIONS
AA7954	404564-02F	"	NO2NO3

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

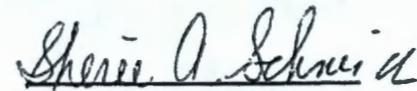
Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or a designee, as verified by the following signature:

Reviewed and Approved:



Sheree' A. Schneider
Project Manager

W02 357

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page <u>1</u> of <u>1</u>				
Collector W. V. SETZER		Company Contact W. V. SETZER				Telephone No. (509) 376-2413						Date Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal				
Project Designation 200 UP-1		Sampling Location 299-W19-34B				SAF No. 94-046 046 WWS 3-14-94										
Ice Chest No. WNC-19		Field Logbook No. EFL-111B				Method of Shipment BY DOE VEHICLE										
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-				Bill of Lading/Air Bill No.										
Possible Sample Hazards/Remarks NONE OBSERVED		Preservative		COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4		
		Type of Container	aGs	aG	G	P/G	G	P/G	P/G	P/G	P/G	P/G	P/G	P/G		
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE		No. of Container(s)		1	1	1	1	1	1	1	1	1	1	1		
		Volume		120ml	500ml	500ml	250ml	250ml	120ml	1000ml	500ml					
SAMPLE ANALYSIS 404315		VOA (CLP)	SEMIVOA (CLP)	ICP MTL Cr (CLP)	GFAA METALS Hg (CLP)	ANIONS NO2, NO3 IC-F, CLEPA(353 SO4, NO2, .2) NO3, PO4										
Sample No.		Matrix*	Date Sampled	Time Sampled												
BOBJ05		01	S	4-14-94	0950	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
BOBJ06			S	4-14-94	0630											<input checked="" type="checkbox"/>
BOBJ07		02	S	4-14-94	0915	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
BOBJ08		03	S	4-14-94	1050	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
BOBJ09			S	4-14-94	1050											<input checked="" type="checkbox"/>
CHAIN OF POSSESSION			Sign/Print Names				SPECIAL INSTRUCTIONS						Matrix*			
Relinquished By <i>W.V. Setzer</i>		Date/Time 4-18-94 0915	Received By <i>[Signature]</i>		Date/Time 4/18/94 1020	*1- GROSS ALPHA, BETA (ITAS-RD-3222) Am-241, Cm 243/244 (ITAS-RD-3302) Np-237 (ITAS-RD-3208) Pu-238, 239/240 (ITAS-RD-3209) U-234, 235, 238 (ITAS-RD-3234) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (ITAS-RD-3219) Sr-90 (ITAS-RD-3204) C-14 (ITAS-RD-3247) Tc-99 (ITAS-1T-RS-0001) LOWEST HOLDING TIME = 7 DAYS						S = Soil		SE = Sediment		
Relinquished By		Date/Time	Received By		Date/Time							SO = Solid		SL = Sludge		
Relinquished By		Date/Time	Received By		Date/Time							W = Water		O = Oil		
Relinquished By		Date/Time	Received By		Date/Time							A = Air		DS = Drum Solids		
Relinquished By		Date/Time	Received By		Date/Time	DL = Drum Liquids		T = Tissue								
Relinquished By		Date/Time	Received By		Date/Time	WI = Wipe		L = Liquid								
Relinquished By		Date/Time	Received By		Date/Time	V = Vegetation		X = Other								
LABORATORY SECTION		Received By		Title				Date/Time								
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time								

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Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page 1 of 1		
Collector W. V. SETZER		Company Contact W. V. SETZER					Telephone No. (509) 376-2413					Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal		
Project Designation 200 UP-1		Sampling Location 297-12.4-34B					SAF No. 94-045 016 203 A-21-74							
Ice Chest No.		Field Logbook No. EFL-1118					Method of Shipment BY DOE VEHICLE							
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-					Bill of Lading/Air Bill No.							
Possible Sample Hazards/Remarks		Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
None CAPTURED		Type of Container	aGs	aG	G	P/G	G	P/G	P/G	P/G	P/G	P/G	aGs	
		No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1	
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE		Volume	120ml	500ml	500ml	250ml	250ml	120ml	1000ml	500ml			40ml	
SAMPLE ANALYSIS		VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cn (CLP)	ANIONS NO2, NO3 IC-F, CL EPA(353 SO4, NO2, NO3, PO4			*1	*1			VOA TRIP (CLP)	
404-12201			1	1	1	1	1	1	404-12201					
Sample No.	Matrix*	Date Sampled	Time Sampled	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
ACB-510	S	4-18-94	0815	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CHAIN OF POSSESSION		Sign/Print Names					SPECIAL INSTRUCTIONS					Matrix*		
Relinquished By	Date/Time	Received By	Date/Time	*1- GROSS ALPHA, BETA (ITAS-RD-3222) Am-241, Cm 243/244 (ITAS-RD-3302) Np-237 (ITAS-RD-3208) Pu-238, 239/240 (ITAS-RD-3209) U-234, 235, 238 (ITAS-RD-3234) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (ITAS-RD-3219) Sr-90 (ITAS-RD-3204) C-14 (ITAS-RD-3247) Tc-99 (ITAS-IT-RS-0001)					S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other					
Relinquished By	Date/Time	Received By	Date/Time											
Relinquished By	Date/Time	Received By	Date/Time											
Relinquished By	Date/Time	Received By	Date/Time											
LABORATORY SECTION		Received By	Title	Date/Time										
FINAL SAMPLE DISPOSITION		Disposal Method	Disposed By	Date/Time										

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PT1DD

W0#466

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page 1 of 1	
Collector W. V. SETZER		Company Contact W. V. SETZER					Telephone No. (509) 376-2413					Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal	
Project Designation 200 UP-1		Sampling Location 299-W19-34B					SAF No. 94-046						
Ice Chest No. SML-60		Field Logbook No. EFL-1118					Method of Shipment BY COMPANY VEHICLE						
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-					Bill of Lading/Air Bill No.						
Possible Sample Hazards/Remarks		Preservative											
NONE OBSERVED		Type of Container	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
		aGs	aG	G	G	G	G	G	P/G	aG	aGs		
		No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE Petris 2C		Volume	125ml	500ml	500ml	250ml	250ml	125ml	1500ml			180ml	40ml
SAMPLE ANALYSIS 404564		VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cu (CLP)	ANIONS (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)
AJS 4/29/94 1400		A	B	C	D	E	F	40456501				OIA	SCAN
Sample No.	Matrix*	Date Sampled	Time Sampled										
BOBSI2 01	S	4-26-94	0700										
BOBSI1 02	S	4-26-94	0805	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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ATTACHMENT 5 - DATA VALIDATION SUPPORTING DOCUMENTATION

029730
HK

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	[D]	E
PROJECT: 200-UP-1 Round 1 Soil			DATA PACKAGE: W0034-ITC-055		
VALIDATOR: K. Angelos		LAB: Quanterra		DATE: November 11, 1994	
CASE: N/A			SDG: W0034		
ANALYSES PERFORMED					
<input checked="" type="checkbox"/> CLP/ICP	<input checked="" type="checkbox"/> CLP/GFAA	<input checked="" type="checkbox"/> CLP/Hg	<input checked="" type="checkbox"/> CLP/Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> SW-846/ICP	<input type="checkbox"/> SW-846/GFAA	<input type="checkbox"/> SW-846/Hg	<input type="checkbox"/> SW-846 Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX: BOBJ05, BOBJ07, BOBJ08, BOBJ10, BOBJ11 ALL SOIL					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? [Yes] No N/A

Is a case narrative present? [Yes] No N/A

Comments: _____

2. HOLDING TIMES

Are sample holding times acceptable? [Yes] No N/A

Comments: cyanide analyses completed in <14 days, mercury completed in less than 28 days. All remaining analyses completed in <180 days.

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . [Yes] No N/A
 Are initial calibrations acceptable? [Yes] No N/A
 Are ICP interference checks acceptable? [Yes] No N/A
 Were ICV and CCV checks performed on all instruments? [Yes] No N/A
 Are ICV and CCV checks acceptable? [Yes] No N/A

Comments: _____

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? [Yes] No N/A
 Are ICB and CCB results acceptable? [Yes] No N/A
 Were preparation blanks analyzed? [Yes] No N/A
 Are preparation blank results acceptable? Yes [No] N/A
 Were field/trip blanks analyzed? [Yes] No N/A
 Are field/trip blank results acceptable? Yes [No] N/A

Comments: calcium, sodium and zinc were detected in the prep. blank assoc. with BOBJ07 with results qualified as U.

Cl, Ba, Fe, Mg, Mn, Fl, Ti detected in equip. blank, no qualification required ^{12/9/94}

5. ACCURACY

Were spike samples analyzed? [Yes] No N/A
 Are spike sample recoveries acceptable? Yes [No] N/A
 Were laboratory control samples (LCS) analyzed? [Yes] No N/A
 Are LCS recoveries acceptable? [Yes] No N/A

Comments: spike sample recovery was unacceptable for cyanide, results were qualified as UJ.

*Revised
 12/7/94*

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? [Yes] No N/A
 Are laboratory duplicate samples RPD values acceptable? . . . [Yes] No N/A
 Were ICP serial dilution samples analyzed? [Yes] No N/A
 Are ICP serial dilution %D values acceptable? [Yes] No N/A
 Are field duplicate RPD values acceptable? Yes No [N/A] *12/5/94*
 Are field split RPD values acceptable? Yes No [N/A]

Comments: NO COMMENTS

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? [Yes] No N/A
 Are duplicate injection %RSD values acceptable? [Yes] No N/A
 Were analytical spikes performed as required? [Yes] No N/A
 Are analytical spike recoveries acceptable? Yes [No] N/A
 Was MSA performed as required? [Yes] No N/A
 Are MSA results acceptable? [Yes] No N/A

Comments: Thallium and Selenium analytical spike recoveries were unacceptable, BOBJ05, BOBJ07, BOBJ08, BOBJ10 were qualified UJ for selenium. BOBJ05, BOBJ10 were qualified BJ for thallium.

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? [Yes] No N/A
 Are all results supported in the raw data? [Yes] No N/A
 Are results calculated properly? [Yes] No N/A
 Do results meet the CRDLs? [Yes] No N/A

Comments: no comments

*Reviewed
 12/7/94
 032*

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WHC-SD-EN-SPP-002, Rev. 2

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

Data Package: W0034-ITC-055 Field Duplicate RPDs					
Constituent	BOBJ05 mg/Kg	Q	BOBJ08 mg/Kg	Q	RPD
Al	10200		8930		13
Sb	11.5	U	11.1	U	NC
As	3.9		4.8		21
Ba	97.1		83.6		15
Be	0.76	B	0.71	B	7
Cd	1.2	U	1.1	U	NC
Ca	13000		12300		6
Cr	26.3		21.4		21
Co	12		10.9	B	10
Cu	17.4		15.9		9
Fe	21000		18800		11
Pb	6.6		9.9		40
Mg	6900		6300		9
Mn	315		289		9
Hg	0.12	U	0.1	U	NC
Ni	19.9		17.6		12
K	2210		1860		17
Se	0.44	UJ	0.42	UJ	NC
Ag	1.2	U	1.1	U	NC
Na	199	B	182	B	9
Tl	0.75	BJ	0.86	B	14
V	39.2		34.6		12
Zn	43.9		40.3		9
Ti	1020		872		16
Cn	5.7	UJ	5.5	UJ	NC

NC - Indicates that the RPD was not calculated since both the sample and duplicate are undetected (U or UJ).

033

Data Package: W0034-ITC-055 Analysis: Metals/Cyanide

Blank Analysis Summary

Prep. blank associated with B0BJ05, B0BJ07, B0BJ08

Analyte	Conc	Conc*5
Al	17.172	85.86
Ca	16.17	80.85
Fe	7	35
Na	27.308	136.54
Zn	1.428	7.14

Prep. blank associated with B0BJ10

Analyte	Conc	Conc*5
Al	15.488	77.44
Ca	43.354	216.77
Fe	10.65	53.25
Mg	15.52	77.6
Zn	2.374	11.87

Prep. blank associated with B0BJ11

Analyte	Conc	Conc*5
Al	31.092	155.46
Ca	13.27	66.35
Fe	14.414	72.07
Mg	8.72	43.6
Mn	0.434	2.17
K	229.16	1145.8
Na	24.956	124.78
Zn	1.696	8.48
Cn	-1.5	-7.5

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE _____ Contract: HANFORD/WE
 Lab Code: ITSTU _____ Case No.: W0389 SAS No.: _____ SDG No.: W0034
 Preparation Blank Matrix (soil/water): SOIL_
 Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank		M		
			1	C	2	C	3	C	C	C			
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	17.172	B	P
Antimony	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	10.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Barium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	0.200	U	P
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	16.170	B	P
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	7.000	B	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Magnesium	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U	6.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	P
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.100	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.0	U	200.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Silver	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	100.0	U	27.308	B	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	1.428	B	P
Titanium	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	0.600	U	P
Cyanide	10.0	U	10.0	U							1.000	U	AS

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14
ANALYSIS RUN LOG

Lab Name: ITAS_KNOXVILLE
Lab Code: ITSTU Case No.: WO389
Instrument ID Number: 5100/600
Start Date: 05/02/94

Contract: HANFORD/WE
SAS No.: SDG No.: W0034
Method: F
End Date: 05/02/94

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K	S E	A G	N A	T L	V	Z N	T I		
ZZZZZZ	1.00	1537																											
ZZZZZZA	1.00	1542	66.6																										
ZZZZZZ	1.00	1548																											
CCV6	1.00	1554																						X					
CCB6	1.00	1559																						X					
ZZZZZZ	10.00	1604																											
ZZZZZZA	1.00	1609	97.3																										
PBS	1.00	1614																											
PBSA	1.00	1620	94.1																										
LCSS	1.00	1625																											
LCSSA	1.00	1630	103.6																										
ZZZZZZ	1.00	1636																											
ZZZZZZA	1.00	1641	76.4																										
BOBJ05	1.00	1646																											
BOBJ05A	1.00	1652	78.1																										
CCV7	1.00	1657																											
CCB7	1.00	1702																											
BOBJ07	1.00	1707																											
BOBJ07A	1.00	1713	87.4																										
BOBJ07D	1.00	1718																											
BOBJ07DA	1.00	1724	89.3																										
BOBJ07S	1.00	1729																											
ZZZZZZ	1.00	1734																											
BOBJ08	1.00	1740																											
BOBJ08A	1.00	1745	86.0																										
ZZZZZZ	1.00	1750																											
ZZZZZZA	1.00	1755	71.6																										
CCV8	1.00	1800																											
CCB8	1.00	1806																											
ZZZZZZ	1.00	1811																											
ZZZZZZA	1.00	1816	96.7																										
ZZZZZZ	1.00	1821																											

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14

ANALYSIS RUN LOG

Lab Name: ITAS_KNOXVILLE

Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO389

SAS No.: SDG No.:W0034

Instrument ID Number: 5100/600

Method: F

Start Date: 05/04/94

End Date: 05/04/94

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K	S E	A G	A L	T V	Z N	T I			
S0	1.00	1020																		X									
S5	1.00	1025																		X									
S10	1.00	1031																		X									
S20	1.00	1036																		X									
S40	1.00	1041																		X									
S80	1.00	1046																		X									
ICV	1.00	1052																		X									
ICB	1.00	1057																		X									
CRA	1.00	1102																		X									
CRAA	1.00	1108	104.6																	X									
CCV1	1.00	1114																		X									
CCB1	1.00	1119																		X									
ZZZZZZ	10.00	1124																											
ZZZZZZA	1.00	1129	99.6																	X									
PBS	1.00	1134																		X									
PBSA	1.00	1140	95.7																	X									
LCSS	1.00	1145																		X									
LCSSA	1.00	1150	101.8																	X									
ZZZZZZ	1.00	1155																											
ZZZZZZA	1.00	1201	85.4																	X									
BOBJ05	1.00	1206																		X									
BOBJ05A	1.00	1211	79.9																	X									
CCV2	1.00	1216																		X									
CCB2	1.00	1222																		X									
BOBJ07	1.00	1227																		X									
BOBJ07A	1.00	1232	83.4																	X									
BOBJ07D	1.00	1237																		X									
BOBJ07DA	1.00	1243	85.5																	X									
BOBJ07S	1.00	1248																		X									
ZZZZZZ	1.00	1253																		X									
BOBJ08	1.00	1259																		X									
BOBJ08A	1.00	1304	81.8																	X									

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5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ITAS_KNOXVILLE

Contract: HANFORD/WE

BOBJ07S

Lab Code: ITSTU

Case No.: W0389

SAS No.:

SDG No.: W0034

Matrix: SOIL

Level (low/med): LOW

% Solids for Sample: 100.0

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							NR
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							NR
Silver							NR
Sodium							NR
Thallium							NR
Vanadium							NR
Zinc							NR
Titanium							NR
Cyanide	75-125	13.5935	4.9407 U	19.67	69.1	N	AS

Comments:

CYANIDE ONLY.

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14
ANALYSIS RUN LOG

Lab Name: ITAS_KNOXVILLE
Lab Code: ITSTU Case No.: WO422
Instrument ID Number: 5100/600
Start Date: 05/04/94

Contract: HANFORD/WE
SAS No.: SDG No.: W0034
Method: F
End Date: 05/04/94

EPA Sample No.	D/F	Time	% R	Analytes																									
				A	S	A	B	B	C	C	C	C	F	P	M	M	H	N	K	S	A	N	T	V	Z	T			
BOBJ10	1.00	1309		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-			
BOBJ10A	1.00	1314	77.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-			
CCV3	1.00	1319		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-			
CCB3	1.00	1324		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1329		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1334	95.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1340		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1345	89.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1350		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1355	13.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1400		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1405	25.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1410		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1415	76.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1420		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1425		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1430		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1435	70.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1440		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1445	69.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1450		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1455	86.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1505	78.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1510		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1516	75.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1521		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1526		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1531		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1536	64.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZ	1.00	1541		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
ZZZZZZA	1.00	1547	76.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			

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14
ANALYSIS RUN LOG

Lab Name: ITAS_KNOXVILLE
Lab Code: ITSTU Case No.: WO422
Instrument ID Number: 5100/600
Start Date: 05/02/94

Contract: HANFORD/WE
SAS No.: SDG No.: W0034
Method: F
End Date: 05/02/94

EPA Sample No.	D/F	Time	% R	Analytes																									
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K	S E	A G	N A	T L	V	Z N	T I		
ZZZZZZ	1.00	1537																											
ZZZZZZA	1.00	1542	66.6																										
ZZZZZZ	1.00	1548																											
CCV6	1.00	1554																						X					
CCB6	1.00	1559																					X						
ZZZZZZ	10.00	1604																											
ZZZZZZA	1.00	1609	97.3																										
PBS	1.00	1614																						X					
PBSA	1.00	1620	94.1																				X	X	X				
LCSS	1.00	1625																						X					
LCSSA	1.00	1630	103.6																					X					
ZZZZZZ	1.00	1636																											
ZZZZZZA	1.00	1641	76.4																										
ZZZZZZ	1.00	1646																											
ZZZZZZA	1.00	1652	78.1																										
CCV7	1.00	1657																						X					
CCB7	1.00	1702																					X						
ZZZZZZ	1.00	1707																											
ZZZZZZA	1.00	1713	87.4																										
ZZZZZZ	1.00	1718																											
ZZZZZZA	1.00	1724	89.3																										
ZZZZZZ	1.00	1729																											
ZZZZZZ	1.00	1734																											
ZZZZZZ	1.00	1740																											
ZZZZZZA	1.00	1745	86.0																										
BOBJ10	1.00	1750																						X					
BOBJ10A	1.00	1755	71.6																				X	X	X				
CCV8	1.00	1800																						X					
CCB8	1.00	1806																						X					
ZZZZZZ	1.00	1811																											
ZZZZZZA	1.00	1816	96.7																										
ZZZZZZ	1.00	1821																											

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MEMORANDUM



TO: 200-UP-1 Round 1 Soil, Project QA Record

FR: Kent Angelos, Golder Associates Inc. *MA*RE: RADIOCHEMISTRY DATA VALIDATION SUMMARY FOR
DATA PACKAGE: W0034-ITC-055, (943-1610.037, 055RAD.UP1)**INTRODUCTION**

This memo presents the results of data validation on data package W0034-ITC-055 prepared by the Quanterra Laboratory. Sample information is provided in the following table.

SAMPLE ID	MEDIA	ANALYSIS	COMMENTS
B0BJ05	SOIL	Radiochemistry	none
B0BJ07*	SOIL	Radiochemistry	equip. blank
B0BJ08	SOIL	Radiochemistry	duplicate of B0BJ05
B0BJ10	SOIL	Radiochemistry	none
B0BJ11	SOIL	Radiochemistry	none

* Indicates sample results which were 100% recalculated.

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information:

- Attachment 1. Glossary of Data Reporting Qualifiers
- Attachment 2. Summary of Data Qualifications
- Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
- Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
- Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of the minor deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of five (5) samples were validated in this data package with a total of 123 determinations reported, all of which

were deemed valid. This results in a completeness of 100 percent which meets the work plan completeness objective of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Blanks

- Americium-241 was detected in the associated blank, therefore associated sample results have been qualified as estimated (J). Attachments 2 and 5 provide supporting documentation.

Laboratory Control Samples

- Laboratory control sample percent recovery was unacceptable for uranium-234 and uranium-238. Attachments 2 and 5 provide supporting documentation.

Spike Sample Recovery

- Spike sample recovery was unacceptable for neptunium-237. Attachments 2 and 5 provide supporting documentation.

DATA REPORTING

- Sample results reported as less than the minimum detectable activity (MDA) have been qualified as undetected (U) and the MDA value is reported in the qualified data summary (Attachment 3).

FIELD QC

- Sample BOBJ07 was identified as an equipment blank, americium-241 (0.689 pCi/g), uranium-234 (0.0826 pCi/g), uranium-238 (0.126 pCi/g), radium-224 (0.125 pCi/g), radium-226 (0.0868 pCi/g), radium-228 (0.101 pCi/g) and total strontium (0.182 pCi/g) were detected in the sample. No qualification was applied in accordance with the data validation procedures.
- Sample BOBJ08 was identified as a field duplicate of sample BOBJ05. All relative percent differences were less than 35%. Attachment 5 provides supporting documentation.

REFERENCES

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington.

WHC 1993, Data Validation Procedures for Radiochemical Analyses, WHC-SD-EN-SPP-001, Rev. 1, 1993. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1. GLOSSARY OF DATA REPORTING QUALIFIERS

- U - Indicates the constituent was analyzed for but not detected at a concentration greater than the minimum detectable activity (MDA). The value reported is the MDA.
- J - Indicates the constituent was analyzed for and detected. Due to a minor deficiency identified during data validation the value reported should be considered an estimated value. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for but not detected at a concentration greater than the MDA. Due to a minor deficiency identified during data validation the value reported should be considered an estimated value. The associated data should be considered usable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected above the MDA. Due to a major deficiency identified during data validation the associated data should be considered unusable for decision making purposes.
- UR - Indicates the constituent was analyzed for and not detected above the MDA. Due to a major deficiency identified during data validation the associated data should be considered unusable for decision making purposes.

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ATTACHMENT 3 - QUALIFIED DATA SUMMARY AND
ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0034-ITC-055

Parameter	Samp#	808J05		808J07		808J08		808J10		808J11	
	Date	4-14-94		4-14-94		4-14-94		4-18-94		4-26-94	
	Location	299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B	
	Depth	168.00 - 170.50		---		168.00 - 170.50		186.00 - 188.50		242.50 - 244.50	
	Type	SOIL		SOIL EQUIP		SOIL DUPLI		SOIL		SOIL	
	Comments										
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
AMERICIUM-241	PCI/G	0.526	J	0.689	J	0.697	J	0.625	J	0.490	J
CURIUM-242	PCI/G	0.023	U	0.024	U	0.016	U	0.014	U	0.027	U
CURIUM-244	PCI/G	0.019	U	0.024	U	0.020	U	0.012	U	0.013	U
NEPTUNIUM-237	PCI/G	0.011	UJ	0.011	UJ	0.013	J	0.017	J	0.049	J
PLUTONIUM-238	PCI/G	0.030	U	0.029	U	0.023	U	0.032	U	0.017	U
PLUTONIUM-239/240	PCI/G	0.043	U	0.029	U	0.011	U	0.027	U	0.017	U
URANIUM-234	PCI/G	1.040	J	0.083	J	0.962	J	2.070	J	0.904	J
URANIUM-235	PCI/G	0.061	U	0.033	U	0.042	U	0.090	U	0.037	U
URANIUM-238	PCI/G	0.776	J	0.126	J	0.956	J	1.900	J	1.110	J
POTASSIUM-40	PCI/G	---		0.524		17.900		9.960		17.600	
COBALT-58	PCI/G	0.013	U	0.002		0.023	U	0.021	U	0.018	U
COBALT-60	PCI/G	0.011	U	0.005	U	0.019	U	0.020	U	0.019	U
CESIUM-137	PCI/G	0.010	U	0.004	U	0.017	U	0.017	U	0.028	U
EUROPIUM-152	PCI/G	0.144		0.026	U	0.145		0.120		0.083	U
EUROPIUM-154	PCI/G	0.036	U	0.013	U	0.068	U	0.057	U	0.056	U
EUROPIUM-155	PCI/G	0.082		0.012	U	0.065		0.064		0.044	U
IRON-59	PCI/G	0.035	U	0.013	U	0.066	U	0.052	U	0.051	U
THORIUM-234	PCI/G	6.410		---		8.390		---		---	
TOTAL STRONTIUM	PCI/G	0.144	U	0.182		0.245		0.316		0.356	
IODINE-129	PCI/G	---		---		---		---		0.828	U
MANGANESE-54	PCI/G	0.019		---		---		---		---	
RADIUM-224	PCI/G	1.140		0.125		1.120		0.865		0.768	
RADIUM-226	PCI/G	0.824		0.087		0.898		0.801		0.442	
RADIUM-228	PCI/G	1.190		0.101		1.160		0.808		0.769	
GROSS ALPHA	PCI/G	13.700		5.110	U	17.500		5.430	U	20.400	
GROSS BETA	PCI/G	26.100		3.670	U	28.900		18.500		32.200	
TECHNETIUM-99	PCI/G	0.595		0.511	U	0.511	U	0.511	U	0.511	U

The decimal places shown do not reflect the precision reported by the laboratory

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*Reviewed
12/19/94*

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W0034-ITC-055

IT ANALYTICAL SERVICES
 RICHLAND, WA
 (509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND

SDG NO.: W0034

LAB SAMPLE ID: 40431601

MATRIX: SOIL

WHC ID: BOBJ05

DATE RECEIVED 4/18/94

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	5.26E-01	J 9.84E-02	1.27E-01	2.45E-02	0.791	RD3302
CM-242	-4.46E-04	8.93E-04	8.96E-04	2.25E-02 U	0.791	RD3302
CM-244	-3.69E-04	7.38E-04	7.40E-04	1.85E-02 U	0.791	RD3302
NP-237	4.16E-03	8.32E-03	8.37E-03	1.13E-02 U J	1	RD3208
PU239/40	1.26E-03	1.36E-02	1.36E-02	4.34E-02 U	0.659	RD3209
PU-238	-1.26E-03	2.53E-03	2.54E-03	3.03E-02 U	0.659	RD3209
U-234	1.04E+00	J 1.73E-01	2.26E-01	3.56E-02	0.583	RD3234
U-235	6.14E-02	X 4.29E-02	4.38E-02	4.03E-02	0.583	RD3234
U-238DA	7.76E-01	J 1.49E-01	1.85E-01	3.56E-02	0.583	RD3234
CO-60	-3.44E-03	6.98E-03	6.99E-03	1.13E-02 U	N/A	RD3219
FE-59	-1.87E-02	2.17E-02	2.18E-02	3.49E-02 U	N/A	RD3219
EU-152	1.44E-01	3.11E-02	3.43E-02	6.11E-02	N/A	RD3219
MN-54	1.91E-02	7.92E-03	8.14E-03	N/A	N/A	RD3219
CO-58	3.91E-03	7.57E-03	7.58E-03	1.27E-02 U	N/A	RD3219
CS-137DA	-3.81E-04	6.50E-03	6.50E-03	1.04E-02 U	N/A	RD3219
RA-224DA	1.14E+00	2.23E-02	1.16E-01	N/A	N/A	RD3219
EU-155	8.24E-02	1.94E-02	2.10E-02	3.12E-02	N/A	RD3219
EU-154	6.09E-03	2.22E-02	2.22E-02	3.64E-02 U	N/A	RD3219
RA-226DA	8.24E-01	3.06E-02	8.78E-02	N/A	N/A	RD3219
TH-234	6.41E+00	2.90E+00	2.97E+00	N/A	N/A	RD3219
RA-228DA	1.19E+00	5.88E-02	1.33E-01	N/A	N/A	RD3219
ALPHA	1.37E+01	5.34E+00	5.54E+00	5.33E+00	1	RD3222
BETA	2.61E+01	3.64E+00	4.03E+00	3.68E+00	1	RD3222
TOTAL-SR	1.03E-01	5.88E-02	6.39E-02	1.44E-01 U	0.821	RD3204
TC-99	5.95E-01	2.30E-01	1.06E+00	5.11E-01	1	ITAS-IT-RS-0001

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SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND

SDG NO.: W0034

LAB SAMPLE ID: 40431602

MATRIX: SOIL

WHC ID: BOBJ07

DATE RECEIVED 4/18/94

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	(6.89E-01) J	1.15E-01	1.57E-01	2.20E-02	0.751	RD3302
CM-242	-4.69E-04	9.39E-04	9.41E-04	(2.36E-02) U	0.751	RD3302
CM-244	-1.16E-03	1.34E-03	1.36E-03	(2.42E-02) U	0.751	RD3302
NP-237	4.17E-03	8.33E-03	8.38E-03	(1.13E-02) U J	1	RD3208
PU239/40	0.00E+00	0.00E+00	3.24E-02	(2.92E-02) U	0.385	RD3209
PU-238	0.00E+00	0.00E+00	3.24E-02	(2.93E-02) U	0.385	RD3209
U-234	(8.26E-02) J	4.61E-02	4.73E-02	3.80E-02	0.677	RD3234
U-235	4.18E-03	1.24E-02	1.25E-02	(3.28E-02) U	0.677	RD3234
U-238DA	(1.26E-01) J	5.64E-02	5.88E-02	3.64E-02	0.677	RD3234
K-40	(5.24E-01)	7.79E-02	9.39E-02	N/A	N/A	RD3219
CO-60	-3.03E-04	2.79E-03	2.79E-03	(4.74E-03) U	N/A	RD3219
FE-59	6.48E-03	6.88E-03	6.91E-03	(1.28E-02) U	N/A	RD3219
EU-152	2.11E-02	1.30E-02	1.31E-02	(2.56E-02) U	N/A	RD3219
CO-58	(2.25E-03)	2.85E-03	2.86E-03	5.15E-03	N/A	RD3219
CS-137DA	2.31E-04	2.52E-03	2.52E-03	(4.14E-03) U	N/A	RD3219
RA-224DA	(1.25E-01)	8.28E-03	1.50E-02	N/A	N/A	RD3219
EU-155	9.13E-03	6.85E-03	6.91E-03	(1.18E-02) U	N/A	RD3219
EU-154	2.77E-03	7.45E-03	7.46E-03	(1.31E-02) U	N/A	RD3219
RA-226DA	(8.68E-02)	1.20E-02	1.48E-02	N/A	N/A	RD3219
RA-228DA	(1.01E-01)	2.14E-02	2.37E-02	N/A	N/A	RD3219
ALPHA	7.25E-01	2.16E+00	2.16E+00	(5.11E+00) U	1	RD3222
BETA	2.43E+00	1.83E+00	1.84E+00	(3.67E+00) U	1	RD3222
TOTAL-SR	(1.82E-01)	6.01E-02	7.58E-02	1.24E-01	0.93	RD3204
TC-99	1.17E-01	2.20E-01	1.02E+00	(5.11E-01) U	1	ITAS-IT-RS-0001

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IT ANALYTICAL SERVICES
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 (509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND

SDG NO.: W0034

LAB SAMPLE ID: 40431603

MATRIX: SOIL

WHC ID: BOBJ08

DATE RECEIVED 4/18/94

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	(6.97E-01) J	1.18E-01	1.61E-01	2.28E-02	0.728	RD3302
CM-242	6.06E-03	1.21E-02	1.22E-02	(1.64E-02) U	0.728	RD3302
CM-244	-4.01E-04	8.01E-04	8.04E-04	(2.02E-02) U	0.728	RD3302
NP-237	(1.25E-02) J	1.44E-02	1.46E-02	1.12E-02	1	RD3208
PU239/40	4.09E-03	8.17E-03	8.19E-03	(1.11E-02) U	1.018	RD3209
PU-238	-1.64E-03	2.31E-03	2.32E-03	(2.31E-02) U	1.018	RD3209
U-234	(9.62E-01) J	1.74E-01	2.22E-01	4.82E-02	0.535	RD3234
U-235	2.87E-02	3.13E-02	3.16E-02	(4.16E-02) U	0.535	RD3234
U-238DA	(9.56E-01) J	1.73E-01	2.21E-01	4.40E-02	0.535	RD3234
K-40	(1.79E+01)	5.51E-01	1.87E+00	N/A	N/A	RD3219
CO-60	7.45E-04	1.14E-02	1.14E-02	(1.90E-02) U	N/A	RD3219
FE-59	2.06E-02	3.79E-02	3.79E-02	(6.58E-02) U	N/A	RD3219
EU-152	(1.45E-01)	5.08E-02	5.28E-02	1.04E-01	N/A	RD3219
CO-58	-4.11E-03	1.37E-02	1.37E-02	(2.27E-02) U	N/A	RD3219
CS-137DA	-1.09E-03	1.07E-02	1.07E-02	(1.72E-02) U	N/A	RD3219
RA-224DA	(1.12E+00)	3.83E-02	1.18E-01	N/A	N/A	RD3219
EU-155	(6.49E-02)	3.37E-02	3.43E-02	5.43E-02	N/A	RD3219
EU-154	4.86E-03	4.08E-02	4.08E-02	(6.78E-02) U	N/A	RD3219
RA-226DA	(8.98E-01)	5.13E-02	1.03E-01	N/A	N/A	RD3219
TH-234	(8.39E+00)	5.30E+00	5.36E+00	N/A	N/A	RD3219
RA-228DA	(1.16E+00)	9.87E-02	1.52E-01	N/A	N/A	RD3219
ALPHA	(1.75E+01)	6.00E+00	6.29E+00	5.64E+00	1	RD3222
BETA	(2.89E+01)	3.78E+00	4.23E+00	3.60E+00	1	RD3222
TOTAL-SR	(2.45E-01)	7.05E-02	9.26E-02	1.40E-01	0.841	RD3204
TC-99	2.70E-01	2.26E-01	1.04E+00	(5.11E-01) U	1	ITAS-IT-RS-0001

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IT ANALYTICAL SERVICES
 RICHLAND, WA
 (509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND

SDG NO.: W0034

LAB SAMPLE ID: 40440301

MATRIX: SOIL

WHC ID: BOBJ10

DATE RECEIVED 4/21/94

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	(6.25E-01) J	1.06E-01	1.42E-01	1.80E-02	0.811	RD3302
CM-242	0.00E+00	0.00E+00	1.60E-02	(1.45E-02) U	0.811	RD3302
CM-244	4.49E-03	8.98E-03	9.00E-03	(1.22E-02) U	0.811	RD3302
NP-237	(1.66E-02) J	1.66E-02	1.70E-02	1.12E-02	1	RD3208
PU239/40	-1.14E-03	2.28E-03	2.29E-03	(2.73E-02) U	0.729	RD3209
PU-238	-2.28E-03	3.23E-03	3.25E-03	(3.23E-02) U	0.729	RD3209
U-234	(2.07E+00) J	3.09E-01	4.61E-01	6.50E-02	0.362	RD3234
U-235	(9.02E-02) J	6.51E-02	6.68E-02	5.25E-02	0.362	RD3234
U-238DA	(1.90E+00) J	2.96E-01	4.31E-01	5.73E-02	0.362	RD3234
K-40	(9.96E+00) J	4.77E-01	1.10E+00	N/A	N/A	RD3219
CO-60	-1.06E-03	1.17E-02	1.17E-02	(1.99E-02) U	N/A	RD3219
FE-59	6.07E-03	2.96E-02	2.96E-02	(5.17E-02) U	N/A	RD3219
EU-152	(1.20E-01) J	5.32E-02	5.46E-02	1.07E-01	N/A	RD3219
CO-58	8.62E-03	1.19E-02	1.19E-02	(2.14E-02) U	N/A	RD3219
CS-137DA	-9.82E-03	1.11E-02	1.12E-02	(1.73E-02) U	N/A	RD3219
RA-224DA	(8.65E-01) J	3.79E-02	9.44E-02	N/A	N/A	RD3219
EU-155	(6.40E-02) J	3.36E-02	3.42E-02	5.47E-02	N/A	RD3219
EU-154	2.61E-02	3.23E-02	3.24E-02	(5.67E-02) U	N/A	RD3219
RA-226DA	(8.01E-01) J	5.31E-02	9.61E-02	N/A	N/A	RD3219
RA-228DA	(8.08E-01) J	8.23E-02	1.15E-01	N/A	N/A	RD3219
ALPHA	4.98E+00	3.60E+00	3.64E+00	(5.43E+00) U	1	RD3222
BETA	(1.85E+01) J	3.14E+00	3.37E+00	3.53E+00	1	RD3222
TOTAL-SR	(3.16E-01) J	7.01E-02	1.07E-01	1.22E-01	0.96	RD3204
TC-99	3.96E-01	2.27E-01	1.05E+00	(5.11E-01) U	1	ITAS-IT-RS-0001

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IT ANALYTICAL SERVICES
 RICHLAND, WA
 (509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND

SDG NO.: W0034

LAB SAMPLE ID: 40456501

MATRIX: SOIL

WHC ID: B0BJ11

DATE RECEIVED 4/29/94

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	(4.90E-01) J	9.63E-02	1.22E-01	1.90E-02	0.769	RD3302
CM-242	-1.31E-03	1.51E-03	1.53E-03	(2.72E-02) U	0.769	RD3302
CM-244	0.00E+00	0.00E+00	1.42E-02	(1.28E-02) U	0.769	RD3302
NP-237	(4.91E-02) J	2.88E-02	3.07E-02	1.90E-02	1	RD3208
PU239/40	0.00E+00	0.00E+00	1.88E-02	(1.69E-02) U	0.666	RD3209
PU-238	0.00E+00	0.00E+00	1.88E-02	(1.69E-02) U	0.666	RD3209
U-234	(9.04E-01) J	1.54E-01	1.97E-01	3.27E-02	0.634	RD3234
U-235	3.68E-02	3.22E-02	3.26E-02	(3.71E-02) U	0.634	RD3234
U-238DA	(1.11E+00) J	1.71E-01	2.28E-01	1.78E-02	0.634	RD3234
K-40	(1.76E+01)	5.52E-01	1.84E+00	N/A	N/A	RD3219
CO-60	-3.14E-03	1.12E-02	1.13E-02	(1.90E-02) U	N/A	RD3219
FE-59	-8.31E-03	3.00E-02	3.00E-02	(5.09E-02) U	N/A	RD3219
EU-152	8.02E-02	4.06E-02	4.14E-02	(8.33E-02) U	N/A	RD3219
CO-58	-3.66E-03	1.05E-02	1.05E-02	(1.77E-02) U	N/A	RD3219
CS-137DA	(2.82E-02)	1.65E-02	1.67E-02	N/A	N/A	RD3219
RA-224DA	(7.68E-01)	3.12E-02	8.29E-02	N/A	N/A	RD3219
EU-155	2.83E-02	2.57E-02	2.58E-02	(4.41E-02) U	N/A	RD3219
EU-154	-5.21E-02	3.66E-02	3.70E-02	(5.65E-02) U	N/A	RD3219
RA-226DA	(4.42E-01)	4.77E-02	6.50E-02	N/A	N/A	RD3219
RA-228DA	(7.69E-01)	8.71E-02	1.16E-01	N/A	N/A	RD3219
I-129LP	2.79E-01	4.58E-01	4.59E-01	(8.28E-01) U	N/A	RD3219
ALPHA	(2.04E+01)	6.46E+00	6.83E+00	5.93E+00	1	RD3222
BETA	(3.22E+01)	4.01E+00	4.54E+00	3.88E+00	1	RD3222
TOTAL-SR	(3.56E-01)	7.93E-02	1.18E-01	1.43E-01	0.859	RD3204
TC-99	6.08E-02	2.20E-01	1.02E+00	(5.11E-01) U	1	ITAS-IT-RS-0001

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ATTACHMENT 4 - LABORATORY NARRATIVE AND
CHAIN-OF-CUSTODY DOCUMENTATION



INTERNATIONAL
TECHNOLOGY
CORPORATION

CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

June 17, 1994

Attention: J.A.Lerch

SAF Number : 94-046
Date SDG Closed : May 2, 1994
Number of Samples : Five (5)
Sample Type : Soil
SDG Number : W0034
Data Deliverable : Stand Alone

I. Introduction

On April 18, 21, and 29, 1994, five soil samples were received by ITAS-Richland for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

<u>ITAS-Richland ID</u>	<u>WHC ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
404316-01A	B0BJ05	Soil	4/18/94
404316-02A	B0BJ07	Soil	4/18/94
404316-03A	B0BJ08	Soil	4/18/94
404403-01A	B0BJ10	Soil	4/21/94
404565-01A	B0BJ11	Soil	4/29/94

Westinghouse Hanford Company
June 17, 1994
Page 2

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, the analytical result(s) and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302

Neptunium-237 by method ITAS-RD-3208

Plutonium-238, 239/40 by method ITAS-RD-3209

Uranium-234, 235, 238 by method ITAS-RD-3234

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219

Iodine-129 by method ITAS-RD-3219

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222

Gross Beta by method ITAS-RD-3222

Strontium-90 by method ITAS-RD-3204

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247

Technetium-99 by method ITAS-IT-RS-0001

III. Quality Control

The analytical results for each analysis performed under SDG W0034 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate.

Quality control sample results are reported in the same units as sample results except for gross alpha and gross beta quality control sample results which are reported in pCi/sample.

IV. Comments

The initial radioactivity screening of the samples classified samples BOBJ07 and BOBJ10 as Category I, and samples BOBJ05, BOBJ08, and BOBJ11 as Category II.

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June 17, 1994
Page 3

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302

The blank result is accepted and reported with possible low-level contamination below the contractual detection limit (the result is less than the contract limit, but greater than 1/2 the contract limit). The sample results are all less than the contract limit. The LCS, sample and sample duplicate (duplicate of sample B0BJ11) results are within contractual requirements.

Neptunium-237 by method ITAS-RD-3208

The analysis of the duplicate of sample B0BJ11 was "lost" during step 5.8.11 of procedure RD3208 due to technician error. Two matrix spikes were analyzed with this batch; their results are out of contract limits (low). The LCS had a recovery of 95.2%, therefore, the matrix spikes are reported as low due to a matrix effect. The LCS and batch blank results are within contractual requirements.

Plutonium-238, 239/40 by method ITAS-RD-3209

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BJ11) results are within contractual requirements.

Uranium-234, 235, 238 by method ITAS-RD-3234

The sample batch was reanalyzed because of a low LCS tracer yield and radiochemical recoveries that were out of limits. The results of the reanalysis show that the original results are acceptable (within 3 sigma of the original sample results) and that the problem with the LCS was not related to the original analysis of the samples. The original analysis is reported rather than the reanalysis due to low sample yields on the reanalysis. The original batch blank, sample and sample duplicate (duplicate of sample B0BJ08) results are within contractual requirements.

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June 17, 1994
Page 4

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219

The detection limit was not met for one or more isotopes for sample BOBJ08 and the duplicate of BOBJ11. An Ottawa sand matrix blank met the detection limits for all isotopes, therefore, the sample data are accepted. The gamma nuclide library had not been updated to allow reporting of U-238 based on the Th-234 found rather than Pb-214, therefore, the result is reported as Th-234 using a half-life of 24 days. This does not take into account that the Th-234 may be in equilibrium with U-238. The effect on the Th-234 results reported is that the results may be elevated due to an inappropriate decay correction. The library has since been updated to report the U-238 result as U-238DLP and uses Th-234 assuming that the Th-234 and U-238 are in equilibrium. The LCS, batch blank, sample and sample duplicate (duplicate of sample BOBJ11) results are within contractual requirements.

Iodine-129 by method ITAS-RD-3219

The LCS, batch blank, sample and sample duplicate (duplicate of sample BOBJ11) results are within contractual requirements.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222

The LCS, batch blank, sample and sample duplicate (duplicate of sample BOBJ07) results are within contractual requirements.

Gross Beta by method ITAS-RD-3222

The LCS, batch blank, sample and sample duplicate (duplicate of sample BOBJ07) results are within contractual requirements.

Strontium-90 by method ITAS-RD-3204

The LCS, batch blank, sample and sample duplicate (duplicate of sample BOBJ05) results are within contractual requirements.

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June 17, 1994
Page 5

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247

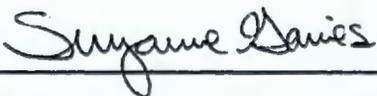
Carbon-14 results are not reportable for these samples due to an insufficient presence of carbon in the samples to perform the analysis. The carbon-14 method requires that 2 grams of carbon be present in each sample. The samples produced insufficient carbon dioxide during sample preparation. Two separate attempts were made to extrude carbon from the sample matrices. The sample results are considered unreportable due to a matrix effect (lack of carbon in the matrix).

Technetium-99 by method ITAS-IT-RS-0001

The matrix spike, LCS, batch blank, sample and sample duplicate (duplicate of sample BOBJ11) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:



Suzanne Gaines
Project Manager

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ATTACHMENT 5 - DATA VALIDATION SUPPORTING DOCUMENTATION

Reviewed
12/19/00
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IT ANALYTICAL SERVICES
 RICHLAND, WA
 (509) 375-3131

LABORATORY CONTROL SAMPLES

LAB NAME: ITAS-RICHLAND

SDG NO.: W0034

LAB SAMPLE ID: L043161S

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
AM-241	5.12E+00	2.99E-01	8.18E-01	1.18E-02	0.831	4.51E+00	113.53
NP-237	5.39E+00	3.00E-01	1.20E+00	1.68E-02	1	5.66E+00	95.23
PU239/40	3.66E+00	4.03E-01	7.18E-01	2.99E-02	0.377	3.40E+00	107.65
U-234	2.67E+00	7.69E-01	1.17E+00	2.93E-01	0.076	1.62E+00	164.81
U-235	3.74E-02	1.11E-01	1.12E-01	2.93E-01	0.076	7.37E-02	50.75
U-238DA	2.90E+00	8.00E-01	1.25E+00	2.51E-01	0.076	1.69E+00	171.60
K-40	1.99E+01	4.35E-01	2.03E+00	N/A	N/A	1.95E+01	102.05
CS-137DA	5.02E-01	2.86E-02	5.78E-02	N/A	N/A	4.80E-01	104.58
RA-226DA	1.00E+00	4.23E-02	1.09E-01	N/A	N/A	1.16E+00	86.21
ALPHA	4.38E+00	4.23E-01	8.50E-01	1.32E-01	1	4.52E+00	96.90
BETA	1.19E+01	1.08E+00	1.37E+00	8.13E-01	1	1.13E+01	105.31
TOTAL-SR	5.14E+00	2.53E-01	1.29E+00	1.47E-01	0.857	6.08E+00	84.54

LAB SAMPLE ID: L044031M

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
TC-99	2.08E+01	4.56E-01	3.11E+00	5.11E-01	1	2.26E+01	92.04

LAB SAMPLE ID: L045651S

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
I-129LP	1.18E+01	1.02E+00	1.56E+00	8.28E-01	N/A	9.01E+00	130.97

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BLANK RESULTS

LAB NAME: ITAS - RICHLAND SDG NO.: W0034
 LAB SAMPLE ID: L043161B
 REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	(7.87E-01)	1.29E-01	1.80E-01	2.62E-02	0.691	RD3302
CM-242	5.71E-03	1.14E-02	1.15E-02	(1.55E-02)	0.691	RD3302
CM-244	0.00E+00	0.00E+00	1.58E-02	(1.43E-02)	0.691	RD3302
NP-237	-3.33E-04	6.67E-04	6.71E-04	(1.68E-02)	1	RD3208
PU239/40	0.00E+00	0.00E+00	3.67E-02	(3.31E-02)	0.34	RD3209
PU-238	0.00E+00	0.00E+00	3.67E-02	(3.32E-02)	0.34	RD3209
U-234	9.48E-03	1.69E-02	1.69E-02	(3.35E-02)	0.703	RD3234
U-235	4.03E-03	1.20E-02	1.20E-02	(3.16E-02)	0.703	RD3234
U-238DA	1.59E-02	2.06E-02	2.07E-02	(3.16E-02)	0.703	RD3234
CO-60	-2.39E-03	3.39E-03	3.39E-03	(5.46E-03)	N/A	RD3219
FE-59	-7.70E-03	7.39E-03	7.43E-03	(1.11E-02)	N/A	RD3219
EU-152	5.80E-03	1.83E-02	1.84E-02	(3.37E-02)	N/A	RD3219
CO-58	-2.11E-03	3.18E-03	3.19E-03	(5.08E-03)	N/A	RD3219
CS-137DA	-9.38E-04	2.99E-03	2.99E-03	(5.08E-03)	N/A	RD3219
EU-155	-6.67E-04	8.00E-03	8.00E-03	(1.26E-02)	N/A	RD3219
EU-154	2.60E-03	9.81E-03	9.81E-03	(1.77E-02)	N/A	RD3219
ALPHA	-1.01E-02	3.92E-02	3.92E-02	(1.21E-01)	1	RD3222
BETA	-5.70E-02	2.99E-01	2.99E-01	(7.40E-01)	1	RD3222
TOTAL-SR	6.31E-02	5.53E-02	5.73E-02	(1.46E-01)	0.768	RD3204

Detected qualified J

LAB SAMPLE ID: L043161X
 REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
CO-60	-2.97E-03	4.31E-03	4.32E-03	6.92E-03 ✓	N/A	RD3219
FE-59	4.49E-03	1.41E-02	1.41E-02	2.58E-02 ✓	N/A	RD3219
EU-152	1.60E-02	2.09E-02	2.09E-02	4.12E-02 ✓	N/A	RD3219
CO-58	4.58E-03	4.95E-03	4.97E-03	9.47E-03 ✓	N/A	RD3219
CS-137DA	6.98E-04	3.12E-03	3.12E-03	5.72E-03 ✓	N/A	RD3219
EU-155	1.12E-02	1.16E-02	1.16E-02	1.90E-02 ✓	N/A	RD3219
EU-154	1.34E-02	1.10E-02	1.11E-02	2.29E-02 ✓	N/A	RD3219

MATRIX SPIKE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0034

LAB SAMPLE ID: W0440301

REPORTING UNITS: pCi/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
TC-99	2.11E+01	4.58E-01	3.14E+00	5.11E-01	3.96E-01	2.26E+01	93.36

LAB SAMPLE ID: W0431601

REPORTING UNITS: pCi/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
NP-237	7.90E-01	1.15E-01	2.05E-01	1.67E-02	4.16E-03	5.65E+00	13.98
TC-99	2.16E+01	4.62E-01	3.20E+00	5.11E-01	5.95E-01	2.26E+01	95.58

GJ/W

LAB SAMPLE ID: W0431603

REPORTING UNITS: pCi/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
NP-237	7.57E-01	1.12E-01	1.98E-01	1.90E-02	1.25E-02	5.64E+00	13.42

J/W

*SPIKE RESULT CORRECTED FOR SAMPLE RESULT

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*Revised
12/19/04*

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT: 200-UP-1 Round 1 Soil			DATA PACKAGE:		
VALIDATOR: K. Angelos		LAB: Quanterra		DATE: November 11, 1994	
CASE:			SDG: W0034-ITC-055		
ANALYSES PERFORMED					
<input checked="" type="checkbox"/> X Gross Alpha/Beta	<input checked="" type="checkbox"/> X Strontium-90	<input checked="" type="checkbox"/> X Technetium-99	<input checked="" type="checkbox"/> X Alpha Spectroscopy	<input checked="" type="checkbox"/> X Gamma Spectroscopy	<input checked="" type="checkbox"/> X Iso. U/Pu/Am/Np
<input checked="" type="checkbox"/> X Total Uranium	<input type="checkbox"/> Radium-22	<input type="checkbox"/> Tritium	<input checked="" type="checkbox"/> X I-129 (Leps)		
SAMPLES/MATRIX: BOBJ05, BOBJ07, BOBJ08, BOBJ10, BOBJ11 all soil					

1. Completeness N/A
 Technical verification forms present? [Yes] No N/A
 Comments: NO COMMENTS

2. Initial Calibration N/A
 Instruments/detectors calibrated within
 one year of sample analysis? Yes [No] N/A
 Initial calibration acceptable? [Yes] No N/A
 Standards NIST traceable? [Yes] No N/A
 Standards Expired? Yes [No] N/A
 Comments: No comments

- 3. Continuing Calibration N/A
- Calibration checked within one week of sample analysis? . . . Yes [No] N/A
- Calibration check acceptable? [Yes] No N/A
- Calibration check standards NIST traceable? [Yes] No N/A
- Calibration check standards expired? Yes [No] N/A

Comments: All calibrations were acceptable with the exception of the Am-241 continuing calibration check associated with sample B0BJ10. Since other QC associated with this sample that would be affected by this deficiency (i.e. tracer recovery) were acceptable, no qualification was deemed necessary.

- 4. Blanks N/A
- Method blank analyzed? [Yes] No N/A
- Method blank results acceptable? Yes [No] N/A
- Analytes detected in method blank? [Yes] No N/A
- Field blank(s) analyzed? [Yes] No N/A
- Field blank results acceptable? Yes [No] N/A
- Analytes detected in field blank(s)? [Yes] No N/A
- Transcription/Calculation Errors? Yes [No] N/A

Comments: Americium-241 detected in method blank, results qualified J. K-40, Co-58, Sr, Ra-224, Ra-226 and Ra-228 detected in the equip. blank no qualification required.

- 5. Matrix Spikes N/A
- Matrix spike analyzed? [Yes] No N/A
- Spike recoveries acceptable? Yes [No] N/A
- Spike source traceable? [Yes] No N/A
- Spike source expired? Yes [No] N/A
- Transcription/Calculation Errors? Yes [No] N/A

Comments: spike recovery for neptunium-237 less than limit, results qualified J/UJ

6. Laboratory Control Samples N/A
 LCS analyzed? [Yes] No N/A
 LCS recoveries acceptable? Yes [No] N/A
 LCS traceable? [Yes] No N/A
 Transcription/Calculation Errors? Yes [No] N/A

Comments: LCS recovery for U234, U238 and I-129 greater than limit, detects
qualified J.

7. Chemical Recovery N/A
 Chemical carrier added? [Yes] No N/A
 Chemical recovery acceptable? [Yes] No N/A
 Chemical carrier traceable? [Yes] No N/A
 Chemical carrier expired? Yes [No] N/A
 Transcription/Calculation errors? Yes [No] N/A

Comments: no comments

8. Duplicates N/A
 Duplicates Analyzed? [Yes] No N/A
 RPD Values Acceptable? [Yes] No N/A
 Transcription/Calculation Errors? Yes [No] N/A

Comments: no comments

9. Field QC Samples N/A

Field duplicate sample(s) analyzed? Yes No ~~[N/A]~~

Field duplicate RPD values acceptable? Yes No ~~[N/A]~~

Field split sample(s) analyzed? Yes No [N/A]

Field split RPD values acceptable? Yes No [N/A]

Performance audit sample(s) analyzed? Yes No [N/A]

Performance audit sample results acceptable? Yes No [N/A]

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12/9/94*

Comments: no comments

10. Holding Times

Are sample holding times acceptable? [Yes] No N/A

Comments: samples collected 4/14/94 and analyses completed by June 17, 1994
which is less than 180 days.

11. Results and Detection Limits (Levels D & E) N/A

Results reported for all required sample analyses? Yes [No] N/A

Results supported in raw data? [Yes] No N/A

Results Acceptable? [Yes] No N/A

Transcription/Calculation errors? Yes [No] N/A

MDA's meet required detection limits? [Yes] No N/A

Transcription/calculation errors? Yes [No] N/A

Comments: All results reported except C-14 which could not be analyzed
due to an insufficient amount of carbon present in samples. Case narrative
states that detection limits not met for BOBJ08 but comparison
with RDLs in SOW-93 show results are okay.

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12/9/94
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*Revised
12/7/64*

029

Americium/Curium

HEIS No.: 80BJ07
Lab ID: 40431602
Aliquot: 2.01E+00
Am241 net cpm: 0.7142
Am241 bkg cpm: 0.0008
Spl count time: 200
Bkg count time: 2500
Eff d/c: 3.225
Decay: 1
Yield: 0.751
Am241 calc: 6.89E-01
Am241 rptd: 6.89E-01
Am241 MDA calc: 2.20E-02
Am241 MDA rptd: 2.20E-02
Cm244 net cpm: -0.0012
Cm244 bkg cpm: 0.0012
Cm244 decay: 1.005
Cm244 calc: -1.16E-03
Cm244 rptd: -1.16E-03
Cm244 MDA calc: 2.42E-02
Cm244 MDA rptd: 2.42E-02
Cm242 net cpm: -0.0004
Cm242 bkg cpm: 0.0004
Cm242 decay: 1.217
Cm242 calc.: -4.69E-04
Cm242 rptd: -4.69E-04
Cm242 MDA calc: 2.36E-02
Cm242 MDA rptd: 2.36E-02

Neptunium

HEIS No.: 80BJ07
Lab ID: 40431602
Aliquot: 2.00E+00
Np237 net cpm: 0.0050
Np237 bkg cpm: 0.0000
Spl count time: 200
Bkg count time: 2500
Eff d/c: 3.7
Decay: 1
Yield: 1
Np237 calc: 4.16E-03
Np237 rptd: 4.16E-03
Np237 MDA calc: 1.13E-02
Np237 MDA rptd: 1.13E-02

Plutonium

HEIS No.: BOBJ07
Lab ID: 40431602
Aliquot: 2.01E+00
Pu238 net cpm: 0
Pu238 bkg cpm: 0
Spl count time: 200
Bkg count time: 1000
Pu238 Eff d/c: 3.703
Decay: 1.001
Yield: 0.385
Pu238 calc: 0.00E+00
Pu238 rptd: 0.00E+00
Pu238 MDA calc: 2.93E-02
Pu238 MDA rptd: 2.93E-02
Pu239 net cpm: 0
Pu239 bkg cpm: 0
Pu239 d/c: 3.7
Pu239 decay: 1
Pu239 calc: 0.00E+00
Pu239 rptd: 0.00E+00
Pu239 MDA calc: 2.92E-02
Pu239 MDA rptd: 2.92E-02

Uranium

HEIS No.: BOBJ07
Lab ID: 40431602
Aliquot: 2.00E+00
U-234 net cpm: 0.0672
U-234 bkg cpm: 0.0028
Spl count time: 200
Bkg count time: 2500
Eff d/c: 3.7
Decay: 1
Yield: 0.677
U-234 calc: 8.26E-02
U-234 rptd: 8.26E-02
U-234 MDA calc: 3.80E-02
U-234 MDA rptd: 3.80E-02
U-235 net cpm: 0.0034
U-235 bkg cpm: 0.0016
U-235 decay: 1
U-235 calc: 4.18E-03
U-235 rptd: 4.18E-03
U-235 MDA calc: 3.28E-02
U-235 MDA rptd: 3.28E-02
U-238 net cpm: 0.1026
U-238 bkg cpm: 0.0024
U-238 decay: 1
U-238 calc.: 1.26E-01
U-238 rptd: 1.26E-01
U-238 MDA calc: 3.65E-02
U-238 MDA rptd: 3.64E-02

Gross Alpha

HEIS No.: 80BJ07
Lab ID: 40431602
Aliquot: 4.99E-02
Net counts: 0.016
Bkg counts: 0.034
Spl count time: 100
Bkg count time: 500
d/c: 5.016
Calc.: 7.24E-01
Rptd: 7.24E-01
MDA calc: 5.11E+00
MDA rptd: 5.11E+00

Gross Beta

HEIS No.: 80BJ07
Lab ID: 40431602
Aliquot: 2.50E-01
Net counts: 0.466
Bkg counts: 0.974
Spl count time: 100
Bkg count time: 500
d/c: 2.898
Calc.: 2.43E+00
Rptd: 2.43E+00
MDA calc: 2.54E+00
MDA rptd: 2.54E+00

Strontium 90

HEIS No.: 80BJ07
Sample: 40431602
Sep date & time: 05/26/94
Count date & time: 05/27/94
Hours: 28.88
Sample amt: 6.04E+00
Net, cpm: 1.306
Count time: 50
Bkg, cpm: 0.914
Count time: 500
D/C 1: 2.267
D/C 2: 1.869
D/C 3: 2.019
Yield: 0.93
Calc: 1.82E-01
Rptd: 1.82E-01
MDA, Calc: 1.24E-01
MDA, rptd: 1.24E-01

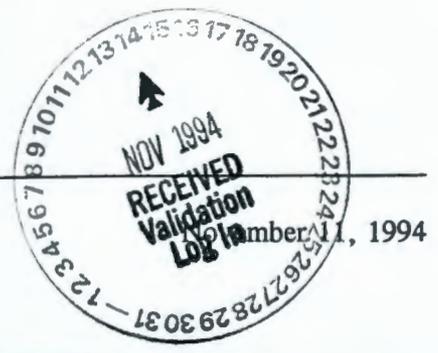
Technetium-99

HEIS No.: 80BJ07
Sample: 40431602
Bkg cpm: 26.38
Spl, amt: 2.00E+00
Spl cpm: 26.64
Count time: 125
Spl dpm: 28.24
d/c: 1.06
Yield: 1
Blk, dpm: 2.77E+01
Blk, d/c: 1.053
Calc: 1.17E-01
Rptd: 1.17E-01
MDA, calc: 5.12E-01
MDA, rptd: 5.12E-01

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RECORD COPY

MEMORANDUM



TO: 200-UP-1 Round 1 Soil, Project QA Record

FR: Kent Angelos, Golder Associates Inc. *KAO*

RE: GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR
DATA PACKAGE: W0034-ITC-055, (943-1610.037, 055GEN.UP1)

INTRODUCTION

This memo presents the results of data validation on data package W0034-ITC-055 prepared by the Quanterra Laboratory. Sample information is provided in the following table.

SAMPLE ID	MEDIA	ANALYSIS	COMMENTS
B0BJ05	SOIL	NO ₃ /NO ₂ /IC-Anions	none
B0BJ07*	SOIL	NO ₃ /NO ₂ /IC-Anions	equip. blank
B0BJ08	SOIL	NO ₃ /NO ₂ /IC-Anions	duplicate of B0BJ05
B0BJ10	SOIL	NO ₃ /NO ₂ /IC-Anions	none
B0BJ11	SOIL	NO ₃ /NO ₂ /IC-Anions	none

* Indicates sample results which were 100% recalculated.

Data validation was conducted to level D in accordance with the WHC statement of work (WHC 1994) and validation procedures (WHC 1993). Attachments 1 through 5 provide the following information:

- Attachment 1. Glossary of Data Reporting Qualifiers
- Attachment 2. Summary of Data Qualifications
- Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
- Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
- Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met with the exception of the minor deficiencies identified below.

Accuracy. Goals for accuracy were met with the exception of the minor deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of five (5) samples were validated in this data package with a total of 35 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets the work plan completeness objective of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified which resulted in qualification of data.

Spike Sample Recovery

- Spike sample recovery for chloride was <75% but greater than 30%, therefore associated results have been qualified as estimated (J for detects, UJ for nondetects). Attachments 2 and 5 provide supporting documentation.

Laboratory Duplicates

- Laboratory duplicate (matrix spike duplicate) sample relative percent difference was >35% for chloride, therefore associated results have been qualified as estimated (J for detects). Attachments 2 and 5 provide supporting documentation.

FIELD QC

- Sample B0BJ07 was identified as an equipment blank. Chloride (4.7 mg/Kg) was detected in the sample. No qualification was applied in accordance with the data validation procedures.
- Sample B0BJ08 was identified as a field duplicate of sample B0BJ05. Relative percent differences were acceptable with the exception of chloride (38%). No qualification was applied in accordance with the data validation procedures.

REFERENCES

WHC 1994, Environmental and Waste Characterization Analytical Data Validation, Purchase Order MSH-SWV-315905; Validation Statement of Work, Revision 1.0, September 7, 1994; Westinghouse Hanford Company, Richland, Washington.

WHC 1993, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1. GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.
- U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.
- UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.
- BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.
- UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.
- R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

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ATTACHMENT 3 - QUALIFIED DATA SUMMARY AND
ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0034-ITC-055

Parameter	Samp#	BOBJ05		BOBJ07		BOBJ08		BOBJ10		BOBJ11	
	Date	4-14-94		4-14-94		4-14-94		4-18-94		4-26-94	
	Location	299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B		299-W19-34B	
	Depth	168.00 - 170.50		---		168.00 - 170.50		186.00 - 188.50		242.50 - 244.50	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments			EQUIP		DUPLI					
	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
FLUORIDE	MG/KG	0.650		1.400		0.650		0.660		0.490	
CHLORIDE	MG/KG	5.700	J	4.700	J	8.400	J	2.900	J	4.400	J
NITRITE	MG/KG	0.400	U	0.400	U	0.400	U	0.400	U	0.400	U
NITRATE	MG/KG	59.000		0.400	U	58.000		320.000		170.000	
PHOSPHATE	MG/KG	1.000	U	1.000	U	1.000	U	1.000	U	1.000	U
SULFATE	MG/KG	22.000		1.500	U	23.000		22.000		12.000	
NITRATE+NITRITE	MG/KG	14.000		2.500	U	11.000		95.000		22.000	

The decimal places shown do not reflect the precision reported by the laboratory

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*Reviewed
12/1/21*

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NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	389
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/12/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6181	2.5	U
BOBJ05	AA6908	14	+
BOBJ07	AA6914	2.5	U
BOBJ08	AA6920	11	+

+ - Positive result.
 U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

and
 11/11/94

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	422
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6181	2.5	U
BOBJ10	AA7338	95	+

+ - Positive result.
 U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Handwritten signature and date: 11/11/94

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	466
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/12/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6181	2.5	U
BOBJ11	AA7954	22	+

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

MW
5/11/94

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	389
Client Sample ID:	BOBJ05	Preparation Date:	05/12/94
Lab Sample ID:	AA6907	Analysis Date:	05/12/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.65	+	0.40
chloride	5.7 J	+	0.40
nitrite	0.40	U	0.40
nitrate	59	+	6.0
phosphate	1.0	U	1.0
sulfate	22	+	1.5

net
11/18/94

+ - Positive result.
 U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	422 & 466
Client Sample ID:	Method Blank	Preparation Date:	05/16/94
Lab Sample ID:	P6228	Analysis Date:	05/16/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	0.40	UJ	0.40
nitrite	0.40	U	0.40
nitrate	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	1.5	U	1.5

WJ
11/8/04

Applies to the following samples: BOBJ10 and BOBJ11

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	389
Client Sample ID:	Method Blank	Preparation Date:	05/12/94
Lab Sample ID:	P6226	Analysis Date:	05/12/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	0.40	U J	0.40
nitrite	0.40	U	0.40
nitrate	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	1.5	U	1.5

MS
11/8/94

Applies to the following samples: BOBJ05, BOBJ07, BOBJ07 MS/MSD and BOBJ08

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	466
Client Sample ID:	BOBJ11	Preparation Date:	05/16/94
Lab Sample ID:	AA7953	Analysis Date:	05/16/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.49	+	0.40
chloride	4.4	+ J	0.40
nitrite	0.40	U	0.40
nitrate	170	+	20
phosphate	1.0	U	1.0
sulfate	12	+	1.5

Wet
11/8/94

- + - Positive result.
- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	422
Client Sample ID:	BOBJ10	Preparation Date:	05/16/94
Lab Sample ID:	AA7337	Analysis Date:	05/16/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.66	+	0.40
chloride	2.9	+ J	0.40
nitrite	0.40	U	0.40
nitrate	320	+	40
phosphate	1.0	U	1.0
sulfate	22	+	1.5

WMA
11/8/94

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

5613978.1999

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	389
Client Sample ID:	BOBJ08	Preparation Date:	05/12/94
Lab Sample ID:	AA6919	Analysis Date:	05/12/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	0.65	+	0.40
chloride	8.4	+ J	0.80
nitrite	0.40	U	0.40
nitrate	58	+	5.60
phosphate	1.0	U	1.0
sulfate	23	+	0.4

*not
11/8/94*

- + - Positive result.
- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0034
Contract Name:	Westinghouse Hanford	Job Number:	389
Client Sample ID:	BOBJ07	Preparation Date:	05/12/94
Lab Sample ID:	AA6913	Analysis Date:	05/12/94
Sample Matrix:	Soil	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
fluoride	1.4	+	0.40
chloride	4.7	+ J	0.40
nitrite	0.40	U	0.40
nitrate	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	1.5	U	1.5

Med
11/18/94

+ - Positive result.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

9613476.0993

**ATTACHMENT 4 - LABORATORY NARRATIVE AND
CHAIN-OF-CUSTODY DOCUMENTATION**



ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

June 13, 1994

Job Number: 389; 422; 466

This is the Certificate of Analysis for the following samples:

SDG:	W0034
Client Project ID:	WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1
Date Received by Lab:	April 20, 22 & 30, 1994
Number of Samples:	Eight (8)
Sample Type:	Soil

I. Introduction

On April 20, 22 & 30, 1994, eight (8) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) volatiles and semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.



American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

018

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J & W DB-624 capillary column on a Hewlett-Packard 5970 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07. All QC results were within method specified limits.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. A matrix spike and a matrix spike duplicate were analyzed using sample BOBJ07. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

- U - Compound analyzed for but not detected; value given is quantitation limit.
- E - Compound exceeded calibration range.
- D - Compound analyzed at a secondary dilution factor.
- J - Compound detected but below quantitation limit; value estimated.
- S - Spiked compound.
- B - Compound found in method blank.
- A - Suspected aldol condensation product.
- Y - Indistinguishable isomer in tentatively identified compounds.
- N - Presumptive evidence of compound presence.

IT Corporation
June 13, 1994
Job Number: 389; 422; 466
Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
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KNOXVILLE, TN

III. Quality Control (Continued)

The samples for work order #389 were digested on May 25, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 25, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBJ07. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses. A cyanide post digestion spike was not performed.

The samples for work order #422 were digested on May 20, 1994 for ICP and May 2, 1994 for GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 20, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

The samples for work order #466 were digested on May 11, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 9, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 12 through May 16, 1994; the remaining metals were analyzed by ICP on May 24, 1994. All run QC was acceptable. The samples were batched with QC from work order #389.

Data were reported with qualifiers as follows:

"C" Qualifiers

- U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
- B - Value greater than instrument detection limit, but less than contract required quantitation limit.

"O" Qualifiers

- * - Duplicate analysis outside control limits.
- N - Spiked sample recovery outside control limits.
- W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
- S - The reported value was determined by method of standard additions.

IT Corporation
June 13, 1994
Job Number: 389; 422; 466
Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
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KNOXVILLE, TN

III. Quality Control (Continued)

"M" Qualifiers

- P - Analysis performed by ICP.
- V - Analysis performed by CVAA.
- F - Analysis performed by GFAA.
- C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

- D - Duplicate.
- S - Spike.
- NR - Not required.
- G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
- X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed on May 6 and May 12, 1994 for nitrate/nitrite. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, nitrite, nitrate, phosphate and sulfate by EPA method 300.0 from May 12 through May 16, 1994. A matrix spike and matrix spike duplicate were analyzed using sample number BOBJ07. All quality control results were acceptable.

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN**III. Quality Control** (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6903	W404315-01A	BOBJ05	VOC
AA6904	W404315-01B	"	SVOC
AA6905	W404315-01C	"	METALS-T
AA6906	W404315-01D	"	CYANIDE
AA6907	W404315-01E	"	ANIONS
AA6908	W404315-01F	"	NO2NO3
J.C. 5/16/94 AA6909	W404315-02A	BOBJ07	VOC
AA6910	W404315-02B	"	SVOC
AA6911	W404315-02C	"	METALS-T
AA6912	W404315-02D	"	CYANIDE
AA6913	W404315-02E	"	ANIONS
AA6914	W404315-02F	"	NO2NO3
AA6915	W404315-03A	BOBJ08	VOC
AA6916	W404315-03B	"	SVOC
AA6917	W404315-03C	"	METALS-T
AA6918	W404315-03D	"	CYANIDE
AA6919	W404315-03E	"	ANIONS
AA6920	W404315-03F	"	NO2NO3
AA6922	W404315-04A	BOBJ09	VOC

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN**III. Quality Control (Continued)**

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA6924	W404315-05A	BOBJ06	VOC
AA7333	W404402-01A	BOBJ10	VOC
AA7334	W404402-01B	"	SVOC
AA7335	W404402-01C	"	METALS-T
AA7336	W404402-01D	"	CYANIDE
AA7337	W404402-01E	"	ANIONS
AA7338	W404402-01F	"	NO2NO3
AA7948	404564-01	BOBJ12	VOC
AA7949	404564-02A	BOBJ11	VOC
AA7950	404564-02B	"	SVOC
AA7951	404564-02C	"	METALS-T
AA7952	404564-02D	"	CYANIDE
AA7953	404564-02E	"	ANIONS
AA7954	404564-02F	"	NO2NO3

IT Corporation

June 13, 1994

Job Number: 389; 422; 466

Client Project ID: WHC SAF# 94-046 200-UP-1 Soil Sampling Round-1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or a designee, as verified by the following signature:

Reviewed and Approved:



Sheree' A. Schneider
Project Manager

W02357

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page 1 of 1			
Collector W. V. SETZER		Company Contact W. V. SETZER					Telephone No. (509) 376-2413					Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal			
Project Designation 200 UP-1		Sampling Location 299-W19-34B					SAF No. 94-046 046 WWS 3-14-94								
Ice Chest No. WMC-19		Field Logbook No. EFL-1118					Method of Shipment BY DOE VEHICLE								
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-					Bill of Lading/Air Bill No.								
Possible Sample Hazards/Remarks		Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	
NONE OBSERVED		Type of Container	aGs	aG	G	P/G	G	P/G	P/G	P/G	P/G	P/G	P/G	aGs	aGs
		No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE		Volume	120ml	500ml	500ml	250ml	250ml	120ml	1000ml	500ml				250ml	120ml
SAMPLE ANALYSIS 404315		VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Hg (CLP)	Cr (CLP)	ANIONS NO2, NO3 IC-F, CLP EPA (353 SO4, NO2, NO3, PO4)								VOA (Field)	VOA TRIP (CLP)
			A	B	C	D	E	F						*1	*1
			404316												
Sample No.	Matrix*	Date Sampled	Time Sampled												
BOBJ05	01 S	4-14-94	0950	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		05A
BOBJ06	S	4-14-94	0630												✓
BOBJ07	02 S	4-14-94	0915	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BOBJ08	03 S	4-14-94	1050	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		04A
BOBJ09	S	4-14-94	1050												✓
CHAIN OF POSSESSION		Sign/Print Names					SPECIAL INSTRUCTIONS					Matrix*			
Relinquished By		Date/Time	Received By		Date/Time	*1- GROSS ALPHA, BETA (ITAS-RD-3222) Am-241, Cm 243/244 (ITAS-RD-3302) Np-237 (ITAS-RD-3208) Pu-238, 239/240 (ITAS-RD-3209) U-234, 235, 238 (ITAS-RD-3234) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (ITAS-RD-3219) Sr-90 (ITAS-RD-3204) C-14 (ITAS-RD-3247) Tc-99 (ITAS-IT-RS-0001)					S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other				
Relinquished By		Date/Time	Received By		Date/Time										
Relinquished By		Date/Time	Received By		Date/Time										
Relinquished By		Date/Time	Received By		Date/Time										
LABORATORY SECTION		Received By					Title					Date/Time			
FINAL SAMPLE DISPOSITION		Disposal Method					Disposed By					Date/Time			

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/82)

025

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wo 422

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page <u>1</u> of <u>1</u>		
Collector W. V. SETZER		Company Contact W. V. SETZER					Telephone No. (509) 376-2413					Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal		
Project Designation 200 UP-1		Sampling Location 200-UP-34B					SAF No. 94-045 046 203 A-21-74							
Ice Chest No.		Field Logbook No. EFL-1118					Method of Shipment BY DOE VEHICLE							
Shipped To INTERNATIONAL TECHNOLOGIES		Offsite Property No. W94-0-					Bill of Lading/Air Bill No.							
Possible Sample Hazards/Remarks		Preservative												
<i>None CAPTURED</i>		Type of Container	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
		aGs	aG	G	P/G	G	P/G	P/G	P/G	P/G	P/G	P/G	aGs	
		No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1	
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE		Volume	120ml	500ml	500ml	250ml	250ml	120ml	1000ml	500ml			40ml	
SAMPLE ANALYSIS		VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS Mg (CLP)	Cd (CLP)	ANIONS IC-F, CL SO4, NO2, NO3, PO4	NO2, NO3 EPA(353.2)						VOA TRIP (CLP)	
<i>404-10201</i>														
Sample No.	Matrix*	Date Sampled	Time Sampled											
<i>RB-516</i>	<i>S</i>	<i>4-18-94</i>	<i>0815</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>		
CHAIN OF POSSESSION		Sign/Print Names					SPECIAL INSTRUCTIONS					Matrix*		
Relinquished By	Date/Time	Received By	Date/Time	*1- GROSS ALPHA, BETA (ITAS-RD-3222) Am-241, Cm 243/244 (ITAS-RD-3302) Np-237 (ITAS-RD-3208) Pu-238, 239/240 (ITAS-RD-3209) U-234, 235, 238 (ITAS-RD-3234) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (ITAS-RD-3219) Sr-90 (ITAS-RD-3204) C-14 (ITAS-RD-3247) Tc-99 (ITAS-IT-RS-0001)					S = Soil		SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other			
<i>W.V. Setzer</i>	<i>4-21-94 1026</i>	<i>R. Boyd</i>	<i>4-21-94 1026</i>											
Relinquished By	Date/Time	Received By	Date/Time											
Relinquished By	Date/Time	Received By	Date/Time											
Relinquished By	Date/Time	Received By	Date/Time	LOWEST HOLDING TIME = 7DAYS										
LABORATORY SECTION	Received By	Title					Date/Time							
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By					Date/Time							

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PT1DD

W0#466

Westinghouse Hanford Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										Page 1 of 1			
Collector W. V. SETZER			Company Contact W. V. SETZER					Telephone No. (509) 376-2413			Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal				
Project Designation 200 UP-1			Sampling Location 299-W19-34B					SAF No. 96-046							
Ice Chest No. SML-60			Field Logbook No. EFL-1118					Method of Shipment BY COMPANY VEHICLE			Bill of Lading/Air Bill No.				
Shipped To INTERNATIONAL TECHNOLOGIES			Offsite Property No. W94-0-												
Possible Sample Hazards/Remarks			Preservative	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4	COOL 4
NONE OBSERVED			Type of Container	aGs	aG	G	G	G	G	P/G			aG	aGs	
No. of Container(s)			1	1	1	1	1	1	1	1			1	1	
Special Handling and/or Storage COOL TO 4 DEGREES CENTIGRADE <i>Peris 2C</i>			Volume	125ml	500ml	500ml	250ml	250ml	125ml	1500ml			120ml 4-26-94	40ml	
SAMPLE ANALYSIS 404564 AJS 4/23/94 1400			VOA (CLP)	SEMIVOA (CLP)	ICP MTL GFAA METALS (CLP)	Cn (CLP)	ANIONS (CLP)	NO2, NO3 (CLP)	NO2, NO3 (CLP)			VOA (TRIP)	ACTIVIT SCAN		
			A	B	C	D	E	F	*1 40456501			OIA			
Sample No.	Matrix*	Date Sampled	Time Sampled												
BOB312 01	S	4-26-94	0700										✓		
BOB311 02	S	4-26-94	0805	✓	✓	✓	✓	✓	✓	✓	✓		✓		
<i>N/S</i>															
CHAIN OF POSSESSION			Sign/Print Names					SPECIAL INSTRUCTIONS					Matrix*		
Relinquished By <i>W.V. Setzer</i>		Date/Time 4-28-94 1350	Received By <i>A. Simpson</i>		Date/Time 4/23/94 1353			*1- GROSS ALPHA, BETA (EP-60,070,170) Am-241, Cm 243/244 (EP-60,070,960) Np-237 (EP-60,070,930) Pu-238, 239/240 (EP-60,070,940) U-234, 235, 238 (EP-60,070,901) GAMMA SPEC TO INCLUDE; Co-58, 60, Cs-137, Eu-152, 154, 155 AND Fe-59 (EP-60,070,100) Sr-90 (EP-60,070,500, 519, 520) I-129 (EP-024,560) C-14 (EP-060,251) Tc-99 (EP-020,540), I-129					S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other		
Relinquished By <i>A. Simpson</i>		Date/Time 4/27/94 1027	Received By <i>J. Sweeney</i>		Date/Time 4-27-94 1230										
Relinquished By <i>J. Sweeney</i>		Date/Time 4-28-94 1210	Received By <i>K. Sweeney</i>		Date/Time 4/28/94 1210										
LABORATORY SECTION			Received By		Title			STANDALONE DELIVERABLES LOWEST HOLDING TIME = 7DAYS					STX-W0034		
FINAL SAMPLE DISPOSITION			Disposal Method		Disposed By			Date/Time					Date/Time		

9613476-1003

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027

ATTACHMENT 5 - DATA VALIDATION SUPPORTING DOCUMENTATION

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	[D]	E
PROJECT: 200-UP-1 Round 1 Soil			DATA PACKAGE: W0034-ITC-055		
VALIDATOR: K. Angelos		LAB: Quanterra		DATE: November 11, 1994	
CASE:			SDG: W0034		
ANALYSES PERFORMED					
<input checked="" type="checkbox"/> Anions/IC	<input type="checkbox"/> TOC	<input type="checkbox"/> TOX	<input type="checkbox"/> TPH-418.1	Oil and Grease	Alkalinity
<input type="checkbox"/> Ammonia	<input type="checkbox"/> BOD/COD	<input type="checkbox"/> Chloride	<input type="checkbox"/> Chromium-VI	<input type="checkbox"/> pH	<input checked="" type="checkbox"/> X NO ₃ /NO ₂
<input type="checkbox"/> Sulfate	<input type="checkbox"/> TDS	<input type="checkbox"/> TKN	<input type="checkbox"/> Phosphate	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX: BOBJ05, BOBJ07, BOBJ08, BOBJ10, BOBJ11 all soil.					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? [Yes] No N/A
 Is a case narrative present? [Yes] No N/A
 Comments: no comments

2. HOLDING TIMES

Are sample holding times acceptable? [Yes] No N/A
 Comments: Samples analyzed within 28 days for nitrate+nitrite and within 48 hours of preparation for IC.

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

- Was initial calibration performed for all applicable analyses? [Yes] No N/A
- Are initial calibration results acceptable? [Yes] No N/A
- Was a calibration check performed for all applicable analyses? [Yes] No N/A
- Are calibration check results acceptable? [Yes] No N/A

Comments: no comments

4. BLANKS

- Were laboratory blanks analyzed? [Yes] No N/A
- Are laboratory blank results acceptable? [Yes] No N/A
- Were field/trip blanks analyzed? [Yes] No N/A
- Are field/trip blank results acceptable? Yes [No] N/A

Comments: Sample BOBJ07 was identified as an equipment blank. Chloride (4.7 mg/Kg) was detected in the sample. No qualification was applied in accordance with the data validation procedures.

5. ACCURACY

- Were spike samples analyzed at the required frequency? . . . [Yes] No N/A
- Are spike recoveries acceptable? Yes [No] N/A
- Were LCS analyses performed at the required frequency? . . . [Yes] No N/A
- Are LCS recoveries acceptable? [Yes] No N/A

Comments: Matrix spike %R for chloride was <75% but >30%, results qualified J/UJ.

6. PRECISION

- Were laboratory duplicate samples analyzed at the required frequency? [Yes] No N/A
- Are laboratory duplicate sample RPD values acceptable? . . . Yes [No] N/A
- Are field duplicate RPD values acceptable? Yes [No] N/A
- Are field split RPD values acceptable? Yes No [N/A]

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments:MS/MSD RPDs were >35% for Chloride, results qualified J. Field duplicate RPD for chloride 38%.

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? [Yes] No N/A

Comments:no comments

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? [Yes] No N/A

Are results supported in the raw data? [Yes] No N/A

Are results calculated properly? [Yes] No N/A

Do results meet the CRDLs? [Yes] No N/A

Comments:no comments

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Data Package: W0034-ITC-055 Field Duplicate RPDs for General Chemistry					
Constituent	BOBJ05 mg/Kg	Q	BOBJ08 mg/Kg	Q	RPD
Fluoride	0.65		0.65		0
Chloride	5.7	J	8.4	J	38
Nitrite	0.40	U	0.40	U	NC
Nitrate	59		58		2
Phosphate	1.0	U	1.0	U	NC
Sulfate	22		23		4
Nitrate/Nitrite	14		11		24
NC - Indicates that the RPD was not calculated since both the sample and duplicate are undetected (U or UJ).					