START W0042-IIC-096

MS 615196

0045463

INTERNATIONAL TECHNOLOGY CORPORATION

RECORD COPY

AUG 1996 RECEIVED SDLA

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

Sheree' Schneider
Project Manager

OCT 1996 RECEIVED EDMC

Regional Office
5815 Middlebrook Pike ▪ Knoxville, Tennessee 37921 ▪ 615-588-6401

DON'T SAY IT --- *Write It!*

DATE: October 10, 1994

TO: W0082-ITC-096

FROM: Pat Reich H4-19

Telephone: 372-2785

cc:

SUBJECT: SUMMARY VALIDATION

The Validation Summary Report for 100-FR-3 Project, Round 5 Groundwater Sampling for this SDG is filed in BOBMY4-TMA-760.

Pat Reich

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0141
Record of Disposition No.

DATE: 6/6/94	LABORATORY: IT
PROJECT TITLE/NO.: 100-FR-3/94-087	NCR NO.: 052864

SAMPLE IDENTIFICATION NUMBERS:

B0BMP0, B0BMP2

DESCRIPTION OF EVENT:

This ROD replaces ROD-94-0139.

1) Sample B0BMP0 was collected on 5/17/04 and arrived at IT-Richland on 5/24/94; IT-Knoxville on 5/25/94. The 7 day holding time for Semi-VOA, PCB/Pests, TDS, and Sulfide analyses was missed.

2) The chain-of-custody for sample B0BMP2 was incomplete. The chain-of-custody was broken.

DISPOSITION OF SAMPLES:

1) With concurrence from J.M. Ayres, project engineer, do not perform analyses for which holding times have been missed (replacement aliquots for these analyses will be collected, shipped, analyzed, abd reported under B0C1G5).

2) Continue with analysis of B0BMP2 for "informational purposes only".

APPROVAL SIGNATURES:

R. C. Smith/ RClayt Smith — 6/6/94
OSM Project Coordinator (Print/Sign Name) — Date

AD Krug
J. M. Ayres/ AD Krug for — 6/9/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

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

July 7, 1994

Job Number: 621 & 633

This is the Certificate of Analysis for the following samples:

SDG:	W0082
Client Project ID:	WHC SAF-94-087 100-FR-3 Groundwater - 5th Round
Date Received by Lab:	June 7 & June 9, 1994
Number of Samples:	Twelve (12)
Sample Type:	Water

I. Introduction

On June 7 and June 9, 1994, twelve (12) water samples arrived at 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. One container for sample BOBMQ2 Pest/PCB was received broken. The analysis was taken from the other container. Samples BOBMQ2, BOBMV6 and BOBMP8 for cyanide were received at pH 10.

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.

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.

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 7, 1994
Job Number: 621 & 633
Client Project ID: WHC SAF-94-087 100-FR-3 Groundwater - 5th Round

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Compound List (TCL) pesticides and PCBs by gas chromatography/electron capture detection (GC/ECD) in accordance with the EPA CLP 3/90 Statement of Work.

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 alkalinity of the samples was determined using EPA method 310.1.

The samples were analyzed for ammonia based on EPA method 350.2.

The samples were analyzed for chemical oxygen demand (COD) at the ITAS ST. Louis laboratory based on EPA method 410.2. A copy of their report is enclosed.

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

The pH of the samples was determined using EPA methods 150.1 and 9040.

The specific conductance of the samples was measured using EPA method 120.1.

The samples were analyzed for sulfide based on EPA method 376.1.

The total dissolved solids (TDS) content of the samples was determined using EPA method 160.1.

The samples were analyzed for total organic carbon (TOC) based on EPA methods 415.1 and 9060.

The samples were analyzed for total organic halogens (TOX) based on EPA method 9020A.

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 Finnigan INCOS 500 GC/MS/DS. All QC results met method specified limits. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. The analysis of the matrix spike duplicate for sample BOBMQ2 was performed twenty-five minutes outside of holding time. The results for this sample compared well to the matrix spike results.

IT ANALYTICAL SERVICES
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IT Corporation
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III. Quality Control (Continued)

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. The recovery for surrogate standard 2,4,6-tribromophenol was high in samples BOC1G5 and BOBMQ2 MSD. These results are acceptable for this method. The percent recovery for 4-nitrophenol and pentachlorophenol were high for both the matrix spike and matrix spike duplicate of sample BOBMQ2.

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.

The samples for work order #621 were digested on June 15, 1994 for ICP and June 15, 1994 (June 22, 1994 - Lead) for GFAA. The CVAA analysis for mercury was performed on June 23, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 16 through June 28, 1994; the remaining metals were analyzed by ICP on July 1, 1994. All run QC was acceptable. A duplicate and a spike were analyzed using sample number BOBMQ2 (total) and BOBMQ3 (dissolved). Spike recovery (accuracy) results were within acceptance limits for all parameters for both samples except for lead indicating matrix interferences. Duplicate RPD (precision) results were within acceptance limits for all parameters.

The samples for work order #633 were digested on June 15, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on June 23, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 16 through June 22, 1994; the remaining metals were analyzed by ICP on July 5, 1994. All run QC was acceptable. Samples were batched with QC from work order #621.

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.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 7, 1994
Job Number: 621 & 633
Client Project ID: WHC SAF-94-087 100-FR-3 Groundwater - 5th Round

III. Quality Control (Continued)

"Q" 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.

"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 for alkalinity on June 8 and 17, 1994. A duplicate analysis was performed using sample BOBMQ2. All quality control results were acceptable.

The samples were analyzed for ammonia on June 17 and 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

The samples for work orders #621 and #633 were analyzed for chemical oxygen demand (COD) on June 16, 1994 at the ITAS St. Louis laboratory.

The samples were analyzed for nitrate/nitrite on June 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

The pH of the samples was determined on June 8 and 10, 1994. A duplicate analyses was performed using sample BOBMQ2. All quality control results were acceptable.

The samples were analyzed for sulfide on June 8 and 13, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

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5815 MIDDLEBROOK PIKE
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IT Corporation
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Job Number: 621 & 633
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III. Quality Control (Continued)

The specific conductance of the samples was determined on June 10, 1994. A duplicate analysis was performed using sample number BOBMQ2. All quality control results were acceptable.

The samples were analyzed for total organic carbon on June 14 and 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

The total dissolved solids content of the samples was determined on June 8 and 10, 1994. A duplicate analysis was performed using sample BOBMQ2. All quality control results were acceptable.

The samples were analyzed for total organic halogens on June 29 and 30, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

The samples were analyzed for anions on June 27, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

IT Corporation
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5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

July 7, 1994
Job Number: 621 & 633
Client Project ID: WHC SAF-94-087 100-FR-3 Groundwater - 5th Round

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
AB0308	406071-01A-C	BOBMQ2	VOC
AB0309	406071-01D-F	"	SVOC
"	406071-01G-I	"	PEST/PCB
AB0310	406071-01J	"	CONDUCTIVITY
"	"	"	pH
"	"	"	ANIONS
AB0311	406071-01K	"	NO_3NO_2
AB0312	406071-01L	"	ALKALINITY
AB0313	406071-01M	"	TDS
AB0314	406071-01N	"	SULFIDE
AB0315	406071-01O	"	AMMONIA
AB0315 5329-016 (ST. LOUIS)	" "	" "	COD "
AB0316	406071-01P	"	METALS-T
AB0317	406071-01Q	"	CYANIDE
AB0318	406071-01R	"	TOC
AB0319	406071-01S	"	TOX
AB0320	406071-02A	BOBMQ3	METALS-D
AB0321	406071-03A-C	BOBMQ4	VOC
AB0322	406041-01A-C	BOC1G5	SVOC

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 7, 1994
Job Number: 621 & 633
Client Project ID: WHC SAF-94-087 100-FR-3 Groundwater - 5th Round

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
AB0322	406041-01D-F	BOC1G5	PEST/PCB
AB0323	406041-01G	"	TDS
AB0324	406041-01H	"	SULFIDE
AB0433	406136-01A-C	BOBMV6	VOC
AB0434	406136-01D-F	"	SVOC
"	406136-01G-I	"	PEST/PCB
AB0435	406136-01J	"	CONDUCTIVITY
"	"	"	pH
"	"	"	ANIONS
AB0436	406136-01K	"	NO_3NO_2
AB0437	406136-01L	"	ALKALINITY
AB0438	406136-01M	"	TDS
AB0439	406136-01N	"	SULFIDES
AB0440	406136-01O	"	AMMONIA
AB0440 5329-014 (ST. LOUIS)	" "	" "	COD "
AB0441	406136-01P	"	METALS-T
AB0442	406136-01Q	"	CYANIDE
AB0443	406136-01R	"	TOC
AB0444	406136-01S	"	TOX
AB0457	406136-02A	BOBMV7	METALS-D

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 7, 1994
Job Number: 621 & 633
Client Project ID: WHC SAF-94-087 100-FR-3 Groundwater - 5th Round

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
AB0461	406136-03A-C	BOBMV8	VOC
AB0462	406136-04A-C	BOBMN8	"
AB0463	406136-05A-C	BOBMN9	"
AB0464	406136-08A-C	BOBMQ0	"
AB0445	406136-06A-C	BOBMP8	"
AB0446	406136-06D-F	"	SVOC
"	406136-06G-I	"	PEST/PCB
AB0447	406136-06J	"	CONDUCTIVITY
"	"	"	pH
"	"	"	ANIONS
AB0448	406136-06K	"	NO_3NO_2
AB0449	406136-06L	"	ALKALINITY
AB0450	406136-06M	"	TDS
AB0451	406136-06N	"	SULFIDES
AB0452	406136-06O	"	AMMONIA
AB0452 5329-015 (ST. LOUIS)	" "	" "	COD "
AB0453	406136-06P	"	METALS-T
AB0454	406136-06Q	"	CYANIDE
AB0455	406136-06R	"	TOC
AB0456	406136-06S	"	TOX
AB0458	406136-07A	BOBMP9	METALS-D

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 7, 1994
Job Number: 621 & 633
Client Project ID: WHC SAF-94-087 100-FR-3 Groundwater - 5th Round

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 his designee, as verified by the following signature:

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

June 7, 1994

VAN PETTY
IT RICHLAND ANALYTICAL SERVICES
2800 GEORGE WASHINGTON WAY
RICHLAND, WA 99352

Re: WESTINGHOUSE HANFORD COMPANY
P.O. #

Dear VAN PETTY:

This confirms the receipt of samples for analysis on June 7, 1994 at our ITAS-KNOXVILLE (MIDDLEBROOK FACILITY) laboratory. These samples were received in good condition unless otherwise noted on an attached Condition Upon Receipt variance form. The samples were logged into our tracking system as Work Order #621. Please review the attached outline for samples received and test assignments for any discrepancies. If you discover any problems please call me at (615) 588-6401.

We appreciate the opportunity to support your analytical requirements. Your report will be sent to you at the above address on or before July 12, 1994 unless advised otherwise.

Again, if you have any questions or comments on our performance, please feel free to call me at (615) 588-6401.

Sincerely,

Sheree Schneider

SHEREE SCHNEIDER
Project Manager
ITAS-KNOXVILLE (MIDDLEBROOK FACILITY)

June 9, 1994

VAN PETTY
IT RICHLAND ANALYTICAL SERVICES
2800 GEORGE WASHINGTON WAY
RICHLAND, WA 99352

Re: WESTINGHOUSE HANFORD COMPANY
P.O. #

Dear VAN PETTY:

This confirms the receipt of samples for analysis on June 9, 1994 at our ITAS-KNOXVILLE (MIDDLEBROOK FACILITY) laboratory. These samples were received in good condition unless otherwise noted on an attached Condition Upon Receipt variance form. The samples were logged into our tracking system as Work Order #633. Please review the attached outline for samples received and test assignments for any discrepancies. If you discover any problems please call me at (615) 588-6401.

We appreciate the opportunity to support your analytical requirements. Your report will be sent to you at the above address on or before July 14, 1994 unless advised otherwise.

Again, if you have any questions or comments on our performance, please feel free to call me at (615) 588-6401.

Sincerely,

Sheree Schneider

SHEREE SCHNEIDER
Project Manager
ITAS-KNOXVILLE (MIDDLEBROOK FACILITY)

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WO #621

WORK ORDER NUMBER: 406041 DATE INITIATED: 6/3/94

INITIATED BY: TGilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/3/94 1430

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
B0C1G5		

Samples were received with the following deficiencies:

- ☐ 1. Not enough sample received for proper analysis.
- ☐ 2. Sample received without proper preservative.
- ☐ 3. No sample received in container.
- ☐ 4. Sample received without a RFA/COC form.
- ☐ 5. No sample ID on container.
- ☐ 6. Sample received broken or leaking.
- ☐ 7. Holding time exceeded at receipt.
- ☐ 8. Custody tape broken.
- ☐ 9. COC not relinquished by client.
- ☐ 10. Sample information on container does not match sample information on the paper work (Explain below).
- ☐ 11. All shipping containers (coolers) on waybill not received with shipment.
  - ☐ RFA/COC received
  - ☐ RFA/COC not received
- ☒ 12. Other (Explain below).

NOTES: No screen vial supplied, aliquate taken from PCB/Pest containers.

SUPERVISOR REVIEW: _____

PROJECT MANAGER REVIEW: _____

TELEPHONED TO: _____ ON _____ BY _____

TELEFAXED TO: _____ ON _____ BY _____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

FORM NO. LS-023, 3/92, Rev. 0

CUR# 1725

Work Order No.: 621

Condition Upon Receipt Variance Report

ITAS - KNOXVILLE Laboratory

Client: Westinghouse Hanford

Project No: 94087

Analysis Requested: CN⁻, Pest/PCB

Date: 6/07/94

Initiated by: Bryan Blomquist

RFA/COC Numbers: 453685

Client Sample Numbers Affected: BOBMQ2

Condition/Variance (Check all that apply):

1. ☐ Not enough sample received for proper analysis. Received approximately: _____
2. ☑ Sample received broken/leaking. Pest/PCB 1-1L Amber
3. ☑ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C. Record temperature: _____
   - ☑ pH 10
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☑ Sample received without proper paperwork. Explain: Trip Blank not Listed on RFA/COC
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. ☐ Sample splits performed by lab.
10. ☐ Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
12. ☐ All coolers on airbill not received with shipment.
13. ☑ Other (explain below): Spec. Cond. + pH Rec'd Past Holding times.

Notes:

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: Bryan Blomquist Date: 6/14/94

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

9613496.0584

CUR # 1737

Work Order No.: 633

Condition Upon Receipt Variance Report

ITAS - KNOXVILLE Laboratory

Client: Westinghouse Hanford

Date: 6/09/94

Project No: 94-087

Initiated by: Bryan Blomquist

Analysis Requested: CN^-

RFA/COC Numbers: 453686

Client Sample Numbers Affected: BOBMV6, BOBMP8

Condition/Variance (Check all that apply):

1. ☐ Not enough sample received for proper analysis. Received approximately: _____
2. ☐ Sample received broken/leaking.
3. ☑ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C. Record temperature: _____
   - ☑ pH BOTH Sample pH = 10
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☑ Sample received without proper paperwork. Explain: Trip Blank Not Listed on RFA/COC
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. ☐ Sample splits performed by lab.
10. ☐ Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
12. ☐ All coolers on airbill not received with shipment.
13. ☑ Other (explain below): "IT" RFA/COC Not Properly Filled Out.

not for analyses

okay this is acceptable!

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: Bryan Blomquist Date: 6/14/94

Project Management Review: Sherie Schneider Date: 6/11/94

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BOBMN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0462

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0462

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	28	B
67-64-1	Acetone	23	B
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	4	BJ
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.

BOBMN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0462

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0462

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMN9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0463

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0463

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	27	B
67-64-1	Acetone	34	B
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	4	BJ
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.

BOBMN9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0463

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0463

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (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/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKANE	4.70	8	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0445

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0445

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	23	B
67-64-1	Acetone	10	B
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	3	BJ
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.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0445

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0445

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BOBMQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0464

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0464

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	27	B
67-64-1	Acetone	15	B
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	4	BJ
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.

BOBMQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0464

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0464

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0308

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0308

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. ____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		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	-	27	B
67-64-1	Acetone		15	B
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		4	BJ
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		2	J
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.

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0308

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0308

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. ____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BOBMQ4

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0321

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0321

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. ____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	24	B
67-64-1	Acetone	20	B
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	4	BJ
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.

BOBMQ4

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0321

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0321

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. ____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0433

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0433

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	23	B
67-64-1	Acetone	8	BJ
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	1	J
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	4	BJ
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	6	J
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	2	J
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	2	J
108-90-7	Chlorobenzene	2	J
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.

BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0433

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0433

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BOBMV8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0461

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0461

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	24	B
67-64-1	Acetone	24	B
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	4	BJ
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.

BOBMV8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0461

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0461

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0446

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616009

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0446

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616009

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.:W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0446

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616009

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0(ul) Dilution Factor: 1.0

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

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	110-82-7	CYCLOHEXANE	2.57	170	JNB
2.		UNKNOWN	5.12	3	J
3.		(E)-3-CHLORO-2-METHYL-2-PEN	8.22	40	JNB
4.	314-40-9	BROMACIL	19.67	8	JN

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0309

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616003

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0309

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616003

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.:W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0309

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616003

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0(ul) Dilution Factor: 1.0

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

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	110-82-7	CYCLOHEXANE	2.58	170	JNB
2.	110-83-8	CYCLOHEXENE	2.88	46	JNB
3.		UNKNOWN	5.22	5	J
4.		UNKNOWN	5.47	4	J
5.	930-68-7	2-CYCLOHEXEN-1-ONE	8.23	44	JN
6.	314-40-9	BROMACIL	19.65	3	JN

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0434

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616008

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0434

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616008

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.:W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0434

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616008

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0(ul) Dilution Factor: 1.0

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

Number TICs found: 4

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	110-82-7	CYCLOHEXANE	2.57	160	JNB
2.		UNKNOWN	2.87	2	JB
3.		UNKNOWN	5.12	2	J
4.		(E)-3-CHLORO-2-METHYL-2-PEN	8.22	40	JNB

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOC1G5

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0322

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616006

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0(ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOC1G5

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0322

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616006

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOC1G5

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.:W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0322

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616006

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

Number TICs found: 40

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	110-82-7	CYCLOHEXANE	2.57	200	JNB
2.	110-83-8	CYCLOHEXENE	2.87	43	JNB
3.		UNKNOWN	6.02	2	J
4.		UNKNOWN	8.22	50	JB

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: W0082 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0446

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

% Moisture: _____ decanted: (Y/N) ___ Date Received: 06/09/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 06/10/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/24/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: W0082 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0309

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

% Moisture: _____ decanted: (Y/N) ___ Date Received: 06/07/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 06/08/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/13/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: W0082 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0434

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

% Moisture: _____ decanted: (Y/N) ___ Date Received: 06/09/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 06/10/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/24/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOC1G5

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: W0082 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0322

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

% Moisture: _____ decanted: (Y/N) ___ Date Received: 06/07/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 06/08/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/13/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO621 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0316

Level (low/med): LOW__ Date Received: 06/07/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	49.9	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	92600			P
7440-47-3	Chromium	19.3			P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	17.3	B		P
7439-92-1	Lead	5.4		N	F
7439-95-4	Magnesium	21600			P
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	5490			P
7782-49-2	Selenium	2.7	B		F
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	26300			P
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium	10.0	U		P
7440-66-6	Zinc	20.5			P
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO621 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0317

Level (low/med): LOW__ Date Received: 06/07/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

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
5955-70-0	Cyanide	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY._____

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EPA SAMPLE NO.

BOBMQ3

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO621 SAS No.: SDG No.: W0082

Matrix (soil/water): WATER Lab Sample ID: AB0320

Level (low/med): LOW Date Received: 06/07/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	51.0	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	96800			P
7440-47-3	Chromium	22.8			P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	24.4	B		P
7439-92-1	Lead	2.0	U	N	F
7439-95-4	Magnesium	22600			P
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	6510			P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	27400			P
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium	10.0	U		P
7440-66-6	Zinc	17.7	B		P
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DISSOLVED.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO633 SAS No.: SDG No.: W0082

Matrix (soil/water): WATER Lab Sample ID: AB0453

Level (low/med): LOW Date Received: 06/09/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	77.0	B		P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	2.0	U		F
7440-39-3	Barium	33.6	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	47600			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	45.8	B		P
7439-92-1	Lead	2.0	U	N	F
7439-95-4	Magnesium	8790			P
7439-96-5	Manganese	2.6	B		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	3410	B		P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	5020			P
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium	10.0	U		P
7440-66-6	Zinc	33.2			P
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO633 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0454

Level (low/med): LOW__ Date Received: 06/09/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

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
5955-70-0	Cyanide	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY._____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMP9

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO633 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0458

Level (low/med): LOW__ Date Received: 06/09/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	46.5	B		P
7440-36-0	Antimony_	50.0	U		P
7440-38-2	Arsenic__	2.0	U		F
7440-39-3	Barium___	31.4	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium__	5.0	U		P
7440-70-2	Calcium__	45500			P
7440-47-3	Chromium_	10.0	U		P
7440-48-4	Cobalt___	10.0	U		P
7440-50-8	Copper___	10.0	U		P
7439-89-6	Iron_____	26.6	B		P
7439-92-1	Lead_____	2.1	B	N	F
7439-95-4	Magnesium	8400			P
7439-96-5	Manganese	2.2	B		P
7439-97-6	Mercury__	0.20	U		CV
7440-02-0	Nickel___	20.0	U		P
7440-09-7	Potassium	3070	B		P
7782-49-2	Selenium_	2.0	U		F
7440-22-4	Silver___	5.0	U		P
7440-23-5	Sodium___	4790	B		P
7440-28-0	Thallium_	2.0	U		F
7440-62-2	Vanadium_	10.0	U		P
7440-66-6	Zinc_____	23.2			P
5955-70-0	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED._____

6/9/94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMV6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO633 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0442

Level (low/med): LOW__ Date Received: 06/09/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

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
5955-70-0	Cyanide	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY._____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMV6

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO633 SAS No.: SDG No.: W0082

Matrix (soil/water): WATER Lab Sample ID: AB0441

Level (low/med): LOW Date Received: 06/09/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	77.7	B		P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	4.5	B		F
7440-39-3	Barium	25.2	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	55600			P
7440-47-3	Chromium	10.6			P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	30.6	B		P
7439-92-1	Lead	3.6		N	F
7439-95-4	Magnesium	16800			P
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	5540			P
7782-49-2	Selenium	2.4	B	W	F
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	51100			P
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium	12.0	B		P
7440-66-6	Zinc	21.6			P
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ILM02.1

7/8/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMV7

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO633 SAS No.: SDG No.: W0082
Matrix (soil/water): WATER Lab Sample ID: AB0457
Level (low/med): LOW Date Received: 06/09/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	42.7	B		P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic	4.6	B		F
7440-39-3	Barium	24.1	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	51200			P
7440-47-3	Chromium	10.2			P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	69.9	B		P
7439-92-1	Lead	13.7		N	F
7439-95-4	Magnesium	15400			P
7439-96-5	Manganese	2.0	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	5740			P
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	46500			P
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium	13.4	B		P
7440-66-6	Zinc	16.7	B		P
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
DISSOLVED.

FORM I - IN

ILM02.1

P 7/8/94

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/08/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6294	2	U
BOBMQ2	AB0312	196	+

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/17/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6333	2	U
BOBMV6	AB0437	202	+
BOBMP8	AB0449	106	+

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

AMMONIA ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/17/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6334	0.1	U
BOBMQ2	AB0315	0.1	U

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

AMMONIA ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6350	0.1	U
BOBMV6	AB0440	0.2	+
BOBMP8	AB0452	0.1	+

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

CHEMICAL OXYGEN DEMAND ANALYSIS

Laboratory Name:	ITAS-St. Louis	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/16/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
BOBMQ2	5329-016	10	+

+ - Positive result.

CHEMICAL OXYGEN DEMAND ANALYSIS

Laboratory Name:	ITAS-St. Louis	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/16/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
BOBMV6	5329-014	10	+
BOBMP8	5329-015	10	+

+ - Positive result.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6352	0.02	U
BOBMQ2	AB0311	18.2	+

+ - 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:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6352	0.02	U
BOBMV6	AB0436	13.5	+
BOBMP8	AB0448	2.73	+

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

pH ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	standard units	Analysis Date:	06/08/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	*	-	-
BOBMQ2	AB0310	7.74	-

* - A method blank is not applicable for this analysis.

pH ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	standard units	Analysis Date:	06/10/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	*	-	-
BOBMV6	AB0435	7.63	-
BOBMP8	AB0447	7.22	-

* - A method blank is not applicable for this analysis.

SPECIFIC CONDUCTIVITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	umhos/cm	Analysis Date:	06/10/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6308	1	U
BOBMQ2	AB0310	818	+

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

SPECIFIC CONDUCTIVITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	umhos/cm	Analysis Date:	06/10/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6308	1	U
BOBMV6	AB0435	658	+
BOBMP8	AB0447	373	+

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

SULFIDE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/08/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6295	1	U
BOBMQ2	AB0314	4	+
BOC1G5	AB0324	4	+

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

SULFIDE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/13/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6306	0.2	U
BOBMV6	AB0439	0.2	U
BOBMP8	AB0451	1.0	+

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/08/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6296	1	U
BOBMQ2	AB0313	474	+
BOC1G5	AB0323	258	+

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/10/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6312	1	U
BOBMV6	AB0438	466	+
BOBMP8	AB0450	286	+

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

TOTAL ORGANIC CARBON ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/14/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6328	1	U
BOBMQ2	AB0318	2.19	+

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

TOTAL ORGANIC CARBON ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6355	1	U
BOBMV6	AB0443	2	+
BOBMP8	AB0455	1	+

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

TOTAL ORGANIC HALOGENS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	µg/l	Analysis Date:	06/29/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6358	20	U
BOBMQ2	AB0319	20	U

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

TOTAL ORGANIC HALOGENS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	µg/l	Analysis Date:	06/30/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6359	20	U
BOBMV6	AB0444	21	+
BOBMP8	AB0456	20	U

+ - 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:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Client Sample ID:	BOBMQ2	Preparation Date:	06/27/94
Lab Sample ID:	AB0310	Analysis Date:	06/27/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	29	+	8.0
phosphate	1.0	U	1.0
sulfate	96	+	15

+ - 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:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Client Sample ID:	BOBMV6	Preparation Date:	06/27/94
Lab Sample ID:	AB0435	Analysis Date:	06/27/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	16.5	+	4.0
phosphate	1.0	U	1.0
sulfate	81	+	15

+ - 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:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Client Sample ID:	BOBMP8	Preparation Date:	06/27/94
Lab Sample ID:	AB0447	Analysis Date:	06/27/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	4.7	+	0.4
phosphate	1.0	U	1.0
sulfate	66	+	7.5

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

INTERNATIONAL TECHNOLOGY CORPORATION

Analytical Data Package Prepared For

Westinghouse Hanford

Radiochemical Analysis By

IT Analytical Services
Richland Laboratory

Sample Delivery Group Number: W0082

CLIENT IDENTIFICATION NUMBER	ITAS RICHLAND ID NUMBER
B0BMQ2	40607201
B0BMV6	40613701
B0BMP8	40613702

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

August 1, 1994

Attention: J.A.Lerch

SAF Number	:	94-087
Date SDG Closed	:	June 17, 1994
Number of Samples	:	Three (3)
Sample Type	:	Water
SDG Number	:	W0082
Data Deliverable	:	Stand Alone

I. Introduction

On June 6 and 8, 1994, three water 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:

ITAS-Richland ID	WHC ID	Matrix	Date of Receipt
406072-01A	B0BMQ2	Water	6/6/94
406137-01A	B0BMV6	Water	6/8/94
406137-02A	B0BMP8	Water	6/8/94

II. Analytical Results/Methodology

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

The requested analyses were:

Alpha Spectroscopy
Americium-241 by method ITAS-RD-3302
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
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
Tritium by method ITAS-RD-3205

III. Quality Control

The analytical results for each analysis performed under SDG W0082 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

Results from the initial radioactivity screening of these samples classified them as Category I.

Alpha Spectroscopy

Americium-241 by method ITAS-RD-3302
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BMQ2) results are within contractual limits.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BMQ2) results are within contractual requirements.

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BMV6) results are within contractual requirements.

Technetium-99 by method ITAS-IT-RS-0001
The SDG was grouped into two batches for analysis, however, only one set of quality control samples will be billed to this SDG. In both analytical batches, the matrix spike, LCS, batch blank, sample and sample duplicate (duplicate of sample B0BMQ2 and sample B0BMP8) results are within contractual requirements.

Tritium by method ITAS-RD-3205
SDG W0082 was batched and analyzed with SDG W0090. Quality Control Samples were prepared and analyzed for each SDG. The LCS (L060721S and L060721M), batch blank (L060721X), sample and sample duplicate (duplicate of sample B0BMQ2) 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:**	W0082
LAB SAMPLE ID:	40607201	**MATRIX:**	WATER
CLIENT ID:	B0BMQ2	**DATE RECEIVED:**	6/6/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	4.37E-02	1.05E-01	1.05E-01	2.38E-01	pCi/L	74.20%	RD3302
PU-238	-2.26E-02	3.20E-02	3.22E-02	3.20E-01	pCi/L	73.80%	RD3209
PU239/40	1.02E-01	1.61E-01	1.62E-01	2.70E-01	pCi/L	73.80%	RD3209
U-234	3.82E+00	9.51E-01	1.08E+00	2.94E-01	pCi/L	70.60%	RD3234
U-235	1.04E-01	1.68E-01	1.68E-01	2.94E-01	pCi/L	70.60%	RD3234
U-238DA	3.14E+00	8.67E-01	9.64E-01	3.93E-01	pCi/L	70.60%	RD3234
CO-58	3.64E+00	6.15E+00	6.16E+00	1.23E+01	pCi/L	N/A	RD3219
CO-60	-3.53E+00	6.10E+00	6.11E+00	9.94E+00	pCi/L	N/A	RD3219
CS-137DA	1.07E+00	3.42E+00	3.42E+00	6.77E+00	pCi/L	N/A	RD3219
EU-152	1.30E+01	1.06E+01	1.07E+01	2.08E+01	pCi/L	N/A	RD3219
EU-154	2.09E+00	1.43E+01	1.43E+01	2.70E+01	pCi/L	N/A	RD3219
EU-155	1.70E+00	9.31E+00	9.31E+00	1.67E+01	pCi/L	N/A	RD3219
FE-59	5.16E+00	1.34E+01	1.34E+01	2.75E+01	pCi/L	N/A	RD3219
ALPHA	8.07E+00	2.42E+00	2.51E+00	2.12E+00	pCi/L	100.00%	RD3214
BETA	9.01E+00	1.98E+00	2.08E+00	2.98E+00	pCi/L	100.00%	RD3214
STRONTIUM	4.03E-02	2.35E-01	2.35E-01	8.00E-01	pCi/L	88.80%	RD3204
C-14	8.45E+00	1.64E+00	3.38E+00	3.54E+00	pCi/L	100.00%	RD3263
TC-99	5.31E-01	9.20E-01	4.05E+00	2.11E+00	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	1.05E+04	2.93E+02	9.27E+02	2.53E+02	pCi/L	97.70%	RD3205

Number of Results: 19

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG:**	W0082
LAB SAMPLE ID:	40613701	**MATRIX:**	WATER
CLIENT ID:	B0BMV6	**DATE RECEIVED:**	6/8/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.13E-01	1.83E-01	1.84E-01	3.21E-01	pCi/L	63.40%	RD3302
PU-238	7.33E-02	1.47E-01	1.47E-01	1.99E-01	pCi/L	56.90%	RD3209
PU239/40	-1.47E-02	2.93E-02	2.94E-02	3.51E-01	pCi/L	56.90%	RD3209
U-234	-2.92E+00	2.92E+00	6.59E+00	4.87E+01	pCi/L	0.50%	RD3234
U-235	-7.30E-01	1.46E+00	2.08E+00	3.67E+01	pCi/L	0.50%	RD3234
U-238DA	-4.38E+00	3.58E+00	9.55E+00	5.41E+01	pCi/L	0.50%	RD3234
CO-58	-2.23E+00	6.14E+00	6.14E+00	1.07E+01	pCi/L	N/A	RD3219
CO-60	4.84E+00	3.42E+00	3.46E+00	9.60E+00	pCi/L	N/A	RD3219
CS-137DA	-3.44E+00	4.45E+00	4.46E+00	6.56E+00	pCi/L	N/A	RD3219
EU-152	-1.36E+01	1.04E+01	1.05E+01	1.49E+01	pCi/L	N/A	RD3219
EU-154	5.18E+00	1.08E+01	1.08E+01	2.46E+01	pCi/L	N/A	RD3219
EU-155	-4.46E+00	8.53E+00	8.55E+00	1.44E+01	pCi/L	N/A	RD3219
FE-59	-5.92E+00	1.41E+01	1.42E+01	2.33E+01	pCi/L	N/A	RD3219
ALPHA	4.47E+00	1.77E+00	1.82E+00	1.54E+00	pCi/L	100.00%	RD3214
BETA	1.08E+00	1.43E+00	1.43E+00	2.99E+00	pCi/L	100.00%	RD3214
STRONTIUM	6.40E-01	2.88E-01	3.31E-01	7.77E-01	pCi/L	93.20%	RD3204
C-14	4.51E-01	1.52E+00	3.16E+00	3.54E+00	pCi/L	100.00%	RD3263
TC-99	2.21E+00	9.43E-01	4.10E+00	2.53E+02	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	6.02E+02	1.26E+02	2.49E+02	2.53E+02	pCi/L	97.70%	RD3205

Number of Results: 19

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG:**	W0082
LAB SAMPLE ID:	40613702	**MATRIX:**	WATER
CLIENT ID:	B0BMP8	**DATE RECEIVED:**	6/8/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.00E-01	1.42E-01	1.43E-01	1.36E-01	pCi/L	76.60%	RD3302
PU-238	-2.98E-02	4.22E-02	4.24E-02	4.21E-01	pCi/L	56.00%	RD3209
PU239/40	-1.49E-02	2.98E-02	2.99E-02	3.56E-01	pCi/L	56.00%	RD3209
U-234	7.69E-01	2.29E+00	2.32E+00	6.03E+00	pCi/L	3.70%	RD3234
U-235	-9.04E-02	1.81E-01	1.86E-01	4.55E+00	pCi/L	3.70%	RD3234
U-238DA	-5.42E-01	4.43E-01	5.17E-01	6.70E+00	pCi/L	3.70%	RD3234
CO-58	-2.52E+00	4.92E+00	4.92E+00	8.31E+00	pCi/L	N/A	RD3219
CO-60	-1.85E+00	5.81E+00	5.81E+00	1.02E+01	pCi/L	N/A	RD3219
CS-137DA	1.09E+00	4.07E+00	4.07E+00	7.92E+00	pCi/L	N/A	RD3219
EU-152	-1.03E+01	1.04E+01	1.05E+01	1.59E+01	pCi/L	N/A	RD3219
EU-154	-6.73E+00	1.29E+01	1.29E+01	2.25E+01	pCi/L	N/A	RD3219
EU-155	-2.96E+00	7.20E+00	7.21E+00	1.16E+01	pCi/L	N/A	RD3219
FE-59	-6.40E+00	1.57E+01	1.57E+01	2.76E+01	pCi/L	N/A	RD3219
ALPHA	9.20E-01	7.21E-01	7.31E-01	1.16E+00	pCi/L	100.00%	RD3214
BETA	2.25E+01	2.59E+00	3.04E+00	2.78E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.84E+02	3.23E+00	4.52E+01	9.05E-01	pCi/L	83.30%	RD3204
C-14	1.89E+00	1.54E+00	3.19E+00	3.54E+00	pCi/L	100.00%	RD3263
TC-99	2.96E+00	9.72E-01	4.16E+00	2.53E+02	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	7.26E+02	1.29E+02	2.55E+02	2.09E+00	pCi/L	97.70%	RD3205

Number of Results: 19

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-0206 page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0082
NCM INITIATED BY (Name/Date): mmh 7-15-94
PARAMETER(S): U-tot
SAMPLE NUMBER(S) AFFECTED: 40607201, F01, 613701, 02
MATRIX: water

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY
☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): other popped
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sing Davis 8/1/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

IT CORPORATION

LOG #: RD-94-020

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE mmm 7-15-94

Ether ppd while drying ether extraction due to warmth in the hood.

☐ CORRECTIVE ACTION: INITIALS/DATE mmm 7-15-94

More water is being added to ether before letting ether evaporate off. Sample 607201 + FD1 had activity > CL, sample 613701,02 have activity < CL. There appears to be no contamination of samples or QC - Rerun of 613701,02 acceptable 8-1-94 mmm

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: m Kellogg DATE: 7-15-94

RESPONSIBLE MANAGER: W MacKillop DATE: 8/1/94

QC REVIEW

☒ NONCONFORMANCE ☐ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cox DATE: 8/1/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cox DATE: 8/1/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

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INTERNATIONAL TECHNOLOGY CORPORATION

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0662

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0082

NCM INITIATED BY (Name/Date): mmh 8-1-94

PARAMETER(S): U ISO

SAMPLE NUMBER(S) AFFECTED: L06137

MATRIX: Water

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): 50% Rec recoveries for U234 & U235 outg 75-125% range
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 8/1/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0026

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IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ **ROOT CAUSE:** INITIALS/DATE mma 8-1-94

U234 + U235 out of 75-125% range for rerun of 613701,02

☐ **CORRECTIVE ACTION:** INITIALS/DATE mma 8-1-94

U234 is 127 which is within the 70-130% range acceptable to data validation. U238 is within limits. U235 is out of limit at 135.1%.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: M Kellogg DATE: 9-1-94

RESPONSIBLE MANAGER: W McKillop DATE: 8/1/94

QC REVIEW

☐ NONCONFORMANCE ☑ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cox DATE: 8/1/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cox DATE: 8/1/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0027

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 406072 , 6137

Lab Sample Numbers or SDG: L0607218 - L0607215 SDGW0087

Method/Test/Parameter: Gamma

Review Item		Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?			✓	✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

NCM - Spike Co57 - failed detect Eu152 interference
- Duplicate Se79 does not meet MDA

Analyst: Joel Thompson Date: 7-20-94

Second Level Review: Suzy Davis Date: 7/25/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION

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LOG #: RD-94-_____ page 1 of 2

0653

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joel TKempema 7-20-94 WCC82

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: L0607215 F0607201

MATRIX: Water

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): L0607215 – Co57 – false detect – misidentified 122KEV line Eu152
   F0607201 – MDA Fe59 > CRDL
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date):_____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sey Daines 7/21/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0053

IT CORPORATION

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE JTK 7-20-94

Co57 false detect - presence of Eu152 causing interference

Fe59 MDA for duplicate - difference in efficiency & background at different germanium detectors

☒ CORRECTIVE ACTION: INITIALS/DATE JTK 7-20-94

Data accepted - discuss in case narrative

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: Jack T Kingsman DATE: 7-20-94

RESPONSIBLE MANAGER: W Mackellar DATE: 7/28/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cox DATE: 8/1/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cox DATE: 8/1/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 406072 406137

Lab Sample Numbers or SDG: W0082

Method/Test/Parameter: Alpha

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?			✓	✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: Joel Kenyon Date: 7-12-94

Second Level Review: Sue Davies Date: 7/12/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 406072 406137 40082

Lab Sample Numbers or SDG: L0607218 - L0607215

Method/Test/Parameter: Rad a

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?			✓	✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: Joel Kenyon Date: 7-12-94

Second Level Review: Shirley Davies Date: 7/12/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 406072 406137

Lab Sample Numbers or SDG: W0082

Method/Test/Parameter: Total SR

	Review Item	Yes (√)	No (√)	N/A (√)	2nd Level review (√)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			X	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?	X			✓
2.	Were all sample holding times met?			X	✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?	X			✓
2.	Is the Minimum Detectable Acuvity for the Blank result ≤ the Contract Detection Limit?	X			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	X			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			X	✓
5.	Is the LCS result within acceptance criteria?	X			✓
6.	Is the LCS yield within acceptance criteria?	X			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	X			✓
8.	MS/MSD results and yield meet acceptance criteria?			X	✓
9.	Duplicate sample results and yield meet acceptance criteria?	X			✓
D. 1.	**Other** Are all nonconformances included and noted?	X			✓
2.	Are all required forms filled out?	X			✓
3.	Correct methodology used?	X			✓
4.	Transcription checked?	JM			✓
5.	Were all calculations checked at a minimum frequency?	X			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: Diana E. Akland Date: 7/6/94

Second Level Review: Suzy Davies Date: 7/09/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 406137, 406072

Lab Sample Numbers or SDG: -

Method/Test/Parameter: C-14

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			X	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			X	✓
2.	Were all sample holding times met?			X	✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			X	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	X			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	X			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			X	✓
5.	Is the LCS result within acceptance criteria?	X			✓
6.	Is the LCS yield within acceptance criteria?	X			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	X			✓
8.	MS/MSD results and yield meet acceptance criteria?			X	✓
9.	Duplicate sample results and yield meet acceptance criteria?	X			✓
D. 1.	**Other** Are all nonconformances included and noted?	X			✓
2.	Are all required forms filled out?	X			✓
3.	Correct methodology used?	X			✓
4.	Transcription checked?	JM			✓
5.	Were all calculations checked at a minimum frequency?	X			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: Elmira E. Wyland Date: 7/19/94

Second Level Review: Suzy Davies Date: 7/25/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 406137

Lab Sample Numbers or SDG: W0092

Method/Test/Parameter: Tc-99

	Review Item	Yes (√)	No (√)	N/A (√)	2nd Level review (√)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			X	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?	X			✓
2.	Were all sample holding times met?			X	✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?	X			✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	X			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	X			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			X	✓
5.	Is the LCS result within acceptance criteria?	X			✓
6.	Is the LCS yield within acceptance criteria?	X			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	X			✓
8.	MS/MSD results and yield meet acceptance criteria?	X			✓
9.	Duplicate sample results and yield meet acceptance criteria?	X			✓
D. 1.	**Other** Are all nonconformances included and noted?	X			✓
2.	Are all required forms filled out?	X			✓
3.	Correct methodology used?	X			✓
4.	Transcription checked?	JM			✓
5.	Were all calculations checked at a minimum frequency?	X			✓
6.	Units checked?	X			✓

Comments on any "No" response:

Analyst: Elinor E. Blackstone Date: 6/29/94

Second Level Review: Judy Davies Date: 7/1/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 406072

Lab Sample Numbers or SDG: W0092

Method/Test/Parameter: Tc-99

	Review Item	Yes (√)	No (√)	N/A (√)	2nd Level review (√)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			X	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?	X			✓
2.	Were all sample holding times met?			✓	✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?	X			✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	X			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	X			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			X	✓
5.	Is the LCS result within acceptance criteria?	X			✓
6.	Is the LCS yield within acceptance criteria?	X			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	X			✓
8.	MS/MSD results and yield meet acceptance criteria?	X			✓
9.	Duplicate sample results and yield meet acceptance criteria?	X			✓
D. 1.	**Other** Are all nonconformances included and noted?	X			✓
2.	Are all required forms filled out?	X			✓
3.	Correct methodology used?	X			✓
4.	Transcription checked?	JM			✓
5.	Were all calculations checked at a minimum frequency?	X			✓
6.	Units checked?	X			✓

Comments on any "No" response:

Analyst: Thomas E. Mylchreest Date: 7/1/94

Second Level Review: Suzy Davies Date: 7/29/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 406234, 406072, 406137

Lab Sample Numbers or SDG: W0482, W0490 -

Method/Test/Parameter: Tritium

Review Item		Yes (√)	No (√)	N/A (√)	2nd Level review (√)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			X	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			X	✓
2.	Were all sample holding times met?			X	✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			X	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	X			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	X			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			X	✓
5.	Is the LCS result within acceptance criteria?	X			✓
6.	Is the LCS yield within acceptance criteria?	X			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	X			✓
8.	MS/MSD results and yield meet acceptance criteria?			X	✓
9.	Duplicate sample results and yield meet acceptance criteria?	X			✓
D. 1.	**Other** Are all nonconformances included and noted?	X			✓
2.	Are all required forms filled out?	X			✓
3.	Correct methodology used?	X			✓
4.	Transcription checked?	JM			✓
5.	Were all calculations checked at a minimum frequency?	X			✓
6.	Units checked?	X			✓

Comments on any "No" response:

Analyst: [signature] Date: 7/1/94

Second Level Review: [signature] Date: 7/6/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

WO#621

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/3/94 1430 Client Name WHC

Project/Client # 94-087 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) GW5008

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 ~~☑~~ 6/3/94 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 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 6/3/94 1430

FORM NO. LS-042, Rev.0, 2/94

WO #621

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/6/94 1215 Client Name WHC

Project/Client # 94-087 Batch or Case # N/A

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

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: 35
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 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 6/6/94 1215

FORM NO. LS-042, Rev.0, 2/94

WO #624

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER:_____ DATE INITIATED: 6/6/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/6/94 1215

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
BOBMPO		VOA

Samples were received with the following deficiencies:

- ☐ 1. Not enough sample received for proper analysis.
- ☐ 2. Sample received without proper preservative.
- ☐ 3. No sample received in container.
- ☑ 4. Sample received without a RFA/COC form.
- ☐ 5. No sample ID on container.
- ☐ 6. Sample received broken or leaking.
- ☐ 7. Holding time exceeded at receipt.
- ☐ 8. Custody tape broken.
- ☐ 9. COC not relinquished by client.
- ☐ 10. Sample information on container does not match sample information on the paper work (Explain below).
- ☐ 11. All shipping containers (coolers) on waybill not received with shipment.
  - ☐ RFA/COC received
  - ☐ RFA/COC not received
- ☐ 12. Other (Explain below).

NOTES: COC shows 34 containers, 35 were received

SUPERVISOR REVIEW:_____

PROJECT MANAGER REVIEW:_____

TELEPHONED TO:_____ ON_____ BY_____

TELEFAXED TO:_____ ON_____ BY_____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

FORM NO. LS-023, 3/92, Rev. 0

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

WO #633

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-8-94 1035 Client Name WHC

Project/Client # SAF 94-087 Batch or Case # _____

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

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: 40
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 2 °

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 R. Boyd R. Boyd Date/Time 6-8-94 1035

FORM NO. LS-042, Rev.0, 2/94

9613496.0674

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

LDR #633

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-8-94 1035 Client Name WHC

Project/Client # SAF 94-087 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) Bonehead II

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: 34
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 2°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 R. Bould A. Bould JT Date/Time 6-8-94 1035

FORM NO. LS-042, Rev.0, 2/94

WO#621

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 2

Data Turnaround: [ ] Priority [X] Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: ZONEHEAD	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.	Bill of Lading/Air Bill No.

Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE

Possible Sample Hazards/Remarks	Preservative	HCL/2pH	COOL 4	pH 5-9	COOL 4	H2SO4<2	COOL 4	COOL 4	ZnAc *1	H2SO4<2	HNO3<2	NaOH>12	HCl<2*2	H2SO4<2	HNO3<2	HClpH<2
	Type of Container	Gs	aG	aG	P	G/P	G/P	G/P	P	G	G	P	aGs	aGs	G/P	G/P
	No. of Container(s)	3	3	3	1	1	1	1	1	1	1	1	1	1	6 3 KTrapp 6/1/94	3
	Volume	40ml	1000ml	1000ml	1000ml	500ml	250ml	500ml	500ml	1000ml	1000ml	1000ml	250ml	500ml	4000ml 2L KTrapp 6/1/94	1000ml
SAMPLE ANALYSIS		VOA (CLP)	SEMIVOA (CLP)	PCB/ PEST (CLP)	ANIONS (IC)SO4 F,Cl, PO4 COND,pH	NO2/NO3	ALK	TDS	SULFIDE	AMMONIA COD	ICP METALS+ ARSENIC LEAD Se,Tl, Hg (CLP)P	CYANIDE (CLP)	TOC	TOX	*3	Tc-99
406071 01		ABC	DEF	GHI	J	k	L	M	N	O		Q	R	S	406072 01	

Sample No.	Matrix*	Date Sampled	Time Sampled													
B0BMQ2 01	W	6/1/94	1200	X	X	X	X	X	X	X	X	X	X	X	X	X
B0BMQ3	W	"	"													
B0BMQ4	W	"	"													

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. Trapp/K. Trapp WHC	6/1/94 1338	C.J. Simpson WHC	6/1/94 1335
C.J. Simpson	6/6/94 1100	Loren E. Hagen	6-6-94 1100
Loren E. Hagen	6-6-94 1115	ITAS	6/6/94 1215

SPECIAL INSTRUCTIONS

*1 = or NaOH Ph>9 *2 = pH>/= to 12 *3 = GROSS ALPHA,BETA(ITAS-RD-3214), GAMMA SPEC(ITAS-RD-3219), U-235/238(ITAS-RD-3234), Pu-239/240(ITAS-RD-3209), Am-241(ITAS-RD-3302 or ITAS-RD-3206), Sr-90(ITAS-RD-3204). NOTE: LOWEST HOLDING TIME = 7 days

Matrix*

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

LABORATORY SECTION — Received By / Title / Date/Time

FINAL SAMPLE DISPOSITION — Disposal Method / Disposed By / Date/Time

9613496.0675

0000033

WO#621

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 2 of 2

Data Turnaround: ☐ Priority ☒ Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: BUN EHEDD	Field Logbook No.: EFL-1075	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks	Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE	

Preservative	N/A	HNO3<2	None			HClpH<2									
Type of Container	Gs	G	aGs			Gs									
No. of Container(s)	1	1	1			3									
Volume	1000ml	1000ml	40mL			40ml									
SAMPLE ANALYSIS	TRITIUM C-14 406071 01	ICP METALS+ ARSENIC LEAD, Se Tl, Hg (CLP) FI FILTERD	Activity Scan			VOA (CLP) ~~IRIP~~ KT 6/1/94									

406071

Sample No.	Matrix*	Date Sampled	Time Sampled														
BOBMQ2	W	6/1/94	1200	X		X											
BOBMQ3 02A	W	↓	↓		X												
BOBMQ4 03ABC	W	↓	↓						X								

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	K. Trapp/K. Trapp	6/1/94 1338
Received By	W1C A Simpson	6/1/94 1338
Relinquished By	A Simpson	6/6/94 1100
Received By	Karen E. Rogers	6-6-94 1100
Relinquished By	Karen E. Rogers	6-6-94 1115
Received By	ITAS	6/6/94 1215
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

Matrix*

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

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

BC-6000-828 (12/92)

9613496.0676

0000034

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO #621

Page 1 of 2

Data Turnaround: ☐ Priority ☒ Normal

Collector: K. Tiapp / L. Rogers	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: GW5008	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

SAMPLE ANALYSIS	Preservative	HCL/2pH	COOL 4	pH 5-9	COOL 4	H2SO4<2	COOL 4	COOL 4	ZnAc *1	H2SO4<2	HNO3<2	NaOH>12	HCl<2*2	H2SO4<2	HNO3<2	HClpH<2
	Type of Container	Gs	aG	aG	P	G/P	G/P	G/P	P	G	G	P	aGs	aGs	G/P	G/P
	No. of Container(s)	3	3	3	2 1 KT 6/2/94	1	1	1	1	1	1	2 1 KT 6/2/94	1	1	~~6~~ 3 KT 6/2/94	~~6~~ 8 KT 6/2/94
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE	Volume	40ml	1000ml	1000ml	~~1000ml~~ 900 mL KT 6/2/94	500ml	250ml	500ml	500ml	1000ml	1000ml	~~1000ml~~ 500mL KT 6/2/94	250ml	500ml	~~1000ml~~ 400 mL KT 6/2/94	~~1000ml~~ 500mL KT 6/2/94
		VOA (CLP)	SEMIVOA (CLP)	PCB/ PEST (CLP)	ANIONS (IC)SO4 F,Cl, PO4 COND,pH	NO2/NO3	ALK	TDS	SULFIDE	AMMONIA COD	ICP METALS+ ARSENIC LEAD Se,Tl, Hg (CLP)	CYANIDE (CLP)	TOC	TOX	*3 KT 6/2/94	Tc-99

6-3-94

Sample No.	Matrix*	Date Sampled	Time Sampled														
~~B0BMP0~~	W	6/2/94	1200	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	W																
B0C1G5	W	6/2/94	1200		X	X				X	X						
		40604101			ABC	DEF				G	H						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Loren Rogers	Date/Time: 6-3-94 1200	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1 = or NaOH Ph>9 *2 = pH>/= to 12 *3 = GROSS ALPHA,BETA(ITAS-RD-3214), GAMMA SPEC(ITAS-RD-3219), U-235/238(ITAS-RD-3234), Pu-239/240(ITAS-RD-3209), Am-241(ITAS-RD-3302 or ITAS-RD-3206), Sr-90(ITAS-RD-3204). NOTE: LOWEST HOLDING TIME = 7 days

6/3/94 - B0BMP0, B0BMP1, B0BMP2 previously shipped and analyzed under different C.O.C. Please analyze B0C1G5 as indicated above. KT 6-3-94

Matrix*

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

LABORATORY SECTION	Received By	Title	Date/Time
	ITAS	6/3/94	1430

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9613496.0677

00000035

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#6211

Page 2 of 2

Data Turnaround: ☐ Priority ☒ Normal

Collector: K. Trapp / L. Rogers	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 E	SAF No.: 94-087
Ice Chest No.: GWS008	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	N/A	HNO3<2	None			HCl pH<2									
Type of Container	Gs	G	aGs			Gs									
No. of Container(s)	1	1	1			3									
Volume	1000ml	1000ml	40mL			40ml									
SAMPLE ANALYSIS	TRITIUM C-14	ICP METALS+ ARSENIC LEAD, Se Tl, Hg (CLP) FI FILTERD	Activity Scan			VOA (CLP) ~~TRIP~~ 6/2/94									

Sample No.	Matrix*	Date Sampled	Time Sampled														
BOBMP1	W	6/2/94	1200		X												
BOBMP2	W								X								
BOBMP0	W			X		X											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Kevin Rogers	Date/Time: 6-3-94 1200	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

Matrix*
- 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

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)

8190 9619 6 0000036

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO #6033

Page 1 of 2

Data Turnaround: ☐ Priority ☒ Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: ZONEHEAD	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: 1T	Offsite Property No.: W94-0-0544-33	Bill of Lading/Air Bill No.: NA
Possible Sample Hazards/Remarks:		

Preservative	HCL/2pH	COOL 4	pH 5-9	COOL 4	H2SO4<2	COOL 4	COOL 4	ZnAc *1	H2SO4<2	HNO3<2	NaOH>12	HCl<2*2	H2SO4<2	HNO3<2	HClpH<2
Type of Container	Gs	aG	aG	P	G/P	G/P	G/P	P	G	G	P	aGs	aGs	G/P	G/P
No. of Container(s)	3	3	3	1	1	1	1	1	1	1	1	1	1	HT&KA 6/3	3
Volume	40ml	1000ml	1000ml	1000ml	500ml	250ml	500ml	500ml	1000ml	1000ml	1000ml	250ml	500ml	4000ml HT&KA	1000ml
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	PCB/ PEST (CLP)	ANIONS (IC)SO4 F,Cl, PO4 COND,pH	NO2/NO3	ALK	TDS	SULFIDE	AMMONIA COD	ICP METALS+ ARSENIC LEAD Se,Tl, Hg (CLP)	CYANIDE (CLP)	TOC	TOX	*3	Tc-99
40613C001	ABC	DEF	GHI	J	K	L	M	N	O	P	Q	R	S	40613701	

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BMV6	W	6/6/94	1000	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B0BMV7	W																
B0BMV8	W																

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. Trapp / E. Trapp WHC	0515	AQ Simpson WHC	6/6/94 1515
AQ Simpson	6/8/94 0940	R Boyd DT	6-8-94 1055

SPECIAL INSTRUCTIONS

*1 = or NaOH Ph>9 *2 = pH>/= to 12 *3 = GROSS ALPHA,BETA(ITAS-RD-3214), GAMMA SPEC(ITAS-RD-3219), U-235/238(ITAS-RD-3234), Pu-239/240(ITAS-RD-3209), Am-241(ITAS-RD-3302 or ITAS-RD-3206), Sr-90(ITAS-RD-3204). NOTE: LOWEST HOLDING TIME = 7 days

Matrix*

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

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)

9613496-0679

0000037

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO #633

Page 2 of 2

Data Turnaround: ☐ Priority ☒ Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: BONEHEAD	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: N/A W44-0--0544-33	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	N/A	HNO3<2	None			HCl pH<2									
Type of Container	Gs	G	GS			Gs									
No. of Container(s)	1	1	1			3									
Volume	1000ml	1000ml	40mL			40ml									
SAMPLE ANALYSIS 406136	TRITIUM C-14 406B7 01	ICP METALS+ ARSENIC LEAD, Se Tl, Hg (CLP) FI FILTERD	Activity Scan			VOA (CLP) ~~TRIP~~									

Sample No.	Matrix*	Date Sampled	Time Sampled												
B0BMV6	W	6/6/94	1000	X		X									
B0BMV7 02A	W	↓	↓		X										
B0BMV8 03ABC	W								X						
B0BMN3 04ABC	W								X						
B0BMN9 05ABC	W	↓	↓						X						

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	K. Trapp/K. Trapp WHC	6/6/94 1515
Received By	AJ Simpson WHC	6/6/94 1515
Relinquished By	AJ Simpson	6/8/94 0940
Received By	R. Boyd ~~IT~~	6-8-94 1035
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

Matrix*
- 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

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)

0000038

0090-9413436-96

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO # 633

Page 1 of 2

Data Turnaround: ☐ Priorty ☒ Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100F	SAF No.: 94-087
Ice Chest No.: BONEHEAD II	Field Logbook No.: EFL-1054	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: W44-0-0544-33	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks:		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HCL/2pH	COOL 4	pH 5-9	COOL 4	H2SO4<2	COOL 4	COOL 4	ZnAc *1	H2SO4<2	HNO3<2	NaOH>12	HCl<2*2	H2SO4<2	HNO3<2	HClpH<2
Type of Container	Gs	aG	aG	P	G/P	G/P	G/P	P	G	G	P	aGs	aGs	G/P	G/P
No. of Container(s)	3	3	3	1	1	1	1	1	1	1	1	1	1	6 3 KT 6/3/94	3
Volume	40ml	1000ml	1000ml	1000ml	500ml	250ml	500ml	500ml	1000ml	1000ml	1000ml	250ml	500ml	2L KT 6/3/94 ~~4000ml~~	1000ml
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	PCB/ PEST (CLP)	ANIONS (IC)SO4 F,Cl, PO4 COND,pH	NO2/NO3	ALK	TDS	SULFIDE	AMMONIA COD	ICP METALS+ ARSENIC LEAD Se,Tl, Hg (CLP) P	CYANIDE (CLP)	TOC	TOX	*3	Tc-99
46613606	ABC	DEF	GHI	J	K	L	M	N	O		Q	R	S	40613702	

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BMP8	W	6/3/94	1200	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	W																
	W																

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. Trapp / K. Trapp	6/3/94 1330	Karen E. Rogers	6-3-94 1335
Karen E. Rogers	6-7-94 0940	AJ Simpson WHC	6/7/94 0940
AJ Simpson WHC	6/8/94 0940	A Boyd IT	6-8-94 1635

SPECIAL INSTRUCTIONS

*1 = or NaOH Ph>9 *2 = pH>/= to 12 *3 = GROSS ALPHA,BETA(ITAS-RD-3214), GAMMA SPEC(ITAS-RD-3219), U-235/238(ITAS-RD-3234), Pu-239/240(ITAS-RD-3209), Am-241(ITAS-RD-3302 or ITAS-RD-3206), Sr-90(ITAS-RD-3204). NOTE: LOWEST HOLDING TIME = 7 days

Matrix*

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

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)

9613496.0681

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Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO #633

Page 2 of 2

Data Turnaround: ☐ Priority ☒ Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: BONEHEAD II	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: N/A W44-0-C544-33	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks:		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	Type of Container	No. of Container(s)	Volume	SAMPLE ANALYSIS
				N/A	Gs	1	1000ml	TRITIUM C-14 40613702
				HNO3<2	G	1	1000ml	ICP METALS+ ARSENIC LEAD, Se Tl, Hg (CLP) FI FILTERD
				None	aGs	1	40mL	Activity Scan
				HClpH<2	Gs	3	40ml	VOA (CLP) ~~TRIP~~
4060136								
BOBMP9 ~~07A~~	W	6/3/94	1200					X
BOBMQ008A ~~06~~	W	↓	↓					X
BOBMP8	W	↓	↓	X		X		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	K. Trapp / K. Trapp	6/3/94 1330
Received By	Karen E. Vagedes	6-3-94 1335
Relinquished By	Karen E. Vagedes	6-7-94 0940
Received By	AG Simpson WHC	6/7/94 0940
Relinquished By	AG Simpson WHC	6/8/94 0940
Received By	R. Boyd IT	6-8-94 1035
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

Matrix*

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

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)

WS #62

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		WN94-0-0594-23

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 George Washington Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: BOCIGS, ~~BO~~ LCS 6/3/94 Cooler ID: GWS008 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: Cooler ID: 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 100 AREA

RECEIVED
JUN 3 1994
PROPERTY RECORDS

Bill of lading # NA

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

RM Clearance for Public Release	RM Survey No	Date
Michael S. Jones	157755	06-03-94

Location of Property (Area & Bldg.)	Contact	Phone
100-FR-3	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
6-3-94	8B410 PD3AA	NA

Originated By	Date	Authorized By	Date
PH Butcher	6/3/94	Thomas Briggs	6-3-94
Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[signature]	6/3/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
ITAS				
Date 6/3/94 1430				

DISTRIBUTION

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

100 #621

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W44-0-0594-26

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 George Washington Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: B0BMQ2 B0BMQ3 B0BMQ4 Cooler ID: BONEAND Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
~~1~~ lbs.	~~Sample #:~~ ER 6-6-94 Cooler ID: 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 100 areas.

RECEIVED
JUN 6 1994
PROPERTY RECORDS

Bill of lading # NA

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

RM Clearance for Public Release	RM Survey No	Date
michael S. Jones	157764	6-6-94

Location of Property (Area & Bldg.)	Contact	Phone
100 IR-3	P. H. Butcher	(509) 376-4308

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
6/6/94	BB410 / PD3AA	NA

Originated By	Date	Authorized By	Date
P. H. Butcher			6/6/94
Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
			6/6/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
ITAS				
Date 6/6/94 1215				

DISTRIBUTION

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

9613496.0685

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Bonehead

OVERNIGHT DELIVERY!

WO#633

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		WALI-O-0544-33

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical services 2800 George Washington Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: B0BMV6 B0BMV7 B0BM8 B0BMN8 B0BMN7 Cooler ID: BONEHEAD Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: B0BMP8 B0BMP7 B0BMQ0 B0BMQ2 Cooler ID: BONEHEAD II 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 100 areas.

Bill of lading # NA

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

RM Clearance for Public Release	RM Survey No.	Date

Location of Property (Area & Bldg.)	Contact	Phone
100 FR-3	P.H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
6/8/94	88410	

Originated By	Date	Authorized By	Date
P.H. Butcher		GG Simpson	6/8/94
Signature and Name of Property Control	**Custodian Date**	**Property Management Approval**	**Date**

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
C.R. Nelson 3C				
Date 6-8-94				

DISTRIBUTION

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

54-3000-479 (09/89)

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO #6211 RI #5821

Reference Document No. 453683

Page 1 of 1

Project Name/No.[1] 94-087
Sample Team Members[2]
Profit Center No.[3] 4632
Project Manager[4] VanPetten
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 6/6/94
Lab Destination[8] Middlebrook
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] 762 7972 672

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]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
40604101 A	BOC165/H2O	6/4/94 1200	Glass	1L	4°C	Semi Voa	32°C BMS 6/6/94	
B							FOR LAB USE ONLY	
C								
D						PCB/Pest		
E							FOR LAB USE ONLY	
F								
G				500ml		TDS		
H			POLY	1	ZnAc	Sulfide	>9	

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): SDG W0082

1. Relinquished by[28] (Signature/Affiliation) ITAS	Date: 6/6/94 Time: 1600	1. Received by[28] (Signature/Affiliation) Bryan Blomquist ITASKN	Date: 6/07/94 Time: 7:35
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]

MCA 3/15/91

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

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INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001725*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO #621 & #820

Reference Document No. 453685

Page 1 of 2

Project Name/No.[1] 94-087

Sample Team Members[2]

Profit Center No.[3] 4632

Project Manager[4] Van Pelkey

Purchase Order No.[6]

Required Report Date[11]

Samples Shipment Date[7] 6/6/94

Lab Destination[8] Middlebrook

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13] 262 7972 085

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]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
40604107 A	BOBMQ2/H2O	6/1/94 1200	Glass	40ml	HCL 4°C	Voa	2°C BBH 6/7/94	
B							FOR LAB USE ONLY	
C								
D				1L		Semi Voa		
E							FOR LAB USE ONLY	
F								
G						PCB/Pest		
H							Broken	

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): SDG W0082

1. Relinquished by[28] (Signature/Affiliation) Jon [illegible] ITAS	Date: 6/6/94 Time: 1600	1. Received by[28] (Signature/Affiliation) Bryan Blomquist ITASKN	Date: 6/07/94 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]

MCA 3/15

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

96134960687

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INTERNATIONAL TECHNOLOGY CORPORATION

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

WO# 621
RL# 820

Reference Document No.[30] 453685

Page 2 of 2

Project Name SDG W0082

Project No. 94-087

Samples Shipment Date 6/6/94

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.
40607101F	BOBMQ2/H_2O	6/1/94/200	glass	1L	4°C	PCB Pest	2°C BPB 6/07/94	
J			poly	1		Anions Fe Sol SO_4 PO_4 pH Cond		
K				500ml	H_2SO_4	NO2/NO3	<2	
L				250ml		Alk		
M				500ml		TDS		
N			glass	1	ZnAc	Sulfide	9	
O				1L	H_2SO_4	Ammonia Cod	<2	
P				1	HNO_3	ICP Metals As Se Pb Tl Hg	<2	
Q			Poly	1	NaOH	CN	10	
R			Glass	250ml	HCL	TOC	<2	
S				500ml	H_2SO_4	TOX	<2	
40607102A	BOBMQ3/H_2O			1L	HNO_3	ICP Metals As Se Pb Tl Hg	<2	
40607103A	BOBMQ4/H_2O			40ml	HCL	Voa		
B				1	1	1		
C							↓	

FOR LAB USE ONLY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

96134196.0688

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INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001737*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO #6633 WO #833 2V

Reference Document No. 453686
Page 1 of 4

Project Name/No.[1] 94-087
Sample Team Members[2]
Profit Center No.[3] 4632
Project Manager[4] VanPetten
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 6/8/94
Lab Destination[8] Middlebrook
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] 261 6147 965

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]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
40613601 A	BOBMW6/H2O	as per WHC	4°C		4°C	as per WHCCOC	Ic BPB 6/09/94	
B							FOR LAB USE ONLY	
C								
D								
E							FOR LAB USE ONLY	
F								
G								
H								

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): SDG WO082

1. Relinquished by[28] (Signature/Affiliation) ITAS	Date: 6/8/94 Time: 1600	1. Received by[28] (Signature/Affiliation) Bryan Stonquist ITASKN	Date: 6/09/94 Time: 8:55
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]

MCA 3/15/91

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

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INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#633

Reference Document No.[30] 453686

Page 2 of 4

Project Name SDG W0082 Project No. 94-087 Samples Shipment Date 6/8/94

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.
406136011 I	BOBMV6/H_2O	as per	WHC COC		4°C	As per WHC COC	2°C BPB 6/09/94	
J							FOR LAB USE ONLY	
K							<2	
L							FOR LAB USE ONLY	
M								
N							>9	
O							FOR LAB USE ONLY <2	
P							<2	
Q							10	
R							FOR LAB USE ONLY <2	
S							<2	
406136021 A	BOBMV7/H_2O						FOR LAB USE ONLY <2	
406136031 A	BOBMV8/H_2O							
B							FOR LAB USE ONLY	
C								
406136041 A	BOBMN8/H_2O							
B							FOR LAB USE ONLY	
C								
406136051 A	BOBMN9/H_2O							
B							↓	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

0090-94136-1 96

0000048

INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#683

Reference Document No.[30] 453686

Page 3 of 4

Project Name SDG W0082 Project No. 94-087 Samples Shipment Date 6/8/94

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.
406136605C	BOBMN9/H2O	as per	WHC	COC	4°C	as per WHC COC	2°C GBB 6/09/94	
406136606A	BOBMP8/H2O						FOR LAB	
B							USE ONLY	
C							FOR LAB	
D							USE ONLY	
E							FOR LAB	
F							USE ONLY	
G							FOR LAB	
H							USE ONLY	
I							FOR LAB	
J							USE ONLY	
K							<2	
L							FOR LAB	
M							USE ONLY	
N							FOR LAB	
O							USE ONLY	
P							<2	
Q							<2	
R							USE ONLY	
S							<2	
							<2	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

96134966.0691

00000049

INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#633

Reference Document No.[30] 4536686

Page 4 of 4

Project Name SDG W0082 Project No. 94-087 Samples Shipment Date 6/8/94

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.
40513607A	BOBMP9/H2O	as per	WHC COC		4°C	as per WHC COC	2°C BPB 6/9/94 LL	
40513608A	BOBMQ0/H2O						FOR LAB USE ONLY	
B								
C								
	(S) 6/8/94							

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

96134%-0692

0000050

WO#621

TENNELEC #2

SCREENING CALCULATION SPREADSHEET

O.K. JRM 3 June 94

Cust Code WHC	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
	6-3-94		6-3		6-3	10	8	226	240

Customer ID WHC/LIQUID	pH <2 Rcvd/Req	Residue Wght mG	Vol. Anal. mG	mL	Sample Size Gm	L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Category 1 Yes/No	Aliquot to Cat 1 Gm or L Alpha	Beta
B0C1G5		1.8	5		1.0		1	11	27	1.07	1.75	3.73E+00	2.99E+00	3.4E-04	2.7E-04	2.4E-07	1.7E-07	3.4E+02	2.7E+02	Yes	3.0E+01	3.7E+02
B0BWC9		0.5	5		1.0		2	0	5	-0.03	-0.45	-9.7E-02	-9.2E-01	-8.7E-06	-8.3E-05	-3.7E-08	-8.3E-08	-8.7E+00	-8.3E+01	Yes	-1.1E+03	-1.2E+03
B0BWD2		0.9	5		1.0		3	1	7	0.07	-0.25	2.47E-01	-5.7E-01	2.2E-05	-5.1E-05	5.4E-08	-1.4E-07	2.2E+01	-5.1E+01	Yes	4.5E+02	-2.0E+03
TOTAL uCi														3.6E-04	2.2E-04							

WO #621

O.K. JRM
6 June 94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	60694		60694		6-6	10	2	55	60

Customer ID	pH	Residue	Vol.	Sample	SMPLE CNT DATA			Net Sample Counts/Minute		DPM / Aliqout		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1	Aliquot to Cat 1 Gm or L	
WHC/LIQUID	<2 Rcvd/Reiq	Wght mG	Anal. mG mL	Size Gm L	Hldr Num	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta
B0BMQ2		4.4	10	2.0	20	11	33	1.07	2.38	4.35E+00	4.39E+00	3.9E-04	4.0E-04	2.8E-07	2.0E-07	2.0E+02	2.0E+02	Yes	5.1E+01	5.1E+02

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

WO# 633

O.K. J.RN.
8 June 94

Customer Code WHC	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
	60694		60694		6-8	10	4	117	240

Customer ID WHC/LIQUID	pH <2 Rcvd/Reiq	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Counts Alpha	Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Category 1 Yes/No	Aliquot to Cat 1 Gm or L Alpha	Beta
B0BMP8		3.0	10	2.0	45	3	45	0.28	4.01	1.02E+00	8.40E+00	9.2E-05	7.6E-04	1.3E-07	2.7E-07	4.6E+01	3.8E+02	Yes	2.2E+02	2.6E+02
B0BMV6		3.4	10	2.0	46	8	30	0.78	2.51	3.12E+00	4.85E+00	2.8E-04	4.4E-04	2.3E-07	2.1E-07	1.4E+02	2.2E+02	Yes	7.1E+01	4.6E+02
TOTAL uCi												3.7E-04	1.2E-03							

WO #621

SAMPLE STATUS REPORT FOR E 6442. E-BLANK 1-F5-4 TIME: 6/ 2/94 8:26
DISPATCHED: 4/ 5/94 13: 8 SAMPLE HAS NOT BEEN SLURPED.
RECEIVED: 6/ 2/94 8:17

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

BO BMQ2
BO BMQ3
BO BMQ4
BO BMQ5

06/03/94 07:33 ☎373 3176 222S 3B 010

WO #621

SAMPLE STATUS REPORT FOR E 7683. E-BLANK 199F1-2R TIME: 6/ 3/94 8:21
DISPATCHED: 5/24/94 12:49 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 2/94 14:46

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

~~B0BW120~~
~~B0BW121~~
~~B0BW122~~
~~B0BW123~~
B0C 195

WO#633

AMPLE STATUS REPORT FOR E 6441. E-BLANK 1-F5-3 TIME: 6/ 6/94 8: 0
ISPATCHED: 4/ 5/94 13: 6 SAMPLE HAS NOT BREN SLURPED
ECEIVED: 6/ 3/94 14:56

XT.	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

BO BMP8
BO BMP9
BO BMQD
BO BMQ1

WO #633

SAMPLE STATUS REPORT FOR E 6453. E-BLANK 1-F7-2 TIME: 6/ 7/94 7:58
DISPATCHED: 4/ 5/94 13:19 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 7/94 7:46

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

Bo BMV6
Bo BMV7
Bo BMV8
Bo BMV9

9613496.0700

Los Alamos Technical Associates, Inc.

8633 Gage Blvd. / Kennewick, WA 99336 / Telephone (509) 783-4369 / FAX (509) 783-9661

September 16, 1994

Jeanette Duncan
CH2M Hill
450 Hills
Richland, WA 99352

Dear Jeanette,

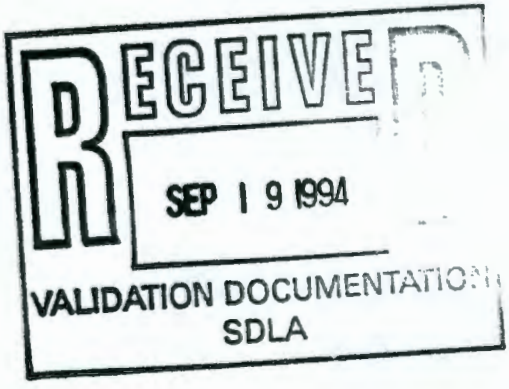
Attached is the data validation report for analytical results for 100-FR-3 Groundwater Operable Unit (SDG W0082-ITC-096). The package was received by Los Alamos Technical Associates on August 11, 1994. Validation of this package began on August 26, and was completed on September 16, 1994.

If you have any questions, please let me know.

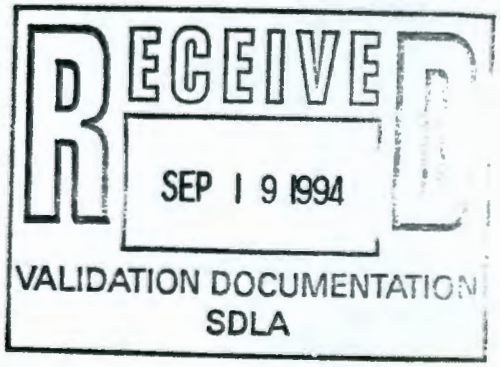
Sincerely,

Donald J. Smith
Project Manager

cc: Judy Pottmeyer, LATA
Joan Kessner, BECHTEL-Hanford
VW402.76 file



DATA VALIDATION REPORT
for
100-FR-3 Groundwater Operable Unit
SDG W0082-ITC-096
LATA VW402.76



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

September 16, 1994

Table of Contents

100-FR-3 Groundwater Operable Unit
Data Validation Narrative

INTRODUCTION

All samples in Sample Delivery Group (SDG) W0082-ITC-096 were validated at level "D" as defined in the Data Validation Procedures for Chemical Analysis (WHC-SD-EN-SPP-002) and/or Data Validation Procedures for Radiochemical Analyses (WHC-SD-EN-SPP-001).

The data package was received by Los Alamos Technical Associates (LATA) on August 11, 1994. Validation began on August 26, 1994 and was completed on September 12, 1994.

The chemical and radiochemical analyses were performed by ITC.

ANALYSES REQUESTED

Twelve (12) water samples were collected by WHC and transferred to ITC for analysis. The following determinations were conducted on all of the samples in this SDG:

			Analyses Requested																
Sample ID	Date Collected by WHC	Date Received by Lab	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
BOBMQ2	6/1/94	6/6/94	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
BOBMQ3	6/1/94	6/6/94																	X	
BOBMQ4	6/1/94	6/6/94	X																	
BOC1G5	6/2/94	6/3/94		X	X				X	X										
BOBMV6	6/6/94	6/8/94	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
BOBMV7	6/6/94	6/8/94																	X	
BOBMV8	6/6/94	6/8/94	X																	
BOBMN8	6/6/94	6/8/94	X																	
BOBMN9	6/6/94	6/8/94	X																	
BOBMP8	6/3/94	6/8/94	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
BOBMP9	6/3/94	6/8/94																	X	
BOBMQ0	5/23/94	5/24/94	X																	

ANALYSES REQUESTED (cont.)

Corresponding List of Analyses Requested

1	Volatile Organics		Method CLP
2	Semivolatile Organics		Method CLP
3	Pesticides/PCBs		Method CLP
4	Anions (F, Cl, PO_4 & SO_4)		Method 300.0
	Conductivity		Method 120.1
	pH		Method 9040
5	Nitrate+Nitrite		Method 353.2
6	Alkalinity		Method 310.1
7	Total Dissolved Solids		Method 160.1
8	Sulfides		Method 376.1
9	Ammonia		Method 350.2
	Chemical Oxygen Demand		Method HACH or 410.2
10	Metals:	ICP	Method CLP
		Arsenic	Method CLP
		Lead	Method CLP
		Selenium	Method CLP
		Thallium	Method CLP
		Mercury	Method CLP
11	Cyanide		Method CLP
12	Total Organic Carbon		Method 9040
13	Total Organic Halogens		Method 9020A
14	Gross Alpha/Beta		Method ITAS-RD-3214
	Gamma Spec		Method ITAS-RD-3219
	Uranium-235/238		Method ITAS-RD-3234
	Plutonium-239/240		Method ITAS-RD-3209
	Americium-241		Method ITAS-RD-3302
	Strontium-90		Method ITAS-RD-3204
15	Technetium-99		Method ITAS-IT-RS-0001
16	Tritium		Method ITAS-RD-3205
	Carbon-14		Method ITAS-RD-3247
17	Metals:	ICP	Method CLP Filtered
		Arsenic	Method CLP Filtered
		Lead	Method CLP Filtered
		Selenium	Method CLP Filtered
		Thallium	Method CLP Filtered
		Mercury	Method CLP Filtered
18	Activity Scan		Method LAB SPECIFIED

ANALYSES REQUESTED (cont.)

The WHC ROD (included with this report in the Chain-of-Custody section) states that the 7 day holding time for the semi-VOA, PCB/Pests, TDS, and Sulfide analyses for sample BOBMP0 were missed and the Chain-of-Custody for sample BOBMP2 was incomplete (the Chain-of-Custody was broken. J. M. Ayers of WHC instructed the laboratory not to perform analyses for which holding times have been missed (replacement aliquots for these analyses will be collected, shipped, analyzed, and reported under BOB1G5). He also instructed the laboratory to continue with the analysis of BOBMP2 for "informational purposes only".

DATA QUALITY OBJECTIVES

The data quality objectives for 100-FR-3 Groundwater Operable Unit are specified in the *Remedial Investigation/Feasibility Study Work Plan for the 100-FR-3 Operable Unit* (DOE/RL-91-53, Rev 0). Precision, accuracy, and detection limit requirements for the project have been derived from the Third Edition of SW-846 (EPA, 1992). Maximum holding times are listed in the 3rd Edition, Final Update I of SW-846 (EPA, July 1992).

The primary objective of the data validation effort was to ensure these data quality objectives were met, and that the data are usable and defensible. This was accomplished through a detailed examination of the data package to recreate the analytical process and verify that proper and acceptable analytical techniques had been applied. The data package was checked for correct submission of required deliverables, correct transcription of raw data to the summary forms, and for proper calculation of a number of parameters.

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 limits goals were met for all sample results as specified in DOE/RL-91-53, Rev 0.

Completeness. The data package was 99% complete for all requested analyses.

Data qualifiers are assigned to any results that have been determined to be deficient. These are discussed below.

MAJOR DEFICIENCIES (REJECTED DATA)

The following major deficiencies resulted in the qualification of the results as unusable.

GENERAL CHEMISTRY

- The holding time for phosphate (IC) was exceeded by greater than two times. Therefore, the phosphate (IC) results for samples BOBMQ2, BOBMV6, and BOBMP8 were qualified as unusable (UR).

MINOR DEFICIENCIES

The following minor deficiencies were discovered. These minor shortcomings are not expected to significantly affect the overall quality of the data.

VOLATILES

- The method blank had positive values with associated sample results less than 10x the blank result for common laboratory contaminants. Therefore, the Methylene Chloride and Acetone results for samples BOBMQ2, BOBMQ4, BOBMV6, BOBMV8, BOBMN8, BOBMN9, BOBMP8, and BOBMQ0 were qualified non-detects (U).

- The method blank had positive values with associated sample results less than 5x the blank result. Where sample results were less than the CRQL, an upward adjustment to the CRQL (10ug/L) was made. Therefore, the Chloroform results for samples BOBMQ2, BOBMQ4, BOBMV6, BOBMV8, BOBMN8, BOBMN9, BOBMP8, and BOBMQ0 were qualified non-detects (10U).

- The %D between the initial and continuing calibration exceeded 25%. Therefore, the 1,1,1-Trichoroethane and Carbon Tetrachloride results for samples BOBMQ2, BOBMQ4, BOBMV6, BOBMV8, BOBMN8, BOBMN9, BOBMP8, and BOBMQ0 were qualified as estimated (UJ).

MINOR DEFICIENCIES (cont.)

VOLATILES

COMMENTS

- A laboratory-generated trip blank was shipped with the WHC samples from Richland to Knoxville for analysis. Trip blank contamination consistent with that found in the method blank indicates that the source of the contamination is the laboratory performing the analysis and not the trip between laboratories.

SEMIVOLATILES

- The %D for the continuing calibration verification exceeded the upper control limit. Therefore, the Hexachlorobenzene results for samples BOBMP8, BOBMQ2, BOBMV6, and BOC1G5 were qualified as estimated (UJ).

PESTICIDES/PCBS

- No deficiencies were observed.

METALS

- The matrix spike and matrix spike duplicate recoveries for accuracy were less than 75% and greater than 30%. Therefore, the lead results for samples BOBMQ2, BOBMQ3, BOBMP8, BOBMP9, BOBMV6, and BOBMV7 were qualified as estimated (J/UJ).

- The analytical spike recovery for graphite furnace was outside acceptance criteria. Therefore, the selenium result for sample BOBMV6 was qualified as estimated (J).

- The calibration blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration. Therefore, the manganese results for samples BOBMP8 and BOBMP9 were qualified as non-detects (U).

- The preparation blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration. Therefore, the iron results for samples BOBMQ2, BOBMQ3, BOBMP8, BOBMP9, BOBMV7, and BOBMV7 were qualified as non-detect (U). The lead results for samples BOBMQ2, BOBMP9, and BOBMV6 were qualified as non-detect (U). The zinc results for samples BOBMQ2, BOBMQ3, BOBMP8, BOBMP9, BOBMV6, and BOBMV7 were qualified as non-detects (U).

MINOR DEFICIENCIES (cont.)

GENERAL CHEMISTRY

- The matrix spike and matrix spike duplicate recoveries for accuracy were less than 75% and greater than 30%. Therefore, the total organic halogen results for samples BOBMQ2, BOBMV6, and BOBMP8 were qualified as estimated (J/UJ).

- The holding time for pH was exceeded. Therefore, the pH results for samples BOBMQ2, BOBMV6, and BOBMP8 were qualified as estimated (J).

COMMENTS

- The pH of samples collected for cyanide analysis, B0BMQ2, B0BMV6, and B0BMP8, was less than 12. A pH less than 12 may lead to a low bias for cyanide analysis as cyanide may evolve from the samples as HCN, a gas.

RADIOCHEMISTRY

- The LCS recovery was less than 75% for uranium-235. Therefore, the result for this analyte for sample BOBMQ2 was qualified as estimated (UJ).

- The uranium-234 LCS recovery for the U-iso reanalysis of samples BOBMV6 and BOBMP8 was greater than 125%. Therefore, the uranium-234 results for both samples were qualified as estimated (J).

COMMENTS

- The case narrative was present, but incomplete. It lacked comments on Pu-iso, U-iso, gross alpha, gross beta, and the gamma analyses.

- All the analyses requested had results reported, but the laboratory did not report the acceptable reanalysis of U-iso of samples BOBMV6 and BOBMP8. In order to save time, the validator added the reanalysis results to the Form 1's, avoiding the "on hold' situation. The original results were qualified unusable (UR). The reanalysis results were acceptable.

- The MDA for Cs-137 (gamma analysis) (QAPjP) was 5 pCi/L. This was not met for any of the samples. The laboratory used the contract RDLs to evaluate their data. No qualifier was necessary.

- The MDA for Tc-99 (samples BOBMV6 and BOBMP8) was not reported correctly. The Form 1 was edited by the validator.

REFERENCES

EPA July 1992, *Test Methods for Evaluating Solid Waste (SW-846),* Third Edition; U.S. Environmental Protection Agency, Washington, D.C.

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

WHC 1993, *Data Validation Procedures for Radiochemical Analyses,* WHC-SD-EN-SPP-001, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

DOE 1992, *Remedial Investigation/Feasibility Study Work Plan for the 100-FR-3 Operable Unit,* DOE/RL-91-53, Rev 0, Department of Energy, Hanford Site, Richland, Washington.

DATA VALIDATION APPLIED QUALIFIERS

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows.

U- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a QC deficiency identified during data validation, the associated quantitation limit is an estimate.

J- Indicates the compound or analyte was analyzed for and detected. The associated concentration is an estimate, but the data are usable for decision making purposes.

BJ- Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R- Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency the data are unusable.

UR- Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data are unusable due to an identified QC deficiency.

JN- Indicates a tentatively identified compound (TIC) that has been determined to be valid in terms of identification and quantitation.

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.

NJ- Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific application (i.e., usable for decision making purposes).

N- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision making purposes).

LABORATORY APPLIED QUALIFIERS

Qualifiers which may be applied by the laboratory in compliance with applicable requirements are as follows.

Organic Data Qualifiers

U- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

J- Indicates an estimated value. This flag is used when estimating concentrations of tentatively identified compounds (TICs) or when the presence of a TCL compound is confirmed at a concentration of less than the CRQL but greater than the IDL.

N- Indicates presumptive evidence of a compound. This flag is used only by the laboratory for TIC results when the identification is based on a mass spectral library search.

P- This flag is used for pesticide/Aroclor target analytes when there is greater than 25% difference for detected values between the quantitation and confirmation GC columns. The lower of the two concentrations is reported on the report form and the result is flagged with a "P".

C- This flag applies to pesticide results where the identification has been confirmed by GC/MS. This flag should not be used by the laboratory if GC/MS confirmation was attempted but unsuccessful, in which case, the laboratory should use an "X" flag as defined below. The "X" flag is then defined in the SDG narrative.

B- This flag applies to results in which the analyte was detected in both the sample and the associated blank. The combination of the "B" flag with the "U" flag ("BU" or "UB") is expressly prohibited in the analytical SOW.

E- This flag identifies compounds whose concentrations exceed the calibrated range of the GC/MS instrument.

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

A- Indicates a TIC which is a suspected aldol-condensate product.

X- This is a non-specific flag used to properly define the results. If used, this flag must be properly defined within the body of the SDG.

LABORATORY APPLIED QUALIFIERS

Inorganic Qualifiers

U- Indicates the analyte was analyzed for but not detected in the sample.

B- Indicates the analyte concentration is less than the CRDL but greater than the IDL.

E- Indicates the value reported is estimated due to the presence of interference.

M- Indicates duplicate injection precision criteria were not met during graphite furnace (GFAA) analysis.

N- Indicates spiked sample recovery was not within the control limits.

S- Indicates the reported value was determined by the Method of Standard Additions (MSA).

W- Indicates post-digestion spike for GFAA analysis is outside control limits and the sample absorbance is less than 50% of the spike absorbance.

*- Indicates duplicate analysis was not within control limits.

+- Indicates the correlation coefficient (r) for the MSA was less than 0.995.

Data Qualification Summary

INORGANICS QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Lead	MINOR	J/UJ	MQ2,MQ3,MP8, MP9,MV6,MV7	ACCURACY	The MS/MSD spike recoveries for accuracy were less than 75% and greater than 30%.
Selenium	MINOR	J	MV6	ACCURACY	The analytical spike recovery for graphite furnace was outside the acceptance criteria.
Iron	MINOR	U	MQ2,MQ3,MP8, MP9,MV6,MV7	BLANKS	The preparation blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration.
Lead	MINOR	U	MQ2,MP9,MV6	BLANKS	The preparation blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration.
Manganese	MINOR	U	MP8,MP9	BLANKS	The calibration blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration.
Zinc	MINOR	U	MQ2,MQ3,MP8, MP9,MV6,MV7	BLANKS	The preparation blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration.

RADIOCHEMISTRY QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Uranium-234	**MAJOR**	**UR**	MV6,MP8	ACCURACY	The yield is less than 5%.
Uranium-235	**MAJOR**	**UR**	MV6,MP8	ACCURACY	The yield is less than 5%.
Uranium-238	**MAJOR**	**UR**	MV6,MP8	ACCURACY	The yield is less than 5%.
Uranium-234	MINOR	J	MV6,MP8	ACCURACY	The LCS recovery is greater than 125%.
Uranium-235	MINOR	UJ	MQ2	ACCURACY	The LCS recovery is less than 75%.

entered by: WJC
date: 9/11/94

40276QLS.XLT, Qualification Summary

checked by:
date: 9/13/94

VOLATILES QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Acetone	MINOR	U	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	BLANKS	The method blank had positive values with associated sample results less than 10x the blank result for common laboratory contaminants.
Chloroform	MINOR	10U	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	BLANKS	The method blank had positive values with associated sample results less than 5x the blank result. Where sample results were less than the CRQL, an upward adjustment was made.
Methylene Chloride	MINOR	U	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	BLANKS	The method blank had positive values with associated sample results less than 10x the blank result for common laboratory contaminants.
1,1,1-Trichloroethane	MINOR	UJ	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	OTHER	The %D between the initial and continuing calibration exceeded 25%.
Carbon Tetrachloride	MINOR	UJ	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	OTHER	The %D between the initial and continuing calibration exceeded 25%.

SEMIVOLATILES QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Hexachlorobenzene	MINOR	UJ	MP8,MQ2,MV6, BOCIG5	OTHER	The %D for the continuing calibration verification exceeded the upper control limit.

PESTICIDES/PCBS QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED	DQO	REASON
No data qualified	N/A	N/A	N\A	N\A	N\A

GENERAL CHEMISTRY QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Total Organic Halogens	MINOR	J/UJ	MQ2,MV6,MP8	ACCURACY	The MS/MSD spike recoveries for accuracy were less than 75% and greater than 30%.
pH	MINOR	J	MQ2,MV6,MP8	HOLD TIME	The holding time was exceeded.
Phosphate	**MAJOR**	**UR**	MQ2,MV6,MP8	HOLD TIME	The holding time was exceeded by greater two times.

entered by: WJC
date: 9/11/94

40276QLS.XLT, Qualification Summary

checked by: AM
date: 9/12/94

Data Summary Tables

961349G.0717

VOLATILE ORGANICS DATA SUMMARY TABLE

FILE #:VW402.76		HEIS #:	B0BMQ4		B0BMV6		B0BMV8	
		Date:	1-Jun-94		6-Jun-94		6-Jun-94	
Constituent		Matrix:	WATER		WATER		WATER	
	CAS #	Units	Results	Q	Results	Q	Results	Q
Chloromethane	74-87-3	µg/L	10	U	10	U	10	U
Bromomethane	74-83-9	µg/L	10	U	10	U	10	U
Vinyl Chloride	75-01-4	µg/L	10	U	10	U	10	U
Chloroethane	75-00-3	µg/L	10	U	10	U	10	U
Methylene Chloride	75-09-2	µg/L	24	U	23	U	24	U
Acetone	67-64-1	µg/L	20	U	10	U	24	U
Carbon Disulfide	75-15-0	µg/L	10	U	10	U	10	U
1,1-Dichloroethene	75-35-4	µg/L	10	U	1	J	10	J
1,1-Dichloroethane	75-34-3	µg/L	10	U	10	U	10	U
1,2-Dichloroethene (total)	540-59-0	µg/L	10	U	10	U	10	U
Chloroform	67-66-3	µg/L	10	U	10	U	10	U
1,2-Dichloroethane	107-06-2	µg/L	10	U	10	U	10	U
2-Butanone	78-93-3	µg/L	10	U	10	U	10	U
1,1,1-Trichloroethane	71-55-6	µg/L	10	UJ	10	UJ	10	UJ
Carbon Tetrachloride	56-23-5	µg/L	10	UJ	10	UJ	10	UJ
Bromodichloromethane	75-27-4	µg/L	10	U	10	U	10	U
1,2-Dichloropropane	78-87-5	µg/L	10	U	10	U	10	U
cis-1,3-Dichloropropene	061-01-5	µg/L	10	U	10	U	10	U
Trichloroethene	79-01-6	µg/L	10	U	6	J	10	U
Dibromochloromethane	124-48-1	µg/L	10	U	10	U	10	U
1,1,2-Trichloroethane	79-00-5	µg/L	10	U	10	U	10	U
Benzene	71-43-2	µg/L	10	U	2	J	10	U
trans-1,3-Dichloropropene	061-02-6	µg/L	10	U	10	U	10	U
Bromoform	75-25-2	µg/L	10	U	10	U	10	U
4-Methyl-2-pentanone	108-10-1	µg/L	10	U	10	U	10	U
2-Hexanone	591-78-6	µg/L	10	U	10	U	10	U
Tetrachloroethene	127-18-4	µg/L	10	U	10	U	10	U
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	10	U	10	U	10	U
Toluene	108-88-3	µg/L	10	U	2	J	10	U
Chlorobenzene	108-90-7	µg/L	10	U	2	J	10	U
Ethylbenzene	100-41-4	µg/L	10	U	10	U	10	U
Styrene	100-42-5	µg/L	10	U	10	U	10	U
Xylene (Total)	330-20-7	µg/L	10	U	10	U	10	U

entered by: [illegible] date: 9-22-94

shaded areas indicate changes by validator
40276TBL.XLS

checked by: [illegible] date: 9/26/94

9613496.0718

VOLATILE ORGANICS DATA SUMMARY TABLE

FILE #:VW402.76		HEIS #:	B0BMN8		B0BMN9		B0BMP8		B0BMQ0		B0BMQ2	
		Date:	6-Jun-94		6-Jun-94		3-Jun-94		3-Jun-94		1-Jun-94	
Constituent		Matrix:	WATER		WATER		WATER		WATER		WATER	
	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Chloromethane	74-87-3	µg/L	10	U	10	U	10	U	10	U	10	U
Bromomethane	74-83-9	µg/L	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride	75-01-4	µg/L	10	U	10	U	10	U	10	U	10	U
Chloroethane	75-00-3	µg/L	10	U	10	U	10	U	10	U	10	U
Methylene Chloride	75-09-2	µg/L	28	U	27	U	23	U	27	U	27	U
Acetone	67-64-1	µg/L	23	U	34	U	10	U	15	U	15	U
Carbon Disulfide	75-15-0	µg/L	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethene	75-35-4	µg/L	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethane	75-34-3	µg/L	10	U	10	U	10	U	10	U	10	U
1,2-Dichloroethene (total)	540-59-0	µg/L	10	U	10	U	10	U	10	U	10	U
Chloroform	67-66-3	µg/L	10	U	10	U	10	U	10	U	10	U
1,2-Dichloroethane	107-06-2	µg/L	10	U	10	U	10	U	10	U	10	U
2-Butanone	78-93-3	µg/L	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane	71-55-6	µg/L	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
Carbon Tetrachloride	56-23-5	µg/L	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
Bromodichloromethane	75-27-4	µg/L	10	U	10	U	10	U	10	U	10	U
1,2-Dichloropropane	78-87-5	µg/L	10	U	10	U	10	U	10	U	10	U
cis-1,3-Dichloropropene	061-01-5	µg/L	10	U	10	U	10	U	10	U	10	U
Trichloroethene	79-01-6	µg/L	10	U	10	U	10	U	10	U	2	J
Dibromochloromethane	124-48-1	µg/L	10	U	10	U	10	U	10	U	10	U
1,1,2-Trichloroethane	79-00-5	µg/L	10	U	10	U	10	U	10	U	10	U
Benzene	71-43-2	µg/L	10	U	10	U	10	U	10	U	10	U
trans-1,3-Dichloropropene	061-02-6	µg/L	10	U	10	U	10	U	10	U	10	U
Bromoform	75-25-2	µg/L	10	U	10	U	10	U	10	U	10	U
4-Methyl-2-pentanone	108-10-1	µg/L	10	U	10	U	10	U	10	U	10	U
2-Hexanone	591-78-6	µg/L	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene	127-18-4	µg/L	10	U	10	U	10	U	10	U	10	U
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	10	U	10	U	10	U	10	U	10	U
Toluene	108-88-3	µg/L	10	U	10	U	10	U	10	U	10	U
Chlorobenzene	108-90-7	µg/L	10	U	10	U	10	U	10	U	10	U
Ethylbenzene	100-41-4	µg/L	10	U	10	U	10	U	10	U	10	U
Styrene	100-42-5	µg/L	10	U	10	U	10	U	10	U	10	U
Xylene (Total)	330-20-7	µg/L	10	U	10	U	10	U	10	U	10	U

entered by: ~~ date: 9/26/94

shaded areas indicate changes by validator
40276TBL.XLS

checked by: JM date: 9/26/9

000617

9613496.0719

SEMIVOLATILE ORGANICS DATA SUMMARY TABLE

FILE #:VW402.76		HEIS #:	B0BMP8		B0BMQ2		B0BMV6		B0C1G5	
		Date:	3-Jun-94		1-Jun-94		6-Jun-94		2-Jun-94	
Constituent		Matrix:	WATER		WATER		WATER		WATER	
	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Phenol	108-95-2	µg/L	10	U	10	U	10	U	10	U
Bis (2-Chloroethyl) ether	111-44-4	µg/L	10	U	10	U	10	U	10	U
2-Chlorophenol	95-57-8	µg/L	10	U	10	U	10	U	10	U
1,3-Dichlorobenzene	541-73-1	µg/L	10	U	10	U	10	U	10	U
1,4-Dichlorobenzene	106-46-7	µg/L	10	U	10	U	10	U	10	U
1,2-Dichlorobenzene	95-50-1	µg/L	10	U	10	U	10	U	10	U
2-Methylphenol	95-48-7	µg/L	10	U	10	U	10	U	10	U
2,2'-oxybis (1-Chloropropane)	108-60-1	µg/L	10	U	10	U	10	U	10	U
4-Methylphenol	106-44-5	µg/L	10	U	10	U	10	U	10	U
N-Nitroso-Di-n-propylamine	621-64-7	µg/L	10	U	10	U	10	U	10	U
Hexachloroethane	97-72-1	µg/L	10	U	10	U	10	U	10	U
Nitrobenzene	98-95-3	µg/L	10	U	10	U	10	U	10	U
Isophorone	78-59-1	µg/L	10	U	10	U	10	U	10	U
2-Nitrophenol	88-75-5	µg/L	10	U	10	U	10	U	10	U
2,4-Dimethylphenol	105-67-9	µg/L	10	U	10	U	10	U	10	U
Bis (2-chloroethoxy) methane	111-91-1	µg/L	10	U	10	U	10	U	10	U
2,4-Dichlorophenol	120-83-2	µg/L	10	U	10	U	10	U	10	U
1,2,4-Trichlorobenzene	120-82-1	µg/L	10	U	10	U	10	U	10	U
Naphthalene	91-20-3	µg/L	10	U	10	U	10	U	10	U
4-Chloroaniline	106-47-8	µg/L	10	U	10	U	10	U	10	U
Hexachlorobutadiene	87-68-3	µg/L	10	U	10	U	10	U	10	U
4-Chloro-3-methylphenol	59-50-7	µg/L	10	U	10	U	10	U	10	U
2-Methylnaphthalene	91-57-6	µg/L	10	U	10	U	10	U	10	U
Hexachlorocyclopentadiene	77-47-4	µg/L	10	U	10	U	10	U	10	U
2,4,6-Trichlorophenol	88-06-2	µg/L	10	U	10	U	10	U	10	U
2,4,5-Trichlorophenol	95-95-4	µg/L	25	U	25	U	25	U	25	U
2-Chloronaphthalene	91-58-7	µg/L	10	U	10	U	10	U	10	U
2-Nitroaniline	88-74-4	µg/L	25	U	25	U	25	U	25	U
Dimethylphthalate	131-11-3	µg/L	10	U	10	U	10	U	10	U
Acenaphthylene	208-96-8	µg/L	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	606-20-2	µg/L	10	U	10	U	10	U	10	U
3-Nitroaniline	99-09-2	µg/L	25	U	25	U	25	U	25	U
Acenaphthene	83-32-9	µg/L	10	U	10	U	10	U	10	U
2,4-Dinitrophenol	51-28-5	µg/L	25	U	25	U	25	U	25	U
4-Nitrophenol	100-02-7	µg/L	25	U	25	U	25	U	25	U
Dibenzofuran	132-64-9	µg/L	10	U	10	U	10	U	10	U
2,4-Dinitrotoluene	121-14-2	µg/L	10	U	10	U	10	U	10	U
Diethylphthalate	84-66-2	µg/L	10	U	10	U	10	U	10	U
4-Chlorophenyl-phenylether	7005-72-3	µg/L	10	U	10	U	10	U	10	U
Fluorene	86-73-7	µg/L	10	U	10	U	10	U	10	U
4-Nitroaniline	100-01-6	µg/L	25	U	25	U	25	U	25	U
4,6-Dinitro-2-Methylphenol	534-52-1	µg/L	25	U	25	U	25	U	25	U
N-Nitrosodiphenylamine (1)	86-30-6	µg/L	10	U	10	U	10	U	10	U
4-Bromophyl-phenylether	101-55-3	µg/L	10	U	10	U	10	U	10	U
Hexachlorobenzene	118-74-1	µg/L	10	UJ	10	UJ	10	UJ	10	UJ
Pentachlorophenol	87-86-5	µg/L	25	U	25	U	25	U	25	U
Phenanthrene	85-01-8	µg/L	10	U	10	U	10	U	10	U

entered by: [illegible] date: 9/13/94

shaded areas show changes by validator
40276DST.XLS

checked by: [illegible] date: 9/13/

9613496.0720

SEMIVOLATILE ORGANICS DATA SUMMARY TABLE

FILE #:VW402.76		HEIS #:	B0BMP8		B0BMQ2		B0BMV6		B0C1G5	
		Date:	3-Jun-94		1-Jun-94		6-Jun-94		2-Jun-94	
Constituent		Matrix:	WATER		WATER		WATER		WATER	
	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Anthracene	120-12-7	µg/L	10	U	10	U	10	U	10	U
Carbazole	85-74-8	µg/L	10	U	10	U	10	U	10	U
Di-n-Butylphthalate	84-74-2	µg/L	10	U	10	U	10	U	10	U
Fluroanthene	206-44-0	µg/L	10	U	10	U	10	U	10	U
Pyrene	129-00-0	µg/L	10	U	10	U	10	U	10	U
Butylebenzylphthalate	85-68-7	µg/L	10	U	10	U	10	U	10	U
3,3'-Dichlorobenzidine	91-94-1	µg/L	10	U	10	U	10	U	10	U
Benzo (a) Anthracene	56-55-3	µg/L	10	U	10	U	10	U	10	U
Chrysene	218-01-9	µg/L	10	U	10	U	10	U	10	U
Bis (2-Ethylhexyl) Phthalate	117-81-7	µg/L	10	U	10	U	10	U	10	U
Di-n-Octyle Phthalate	117-81-7	µg/L	10	U	10	U	10	U	10	U
Benzo (b) Fluoranthene	205-99-2	µg/L	10	U	10	U	10	U	10	U
Benzo (k) Fluoranthene	207-08-9	µg/L	10	U	10	U	10	U	10	U
Benzo (a) Pyrene	50-32-8	µg/L	10	U	10	U	10	U	10	U
Indeno (1,2,3-cd) Pyrene	193-39-5	µg/L	10	U	10	U	10	U	10	U
Dibenze (a,h) Anthracene	53-70-3	µg/L	10	U	10	U	10	U	10	U
Benzo (g,h,i) Perylene	191-247-2	µg/L	10	U	10	U	10	U	10	U

entered by: AJ date: 9/13/94

shaded areas show changes by validator
40276DST.XLS

checked by: gm date: 9/13/9

9613496.0721

PESTICIDE/PCB ANALYSIS RESULTS TABLE

FILE #: 402.76		HEIS #:	BOBMP8		BOBMQ2		BOBMV6		BOC1G5	
		Date:	3-Jun-94		1-Jun-94		6-Jun-94		2-Jun-94	
Constituent		Matrix:	WATER		WATER		WATER		WATER	
	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
alpha-BHC	319-84-6	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
beta-BHC	319-85-7	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
delta-BHC	319-86-8	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
gamma-BHC (Lindane)	58-89-9	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
Heptachlor	76-44-8	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
Aldrin	309-00-2	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
Heptachlor Epoxide	1024-57-3	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
Endosulfan I	959-98-8	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
Dieldrin	60-57-1	µg/L	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDE	72-55-9	µg/L	0.10	U	0.10	U	0.10	U	0.10	U
Endrin	72-20-8	µg/L	0.10	U	0.10	U	0.10	U	0.10	U
Endosulfan II	33213-65-9	µg/L	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDD	72-54-8	µg/L	0.10	U	0.10	U	0.10	U	0.10	U
Endosulfan Sulfate	1031-07-8	µg/L	0.10	U	0.10	U	0.10	U	0.10	U
4,4'-DDT	50-29-3	µg/L	0.10	U	0.10	U	0.10	U	0.10	U
Methoxychlor	72-43-5	µg/L	0.50	U	0.50	U	0.50	U	0.50	U
Endrin Ketone	53494-70-5	µg/L	0.10	U	0.10	U	0.10	U	0.10	U
Endrin Aldehyde	7421-93-4	µg/L	0.10	U	0.10	U	0.10	U	0.10	U
alpha-Chlordane	5103-71-9	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
gamma-Chlordane	5103-74-2	µg/L	0.050	U	0.050	U	0.050	U	0.050	U
Toxaphene	8001-35-2	µg/L	5.0	U	5.0	U	5.0	U	5.0	U
Aroclor-1016	12674-11-2	µg/L	1.0	U	1.0	U	1.0	U	1.0	U
Aroclor-1221	11104-28-2	µg/L	2.0	U	2.0	U	2.0	U	2.0	U
Aroclor-1232	11141-16-5	µg/L	1.0	U	1.0	U	1.0	U	1.0	U
Aroclor-1242	53469-21-9	µg/L	1.0	U	1.0	U	1.0	U	1.0	U
Aroclor-1248	12672-29-6	µg/L	1.0	U	1.0	U	1.0	U	1.0	U
Aroclor-1254	11097-69-1	µg/L	1.0	U	1.0	U	1.0	U	1.0	U
Aroclor-1260	11096-82-5	µg/L	1.0	U	1.0	U	1.0	U	1.0	U

shaded areas indicate a change by the validator

entered by: JM date: 9/13/94 ITC096.XLS checked by: JF date: 9/15/94

9613496.0722

METALS/CYANIDE DATA SUMMARY TABLE

FILE#:VW402.76		HEIS #:	B0BMQ2		B0BMQ3		B0BMP8		B0BMP9		B0BMV6		B0BMV7	
		Date:	1-Jun-94		1-Jun-94		3-Jun-94		3-Jun-94		6-Jun-94		6-Jun-94	
Constituent		Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	429-90-5	ug/L	40.0	U	40.0	U	77.0	B	46.5	B	77.7	B	42.7	B
Antimony	440-36-0	ug/L	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Arsenic	440-38-2	ug/L	2.0	U	2.0	U	2.0	U	2.0	U	4.5	B	4.6	B
Barium	440-39-3	ug/L	49.9	B	51.0	B	33.6	B	31.4	B	25.2	B	24.1	B
Beryllium	440-41-7	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Cadmium	440-43-9	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Calcium	440-70-2	ug/L	92600		96800		47600		45500		55600		51200	
Chromium	440-47-3	ug/L	19.3		22.8		10.0	U	10.0	U	10.6		10.2	
Cobalt	440-48-4	ug/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
Copper	440-50-8	ug/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
Iron	439-89-6	ug/L	17.3	[illegible]	24.4	[illegible]	45.8	[illegible]	26.6	[illegible]	30.6	[illegible]	69.9	[illegible]
Lead	439-92-1	ug/L	5.4	[illegible]	2.0	[illegible]	2.0	[illegible]	2.1	[illegible]	3.6	[illegible]	13.7	[illegible]
Magnesium	439-95-4	ug/L	21600		22600		8790		8400		16800		15400	
Manganese	439-96-5	ug/L	2.0	U	2.0	U	2.6	[illegible]	2.2	[illegible]	2.0	U	2.0	U
Mercury	439-97-6	ug/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Nickel	440-02-0	ug/L	20.0	U	20.0	U	20.0	B	20.0	U	20.0	U	20.0	U
Potassium	440-09-7	ug/L	5490		6510		3410	U	3070	B	5540		5740	
Selenium	782-49-2	ug/L	2.7	B	2	U	2.0	U	2.0	U	2.4	[illegible]	2.0	U
Silver	440-22-4	ug/L	5.0	U	5.0	U	5.0		5.0	U	5.0	U	5.0	U
Sodium	440-23-5	ug/L	26300		27400		5020	U	4790	B	51100		46500	
Thallium	440-28-0	ug/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Vanadium	440-62-2	ug/L	10.0	U	10.0	U	10.0	U	10.0	U	12.0	B	13.4	B
Zinc	440-66-6	ug/L	20.5	[illegible]	17.7	[illegible]	33.2	[illegible]	23.2	[illegible]	21.6	[illegible]	16.7	[illegible]
Cyanide	955-70-0	ug/L	10.0	U			10	U			10.0	U		

entered by: JM date: 9/26/94

shaded areas indicate changes by validator
40276TBL.XLS

checked by: [illegible] date: 9-26-94

9613496.0723

GENERAL CHEMISTRY DATA SUMMARY TABLE

FILE #: VW 402.76		HEIS #:	B0BMQ2		B0BMV6		B0BMP8		B0C1G5	
		Date:	1-Jun-94		6-Jun-94		3-Jun-94		2-Jun-94	
Constituent		Matrix:	WATER		WATER		WATER		WATER	
	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Alkalinity	ALKALINITY	mg/L	196		202		106			
Chloride by IC	anions	mg/L	29		16.5		4.7			
Fluoride by IC	anions	mg/L	0.4	U	0.4	U	0.4	U		
Phosphate by IC	14265-44-2	mg/L	1.0	UR	1.0	UR	1.0	UR		
Sulfate by IC	anions	mg/L	96		81		66			
Sulfide	18496-25-8	mg/L	4		0.2	U	1.0		4	
Nitrite Nitrate	NO2+NO3-N	mg/L	18.2		13.5		2.73			
Total Organic Carbon (TOC)	TOC	mg/L	2.19		2		1			
pH	207	PH UNITS	7.74	J	7.63	J	7.22	J		
Ammonia	7664-41-7	mg/L	0.1	U	0.2		0.1			
Chemical Oxygen Demand	COD	mg/L	10		10		10			
Specific Conductance	191	umhos/cm	818		658		373			
Total Dissolved Solids	TDS	mg/L	474		466		286		258	
Total Organic Halogens	TOC	ug/L	20	UJ	21	J	20	UJ		

entered by: [illegible] 9/13/94 date:

shaded area means a change by the validator
40276DST.XLS

checked by: jm date: 9/13/

9613496.0724

RADIOCHEMISTRY ANALYSIS RESULTS TABLE

FILE #:VW402.76		HEIS #:	B0BMQ2			B0BMV6			B0BMP8		
		Date:	1-Jun-94			6-Jun-94			3-Jun-94		
Constituent		Matrix:	WATER			WATER			WATER		
	CAS #	Units	Results	Q	MDA	Results	Q	MDA	Results	Q	MDA
Gross Alpha	ALPHA	pCi/L	8.07E+00		2.12E+00	4.47E+00		1.54E+00	9.20E-01	U	1.16E+00
Gross Beta	BETA	pCi/L	9.01E+00		2.98E+00	1.08E+00	U	2.99E+00	2.25E+01		2.78E+00
Strontium-90	0098-97-2	pCi/L	4.03E-02	U	8.00E-01	6.40E-01	U	7.77E-01	1.84E+02		9.05E-01
Uranium 234	U-233/234	pCi/L	3.82E+00		2.94E-01	-2.92E+00	UR	4.87E+01	7.69E-01	UR	6.03E+00
Uranium 235	5117-96-1	pCi/L	1.04E-01	UJ	2.94E-01	-7.30E-01	UR	3.67E+01	-9.04E-02	UR	4.55E+00
Uranium 238	U-238	pCi/L	3.14E+00		3.93E-01	-4.38E+00	UR	5.41E+01	-5.42E-01	UR	6.70E+00
Plutonium-238	3981-16-3	pCi/L	-2.26E-02	U	3.20E-01	7.33E-02	U	1.99E-01	-2.98E-02	U	4.21E-01
Plutonium-239/40	U-239/240	pCi/L	1.02E-01	U	2.70E-01	-1.47E-02	U	3.51E-01	-1.49E-02	U	3.56E-01
Americium-241	4596-10-2	pCi/L	4.37E-02		2.38E-01	1.13E-01	U	3.21E-01	1.00E-01	U	1.36E-01
Technetium-99	4133-76-7	pCi/L	5.31E-01	U	2.11E+00	2.21E+00		2.11E+00	2.96E+00		2.09E+00
Tritium	0028-17-8	pCi/L	1.05E+04		2.53E+02	6.02E+02		2.53E+02	7.26E+02		2.53E+02
Carbon-14	4762-75-5	pCi/L	8.45E+00		3.54E+00	4.51E-01	U	3.54E+00	1.89E+00	U	3.54E+00
ADDITIONAL RUN											
Uranium 234	U-233/234	pCi/L				3.21E+00	J	2.36E-01	4.85E-01	J	3.08E-01
Uranium 235	5117-96-1	pCi/L				7.366E-02	U	2.09E-01	1.64E-01		2.17E-01
Uranium 238	U-238	pCi/L				2.73E+00	U	2.78E-01	6.03E-01		1.99E-01
GAMMA SCAN											
Iron-59	4596-12-4	pCi/L	5.16E+00	U	2.75E+01	-5.92E+00	U	2.33E+01	-6.40E+00	U	2.76E+01
Cobalt-58	3981-38-9	pCi/L	3.64E+00	U	1.23E+01	-2.23E+00	U	1.07E+01	-2.52E+00	U	8.31E+00
Cobalt-60	0198-40-0	pCi/L	-3.53E+00	U	9.94E+00	4.84E+00	U	9.60E+00	-1.85E+00	U	1.02E+01
Cesium-137	0045-97-3	pCi/L	1.07E+00	U	6.77E+00	-3.44E+00	U	6.56E+00	1.09E+00	U	7.92E+00
Europium-152	4683-23-9	pCi/L	1.30E+01	U	2.08E+01	-1.36E+01	U	1.49E+01	-1.03E+01	U	1.59E+01
Europium-154	5585-10-1	pCi/L	2.09E+00	U	2.70E+01	5.18E+00	U	2.46E+01	-6.73E+00	U	2.25E+01
Europium-155	4391-16-3	pCi/L	1.70E+00	U	1.67E+01	-4.46E+00	U	1.44E+01	-2.96E+00	U	1.16E+01

entered by: [illegible] date: 9/13/94

shaded areas show changes by validator

40276DST.XLS

checked by: [illegible] date: 9/13/94

Sample Results (Form I's)

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0462

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0462

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	28	~~B~~ U
67-64-1	Acetone	23	~~B~~ 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 ~~A~~	~~B~~ 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~~ UJ
56-23-5	Carbon Tetrachloride	10	~~U~~ UJ
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.

BOBMN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0462

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0462

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

8-31-94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMN9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0463

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0463

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	27	~~B~~ U
67-64-1	Acetone	34	~~B~~ 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 ~~4~~	~~B~~ 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~~ U
56-23-5	Carbon Tetrachloride	10	~~U~~ 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

8/3/94

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBMN9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0463

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0463

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (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/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKANE	4.70	8	J

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0445

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0445

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	23	~~B~~ U
67-64-1	Acetone	10	~~B~~ 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 ~~3~~	~~B~~ 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~~ U
56-23-5	Carbon Tetrachloride	10	~~U~~ 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.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0445

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0445

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0464

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0464

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	27	~~B~~ U
67-64-1	Acetone	15	~~B~~ 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 ~~4~~	~~BJ~~ 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~~ UJ
56-23-5	Carbon Tetrachloride	10	~~U~~ UJ
75-27-4	Bromodichloromethane	10	~~U~~ ~~UJ~~ 8-31-94 (WJC)
78-87-5	1,2-Dichloropropane	10	U 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.
BOBMQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0464

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0464

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0308

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0308

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. ____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	27	~~B~~ U
67-64-1	Acetone	15	~~B~~ 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 ~~4~~	~~BJ~~ 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~~ UJ
56-23-5	Carbon Tetrachloride	10	~~U~~ UJ
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	2	J
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

8/3/94 Date

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0308

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0308

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. ____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMQ4

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0321

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0321

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. ____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	24	~~B~~ U
67-64-1	Acetone	20	~~B~~ 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 ~~4~~	~~B~~ 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~~ UJ
56-23-5	Carbon Tetrachloride	10	~~U~~ UJ
75-27-4	Bromodichloromethane	10	~~U~~ UJ
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

8-31-94 (WSC)

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBMQ4

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0321

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0321

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: not dec. _____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0433

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0433

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	23	~~B~~ U
67-64-1	Acetone	10 ~~8~~	~~BJ~~ U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	1	J
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10 ~~4~~	~~BJ~~ 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~~ UJ
56-23-5	Carbon Tetrachloride	10	~~U~~ UJ
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	6	J
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	2	J
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	2	J
108-90-7	Chlorobenzene	2	J
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.

BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0433

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0433

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

8/3/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMV8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0461

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0461

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	24	~~B~~ U
67-64-1	Acetone	24	~~B~~ 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 ~~1~~	~~B~~ 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~~ UJ
56-23-5	Carbon Tetrachloride	10	~~U~~ UJ
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.

BOBMV8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0461

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0461

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP_BLANK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0465

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0465

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	27	~~B~~ U
67-64-1	Acetone	27	~~B~~ 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 ~~8~~	~~BJ~~ 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~~ UJ
56-23-5	Carbon Tetrachloride	10	~~U~~ UJ
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

8/3/94

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TRIP_BLANK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0465

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: AB0465

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: not dec. ____ Date Analyzed: 06/16/94

GC Column: DB624 ID: 0.530 (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/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKANE	4.70	8	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0446

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616009

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0(ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

8-31-94

000043

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0446

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616009

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	UJ
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: SDG No.:W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0446

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616009

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: decanted: (Y/N) Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0(ul) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 4

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	110-82-7	CYCLOHEXANE	2.57	170	JNB
2.		UNKNOWN	5.12	3	J
3.		(E)-3-CHLORO-2-METHYL-2-PEN	8.22	40	JNB
4.	314-40-9	BROMACIL	19.67	8	JN

8-31-94
FWDC

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0309

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616003

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

8-31-94 (NJC)

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0309

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616003

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0(ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U UJ
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: SDG No.:W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0309

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616003

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: decanted: (Y/N) Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0(ul) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	110-82-7	CYCLOHEXANE	2.58	170	JNB
2.	110-83-8	CYCLOHEXENE	2.88	46	JNB
3.		UNKNOWN	5.22	5	J
4.		UNKNOWN	5.47	4	J
5.	930-68-7	2-CYCLOHEXEN-1-ONE	8.23	44	JN
6.	314-40-9	BROMACIL	19.65	3	JN

8-31-94

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0434

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616008

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

8-31-94

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0434

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616008

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 633 SAS No.: _____ SDG No.:W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0434

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616008

Level: (low/med) LOW Date Received: 06/09/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/10/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	110-82-7	CYCLOHEXANE	2.57	160	JNB
2.		UNKNOWN	2.87	2	JB
3.		UNKNOWN	5.12	2	J
4.		(E)-3-CHLORO-2-METHYL-2-PEN	8.22	40	JNB

8/31/94 WTO

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOC1G5

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0322

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616006

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

8-31-94

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOC1G5

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0322

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616006

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U UJ
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOC1G5

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.:W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0322

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B0616006

Level: (low/med) LOW Date Received: 06/07/94

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 06/08/94

Concentrated Extract Volume: 1000 (ul) Date Analyzed: 06/16/94

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

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

Number TICs found: 40

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 110-82-7	CYCLOHEXANE	2.57	200	JNB
2. 110-83-8	CYCLOHEXENE	2.87	43	JNB
3.	UNKNOWN	6.02	2	J
4.	UNKNOWN	8.22	50	JB

6-31-94

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: W0082 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0446

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

% Moisture: _____ decanted: (Y/N) ___ Date Received: 06/09/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 06/10/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/24/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: W0082 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0309

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

% Moisture: _____ decanted: (Y/N) ___ Date Received: 06/07/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 06/08/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/13/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

9-10 9/4 (w/JC)

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BOBMV6

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: W0082 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0434

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

% Moisture: _____ decanted: (Y/N) ___ Date Received: 06/09/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 06/10/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/24/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

9-10-94 (WJC)

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOC1G5

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: _____ Case No.: W0082 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0322

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

% Moisture: _____ decanted: (Y/N) ___ Date Received: 06/07/94

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 06/08/94

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 06/13/94

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

9-16-94 WJC

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/08/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6294	2	U
BOBMQ2	AB0312	196	+

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

6-21-94

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/17/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6333	2	U
BOBMV6	AB0437	202	+
BOBMP8	AB0449	106	+

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

AMMONIA ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/17/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6334	0.1	U
BOBMQ2	AB0315	0.1	U

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

AMMONIA ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6350	0.1	U
BOBMV6	AB0440	0.2	+
BOBMP8	AB0452	0.1	+

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

CHEMICAL OXYGEN DEMAND ANALYSIS

Laboratory Name:	ITAS-St. Louis	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/16/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
BOBMQ2	5329-016	10	+

+ - Positive result.

CHEMICAL OXYGEN DEMAND ANALYSIS

Laboratory Name:	ITAS-St. Louis	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/16/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
BOBMV6	5329-014	10	+
BOBMP8	5329-015	10	+

+ - Positive result.

9.9.94

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6352	0.02	U
BOBMQ2	AB0311	18.2	+

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

9-8-94

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6352	0.02	U
BOBMV6	AB0436	13.5	+
BOBMP8	AB0448	2.73	+

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

9-9-94

pH ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	standard units	Analysis Date:	06/08/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	*	-	-
BOBMQ2	AB0310	7.74	- J

* - A method blank is not applicable for this analysis.

6-8-94

pH ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	standard units	Analysis Date:	06/10/94

Client Sample ID	Lab Sample ID	Result	Qualifiers	
Method Blank	*	-	-	
BOBMV6	AB0435	7.63	-	J
BOBMP8	AB0447	7.22	-	J

* - A method blank is not applicable for this analysis.

SPECIFIC CONDUCTIVITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	umhos/cm	Analysis Date:	06/10/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6308	1	U
BOBMQ2	AB0310	818	+

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

mw 4-4-94

SPECIFIC CONDUCTIVITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	umhos/cm	Analysis Date:	06/10/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6308	1	U
BOBMV6	AB0435	658	+
BOBMP8	AB0447	373	+

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

SULFIDE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/08/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6295	1	U
BOBMQ2	AB0314	4	+
BOC1G5	AB0324	4	+

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

SULFIDE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/13/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6306	0.2	U
BOBMV6	AB0439	0.2	U
BOBMP8	AB0451	1.0	+

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

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/08/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6296	1	U
BOBMQ2	AB0313	474	+
BOC1G5	AB0323	258	+

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

6-8-94

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/10/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6312	1	U
BOBMV6	AB0438	466	+
BOBMP8	AB0450	286	+

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

9-8-94

TOTAL ORGANIC CARBON ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/14/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6328	1	U
BOBMQ2	AB0318	2.19	+

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

9-8-94

TOTAL ORGANIC CARBON ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	06/28/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6355	1	U
BOBMV6	AB0443	2	+
BOBMP8	AB0455	1	+

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

TOTAL ORGANIC HALOGENS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	µg/l	Analysis Date:	06/29/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6358	20	U
B0B8Q2	AB0319	20	~~U~~ UJ

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

MW
9-8-94

TOTAL ORGANIC HALOGENS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	µg/l	Analysis Date:	06/30/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6359	20	U
BOBMV6	AB0444	21	~~+~~ J
BOBMP8	AB0456	20	~~U~~ UJ

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

6-8-94

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Client Sample ID:	BOBMQ2	Preparation Date:	06/27/94
Lab Sample ID:	AB0310	Analysis Date:	06/27/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	29	+	8.0
phosphate	1.0	~~U~~ UR	1.0
sulfate	96	+	15

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

9-8-94

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Client Sample ID:	BOBMV6	Preparation Date:	06/27/94
Lab Sample ID:	AB0435	Analysis Date:	06/27/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	16.5	+	4.0
phosphate	1.0	~~U~~ UR	1.0
sulfate	81	+	15

mm 6-8-94

+ - 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:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	633
Client Sample ID:	BOBMP8	Preparation Date:	06/27/94
Lab Sample ID:	AB0447	Analysis Date:	06/27/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	4.7	+	0.4
phosphate	1.0	~~U~~ UR	1.0
sulfate	66	+	7.5

MW
9-8-94

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

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0082
LAB SAMPLE ID:	40607201	MATRIX:	WATER
CLIENT ID:	B0BMQ2	DATE RECEIVED:	6/6/94

	ISOTOPE		RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
	AM-241		4.37E-02	1.05E-01	1.05E-01	2.38E-01	pCi/L	74.20%	RD3302
	PU-238	U	-2.26E-02	3.20E-02	3.22E-02	3.20E-01	pCi/L	73.80%	RD3209
	PU239/40	U	1.02E-01	1.61E-01	1.62E-01	2.70E-01	pCi/L	73.80%	RD3209
	U-234		3.82E+00	9.51E-01	1.08E+00	2.94E-01	pCi/L	70.60%	RD3234
UJ	U-235		1.04E-01	1.68E-01	1.68E-01	2.94E-01	pCi/L	70.60%	RD3234
	U-238DA		3.14E+00	8.67E-01	9.64E-01	3.93E-01	pCi/L	70.60%	RD3234
	CO-58	U	3.64E+00	6.15E+00	6.16E+00	1.23E+01	pCi/L	N/A	RD3219
	CO-60	U	-3.53E+00	6.10E+00	6.11E+00	9.94E+00	pCi/L	N/A	RD3219
	CS-137DA	U	1.07E+00	3.42E+00	3.42E+00	6.77E+00	pCi/L	N/A	RD3219
	EU-152	U	1.30E+01	1.06E+01	1.07E+01	2.08E+01	pCi/L	N/A	RD3219
	EU-154	U	2.09E+00	1.43E+01	1.43E+01	2.70E+01	pCi/L	N/A	RD3219
	EU-155	U	1.70E+00	9.31E+00	9.31E+00	1.67E+01	pCi/L	N/A	RD3219
	FE-59	U	5.16E+00	1.34E+01	1.34E+01	2.75E+01	pCi/L	N/A	RD3219
	ALPHA		8.07E+00	2.42E+00	2.51E+00	2.12E+00	pCi/L	100.00%	RD3214
	BETA		9.01E+00	1.98E+00	2.08E+00	2.98E+00	pCi/L	100.00%	RD3214
	STRONTIUM	U	4.03E-02	2.35E-01	2.35E-01	8.00E-01	pCi/L	88.80%	RD3204
	C-14		8.45E+00	1.64E+00	3.38E+00	3.54E+00	pCi/L	100.00%	RD3263
	TC-99	U	5.31E-01	9.20E-01	4.05E+00	2.11E+00	pCi/L	95.10%	ITAS-IT-RS-0001
	TRITIUM		1.05E+04	2.93E+02	9.27E+02	2.53E+02	pCi/L	97.70%	RD3205

Number of Results: 19

8-26-94

9613496.0784

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0082
LAB SAMPLE ID:	40613701	MATRIX:	WATER
CLIENT ID:	B0BMV6	DATE RECEIVED:	6/8/94

	ISOTOPE		RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
	AM-241	U	1.13E-01	1.83E-01	1.84E-01	3.21E-01	pCi/L	63.40%	RD3302
	PU-238	U	7.33E-02	1.47E-01	1.47E-01	1.99E-01	pCi/L	56.90%	RD3209
	PU239/40	U	-1.47E-02	2.93E-02	2.94E-02	3.51E-01	pCi/L	56.90%	RD3209
UR	U-234	U	-2.92E+00	2.92E+00	6.59E+00	4.87E+01	pCi/L	0.50%	RD3234
UR	U-235	U	-7.30E-01	1.46E+00	2.08E+00	3.67E+01	pCi/L	0.50%	RD3234
UR	U-238DA	U	-4.38E+00	3.58E+00	9.55E+00	5.41E+01	pCi/L	0.50%	RD3234
	CO-58	U	-2.23E+00	6.14E+00	6.14E+00	1.07E+01	pCi/L	N/A	RD3219
	CO-60	U	4.84E+00	3.42E+00	3.46E+00	9.60E+00	pCi/L	N/A	RD3219
	CS-137DA	U	-3.44E+00	4.45E+00	4.46E+00	6.56E+00	pCi/L	N/A	RD3219
	EU-152	U	-1.36E+01	1.04E+01	1.05E+01	1.49E+01	pCi/L	N/A	RD3219
	EU-154	U	5.18E+00	1.08E+01	1.08E+01	2.46E+01	pCi/L	N/A	RD3219
	EU-155	U	-4.46E+00	8.53E+00	8.55E+00	1.44E+01	pCi/L	N/A	RD3219
	FE-59	U	-5.92E+00	1.41E+01	1.42E+01	2.33E+01	pCi/L	N/A	RD3219
	ALPHA		4.47E+00	1.77E+00	1.82E+00	1.54E+00	pCi/L	100.00%	RD3214
	BETA	U	1.08E+00	1.43E+00	1.43E+00	2.99E+00	pCi/L	100.00%	RD3214
	STRONTIUM	U	6.40E-01	2.88E-01	3.31E-01	7.77E-01	pCi/L	93.20%	RD3204
	C-14	U	4.51E-01	1.52E+00	3.16E+00	3.54E+00	pCi/L	100.00%	RD3263
	TC-99		2.21E+00	9.43E-01	4.10E+00	2.53E+02	pCi/L	95.10%	ITAS-IT-RS-0001
	TRITIUM		6.02E+02	1.26E+02	2.49E+02	2.53E+02	pCi/L	97.70%	RD3205

Tc99 MDA = 2.11

Number of Results: 19

J	U234	3.206E00	.7346	.832	.236	pCi/L	99.6%	RD3234
	U235 U	7.366E-02	.1189	.1193	.209			
	U238 U	2.732E00	.6802	.7574	.278			

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682A-6-93

9613496.0785

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG:**	W0082
LAB SAMPLE ID:	40613702	**MATRIX:**	WATER
CLIENT ID:	B0BMP8	**DATE RECEIVED:**	6/8/94

	ISOTOPE		RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
	AM-241	U	1.00E-01	1.42E-01	1.43E-01	1.36E-01	pCi/L	76.60%	RD3302
	PU-238	U	-2.98E-02	4.22E-02	4.24E-02	4.21E-01	pCi/L	56.00%	RD3209
	PU239/40	U	-1.49E-02	2.98E-02	2.99E-02	3.56E-01	pCi/L	56.00%	RD3209
UR	U-234	U	7.69E-01	2.29E+00	2.32E+00	6.03E+00	pCi/L	3.70%	RD3234
UR	U-235	U	-9.04E-02	1.81E-01	1.86E-01	4.55E+00	pCi/L	3.70%	RD3234
UR	U-238DA	U	-5.42E-01	4.43E-01	5.17E-01	6.70E+00	pCi/L	3.70%	RD3234
	CO-58	U	-2.52E+00	4.92E+00	4.92E+00	8.31E+00	pCi/L	N/A	RD3219
	CO-60	U	-1.85E+00	5.81E+00	5.81E+00	1.02E+01	pCi/L	N/A	RD3219
	CS-137DA	U	1.09E+00	4.07E+00	4.07E+00	7.92E+00	pCi/L	N/A	RD3219
	EU-152	U	-1.03E+01	1.04E+01	1.05E+01	1.59E+01	pCi/L	N/A	RD3219
	EU-154	U	-6.73E+00	1.29E+01	1.29E+01	2.25E+01	pCi/L	N/A	RD3219
	EU-155	U	-2.96E+00	7.20E+00	7.21E+00	1.16E+01	pCi/L	N/A	RD3219
	FE-59	U	-6.40E+00	1.57E+01	1.57E+01	2.76E+01	pCi/L	N/A	RD3219
	ALPHA	U	9.20E-01	7.21E-01	7.31E-01	1.16E+00	pCi/L	100.00%	RD3214
	BETA		2.25E+01	2.59E+00	3.04E+00	2.78E+00	pCi/L	100.00%	RD3214
	STRONTIUM		1.84E+02	3.23E+00	4.52E+01	9.05E-01	pCi/L	83.30%	RD3204
	C-14	U	1.89E+00	1.54E+00	3.19E+00	3.54E+00	pCi/L	100.00%	RD3263
	TC-99		2.96E+00	9.72E-01	4.16E+00	2.53E+02	pCi/L	95.10%	ITAS-IT-RS-0001
	TRITIUM		7.26E+02	1.29E+02	2.55E+02	2.09E+00	pCi/L	97.70%	RD3205

Tc99 MDA = 2.09
H3 253 MDA

Number of Results: 19

JU234	.4845	.3028	.3086	.308	pCi/L	95.6%	RD3234
U235	.1638	.1747	.1758	.217	1	1	0009
U238	.6030	.3264	.3344	.199			

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MW 8-27-94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO621 SAS No.: SDG No.: W0082
Matrix (soil/water): WATER Lab Sample ID: AB0316
Level (low/med): LOW Date Received: 06/07/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	40.0	U		P	
7440-36-0	Antimony	50.0	U		P	
7440-38-2	Arsenic	2.0	U		F	
7440-39-3	Barium	49.9	B		P	
7440-41-7	Beryllium	1.0	U		P	
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	92600			P	
7440-47-3	Chromium	19.3			P	
7440-48-4	Cobalt	10.0	U		P	
7440-50-8	Copper	10.0	U		P	
7439-89-6	Iron	17.3	B		P	U per 9-6-94
7439-92-1	Lead	5.4		N	F	U per UJ
7439-95-4	Magnesium	21600			P	
7439-96-5	Manganese	2.0	U		P	
7439-97-6	Mercury	0.20	U		CV	
7440-02-0	Nickel	20.0	U		P	
7440-09-7	Potassium	5490			P	
7782-49-2	Selenium	2.7	B		F	
7440-22-4	Silver	5.0	U		P	
7440-23-5	Sodium	26300			P	
7440-28-0	Thallium	2.0	U		F	
7440-62-2	Vanadium	10.0	U		P	
7440-66-6	Zinc	20.5			P	U
5955-70-0	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

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D 7/5/94

MW 8-25-94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMQ2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO621 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0317

Level (low/med): LOW__ Date Received: 06/07/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

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
5955-70-0	Cyanide__	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY._____

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MW 8-29-94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMQ3

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO621 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0320

Level (low/med): LOW__ Date Received: 06/07/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	40.0	U		P	
7440-36-0	Antimony	50.0	U		P	
7440-38-2	Arsenic	2.0	U		F	
7440-39-3	Barium	51.0	B		P	
7440-41-7	Beryllium	1.0	U		P	
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	96800			P	
7440-47-3	Chromium	22.8			P	
7440-48-4	Cobalt	10.0	U		P	
7440-50-8	Copper	10.0	U		P	
7439-89-6	Iron	24.4	~~B~~		P	U
7439-92-1	Lead	2.0	~~U~~	N	F	UJ
7439-95-4	Magnesium	22600			P	
7439-96-5	Manganese	2.0	U		P	
7439-97-6	Mercury	0.20	U		CV	
7440-02-0	Nickel	20.0	U		P	
7440-09-7	Potassium	6510			P	
7782-49-2	Selenium	2.0	U		F	
7440-22-4	Silver	5.0	U		P	
7440-23-5	Sodium	27400			P	
7440-28-0	Thallium	2.0	U		F	
7440-62-2	Vanadium	10.0	U		P	
7440-66-6	Zinc	17.7	~~B~~		P	U
5955-70-0	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

DISSOLVED.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO633 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0453

Level (low/med): LOW__ Date Received: 06/09/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	77.0	B		P	
7440-36-0	Antimony	50.0	U		P	
7440-38-2	Arsenic	2.0	U		F	
7440-39-3	Barium	33.6	B		P	
7440-41-7	Beryllium	1.0	U		P	
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	47600			P	
7440-47-3	Chromium	10.0	U		P	
7440-48-4	Cobalt	10.0	U		P	
7440-50-8	Copper	10.0	U		P	
7439-89-6	Iron	45.8	~~B~~		P	U
7439-92-1	Lead	2.0	~~U~~	N	F	UJ
7439-95-4	Magnesium	8790			P	
7439-96-5	Manganese	2.6	~~B~~		P	U
7439-97-6	Mercury	0.20	U		CV	
7440-02-0	Nickel	20.0	U		P	
7440-09-7	Potassium	3410	B		P	
7782-49-2	Selenium	2.0	U		F	
7440-22-4	Silver	5.0	U		P	
7440-23-5	Sodium	5020			P	
7440-28-0	Thallium	2.0	U		F	
7440-62-2	Vanadium	10.0	U		P	
7440-66-6	Zinc	33.2			P	U
5955-70-0	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMP8

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO633 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0454

Level (low/med): LOW__ Date Received: 06/09/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

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
5955-70-0	Cyanide__	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY._____

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8-29-94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMP9

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE _____

Lab Code: ITSTU_ Case No.: WO633 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0458

Level (low/med): LOW__ Date Received: 06/09/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	46.5	B		P	
7440-36-0	Antimony	50.0	U		P	
7440-38-2	Arsenic	2.0	U		F	
7440-39-3	Barium	31.4	B		P	
7440-41-7	Beryllium	1.0	U		P	
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	45500			P	
7440-47-3	Chromium	10.0	U		P	
7440-48-4	Cobalt	10.0	U		P	
7440-50-8	Copper	10.0	U		P	
7439-89-6	Iron	26.6	B		P	U
7439-92-1	Lead	2.1	B	N	F	~~J~~ ~~UJ~~ ~~UJ~~ UJ
7439-95-4	Magnesium	8400			P	
7439-96-5	Manganese	2.2	B		P	U
7439-97-6	Mercury	0.20	U		CV	
7440-02-0	Nickel	20.0	U		P	
7440-09-7	Potassium	3070	B		P	
7782-49-2	Selenium	2.0	U		F	
7440-22-4	Silver	5.0	U		P	
7440-23-5	Sodium	4790	B		P	
7440-28-0	Thallium	2.0	U		F	
7440-62-2	Vanadium	10.0	U		P	
7440-66-6	Zinc	23.2			P	U
5955-70-0	Cyanide				NR	

pmw 8-30-94

pmw 8-23-94

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

DISSOLVED.

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ILM02.1

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMV6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO633 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0441

Level (low/med): LOW__ Date Received: 06/09/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	77.7	B		P	
7440-36-0	Antimony	50.0	U		P	
7440-38-2	Arsenic	4.5	B		F	
7440-39-3	Barium	25.2	B		P	
7440-41-7	Beryllium	1.0	U		P	
7440-43-9	Cadmium	5.0	U		P	
7440-70-2	Calcium	55600			P	
7440-47-3	Chromium	10.6			P	
7440-48-4	Cobalt	10.0	U		P	
7440-50-8	Copper	10.0	U		P	
7439-89-6	Iron	30.6	~~B~~		P	U per 8-30-94
7439-92-1	Lead	3.6		N	F	~~J~~ UJ
7439-95-4	Magnesium	16800			P	
7439-96-5	Manganese	2.0	U		P	
7439-97-6	Mercury	0.20	U		CV	
7440-02-0	Nickel	20.0	U		P	
7440-09-7	Potassium	5540			P	
7782-49-2	Selenium	2.4	~~B~~	W	F	BJ M 9-25-94
7440-22-4	Silver	5.0	U		P	
7440-23-5	Sodium	51100			P	
7440-28-0	Thallium	2.0	U		F	
7440-62-2	Vanadium	12.0	B		P	
7440-66-6	Zinc	21.6			P	J
5955-70-0	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMV6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO633 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0442

Level (low/med): LOW__ Date Received: 06/09/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

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
5955-70-0	Cyanide__	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY._____

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBMV7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO633 SAS No.: _____ SDG No.: W0082_

Matrix (soil/water): WATER Lab Sample ID: AB0457

Level (low/med): LOW__ Date Received: 06/09/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum_	42.7	B		P_	
7440-36-0	Antimony_	50.0	U		P_	
7440-38-2	Arsenic__	4.6	B		F_	
7440-39-3	Barium___	24.1	B		P_	
7440-41-7	Beryllium	1.0	U		P_	
7440-43-9	Cadmium__	5.0	U		P_	
7440-70-2	Calcium__	51200			P_	
7440-47-3	Chromium_	10.2			P_	
7440-48-4	Cobalt___	10.0	U		P_	
7440-50-8	Copper___	10.0	U		P_	
7439-89-6	Iron_____	69.9	B		P_	U
7439-92-1	Lead_____	13.7		N	F_	J
7439-95-4	Magnesium	15400			P_	
7439-96-5	Manganese	2.0	U		P_	
7439-97-6	Mercury__	0.20	U		CV	
7440-02-0	Nickel___	20.0	U		P_	
7440-09-7	Potassium	5740			P_	
7782-49-2	Selenium_	2.0	U		F_	
7440-22-4	Silver___	5.0	U		P_	
7440-23-5	Sodium___	46500			P_	
7440-28-0	Thallium_	2.0	U		F_	
7440-62-2	Vanadium_	13.4	B		P_	
7440-66-6	Zinc_____	16.7	B		P_	U
5955-70-0	Cyanide__				NR	

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED._____

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8-29-94

Checklists

LATA GC/MS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT: 100-FR-3			SDG: W0082-ITC-096		
VALIDATOR: Cowan		LATA NO.: WW402.76		DATE: 8-30-94	
SAF NO.: SAF-94-087		LAB: ITC		CASE:	
QAPP REFERENCE:			SAP REFERENCE:		

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☒ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (pac column)	☐ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 8270 (pac column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX

8 X Q WATER SAMPLES: BOBMQ2, BOBMQ4, BOBMW6, BOBMV8, BOBMN8, BOBMN9, BOBMP8, 9-10-94 (JC) BOBMQ0

BOBMN8 and BOBMN9 are method blanks

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 *(see HOLDING TIME SUMMARY form)*

Are sample holding times acceptable? ..... (Yes) No N/A

Comments: It states in the laboratory narrative that the MSD for BOBMQ2 WAS RUN "25 minutes" past holding time for VOA analysis. As samples were not collected and analysed in same time zone, the MSD for BOBMQ2 was run within hold time as Pacific time must be used to calculate hold time. All hold times met.

LATA GC/MS DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION *(see CALIBRATION DATA SUMMARY form)*

Is the GC/MS tuning/performance check acceptable? ..... (Yes) No N/A

★ **VOA:** Verify the calculation of the mass abundance percentages for the 95/96, 176/177 and 174/176 ratios.

★ **SVOA:** Verify the calculation of the mass abundance percentages for the 199/198 and 443/442 ratios.

Are initial calibrations acceptable? ..... (Yes) No N/A

★ Verify the RRF and %RSD values and recalculate the individual and average RRF values and RSD values for two TCL compounds for Volatiles (V) and Semivolatiles (S).

★

Relative Response Factor

$$RRF = \frac{A_x C_{is}}{A_{is} C_x}$$

where:
A_x (V/S) = area of the characteristic ion measured for the sample
A_{is} (V/S) = area of the characteristic ion measured for the internal standard
C_x (V/S) = concentration [(VOA ng) (SVOA ng/µL)] of the compound of interest
C_{is} (V/S) = concentration [(VOA ng) (SVOA ng/µL)] of the associated internal standard

★

Relative Standard Deviation

$$\%RSD = \frac{STDEV}{MEAN} \times 100$$

where:
MEAN = mean of the initial five relative response factors
STDEV = standard deviation of the initial five RRFs per compound

$$= \sqrt{\sum_{i=1}^{n} \frac{(RRF_i - RRF)^2}{n-1}}$$

Are continuing calibrations acceptable? ..... Minor deficiencies ..... Yes (No) N/A

Yes
6-25-94

★ Verify that the RRF and %D values are within the required limits and recalculate the individual RRF and %D values for at least two TCL compounds for Volatiles (V) and Semivolatiles (S).

★

Percent Difference

$$\%D = \frac{(RRF_i - RRF_s)}{RRF_i} \times 100$$

where:
RRF_i (V/S) = initial calibration average relative response factor
RRF_s (V/S) = continuing calibration average relative response factor

Comments: %D for 1,1,1-Trichloroethane & Carbon Tetrachloride > 25%

LATA GC/MS DATA VALIDATION CHECKLIST

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Were laboratory blanks analyzed? ..... (Yes) No N/A

Are laboratory blank results acceptable? . Minor Deficiencies ..... Yes (No) N/A

Comments: mw 9-25-94

Blank contamination detected for MeCl, Acetone, Carbon Disulfide, 1,2,2-Tetra Chloroethane. Data Qualified as non-detect.

Chloroform is detected in the blank. Results are qualified as non-detect. mw 9-25-94

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were surrogates/System Monitoring Compounds analyzed? ..... (Yes) No N/A

Are all surrogate/System Monitoring Compound recoveries acceptable? ..... (Yes) No N/A

★

Surrogate Recovery

$$\%R = \left(\frac{Q_d}{Q_a}\right) \times 100$$

where:
Q_d (V/S) = quantity of surrogate determined (analysis result)
Q_a (V/S) = quantity of surrogate added (true value)

Were MS/MSD samples analyzed? ..... (Yes) No N/A

Are all MS/MSD recoveries acceptable? ..... (Yes) No

★

Spike Recovery

$$MS\%R = \frac{MS - OS}{SA} \times 100 \quad \text{or} \quad MSD\%R = \frac{MSD - OS}{SA} \times 100$$

where:
MS/MSD (V/S) = spiked sample result
OS (V/S) = sample result
SA (V/S) = spike added

Comments:

LATA GC/MS DATA VALIDATION CHECKLIST

6. PRECISION *(see PRECISION DATA SUMMARY form)*

Are all MS/MSD RPD values acceptable? ..... (Yes) No N/A

★

$$RPD = \frac{|MS - MSD|}{\left(\frac{MS + MSD}{2}\right)} \times 100$$

Relative Percent Difference

where =
MS = MS recovery
MSD = MSD recovery

Comments: _____

7. FIELD QC SAMPLES MB 9/1/94 are method blanks

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? Yes (No) N/A 9-1

Are field/trip blank results acceptable? ..... geo. mw. 9-25-94 .. (Yes) No N/A

Are field duplicate RPD values acceptable? ..... Yes No (N/A) 9-25

Are field split RPD values acceptable? ..... Yes No (N/A)

Are performance audit sample results acceptable? ..... Yes No (N/A)

Comments: A laboratory created trip blank was shipped with the WHC samples from Richland to Knoxville. Contamination consistent with that found in the blank indicates that the source of the contamination is the laboratory and not the trip between laboratories.

8. 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: _____

9. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? ..... (Yes) No N/A

Is compound quantitation acceptable? ..... (Yes) No N/A

★

Results Calculations for VOA water (VW) samples

$$\text{Concentration } (\mu g/L) = \frac{(A_x VW)\,(I_s VW)\,(D_f VW)}{(A_{is} VW)\,(RRF VW)\,(V_o VW)}$$

where:

$A_x VW$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} VW$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s VW$ = amount of internal standard added (ng)
RRFVW = relative response factor (ambient temperature purge of the calibration standard)
$V_o VW$ = volume of water purged (ml)
$D_f VW$ = dilution factor

★

Results Calculations for VOA soil/sediment (VLS) samples (low level)

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x VLS)\,(I_s VLS)}{(A_{is} VLS)\,(RRF VLS)\,(W_s VLS)\,(S VLS)}$$

where:

$A_x VLS$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} VLS$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s VLS$ = amount of internal standard added (ng)
RRFVLS = relative response factor (ambient temperature purge of the calibration standard)
$W_s VLS$ = weight of sample added (g)
SVLS = dry weight conversion factor [(100 - %moisture)/100]

★

Results Calculations for VOA soil/sediment (VMS) samples (medium level)

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x VMS)\,(I_s VMS)\,(V_t VMS)\,(1000)\,(D_f VMS)}{(A_{is} VMS)\,(RRF VMS)\,(V_a VMS)\,(W_s VMS)\,(S VMS)}$$

where:

$A_x VMS$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} VMS$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s VMS$ = amount of internal standard added (ng)
RRFVMS = relative response factor (ambient temperature purge of the calibration standard)
$W_s VMS$ = weight of sample extracted (g)
$D_f VMS$ = dilution factor
SVMS = dry weight conversion factor [(100 - %moisture)/100]
$V_t VMS$ = total volume methanol extract (ml)
$V_a VMS$ = volume of the aliquot (ml)

9. COMPOUND IDENTIFICATION AND QUANTITATION (continued)

★

Results Calculations for SVOA water (SW) samples

$$\text{Concentration } (\mu g/L) = \frac{(A_x SW)\ (I_s SW)\ (V_t SW)\ (D_f SW)}{(A_{is} SW)\ (RRFSW)\ (V_o SW)\ (V_i SW)}$$

where:
$A_x SW$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} SW$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s SW$ = amount of internal standard added (ng)
RRFSW = relative response factor for the daily calibration standard
$V_o SW$ = volume of water extracted (ml)
$V_i SW$ = volume of extract injected (µL)
$V_t SW$ = volume of concentrated extract (µL)
$D_f SW$ = dilution factor

★

Results Calculations for SVOA soil/sediment (SS) samples

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x SS)\ (I_s SS)\ (V_t SS)\ (D_f SS)}{(A_{is} SS)\ (RRFSS)\ (V_i SS)\ (W_s SS)\ (SSS)}$$

where:
$A_x SS$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} SS$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s SS$ = amount of internal standard added (ng)
RRFSS = relative response factor for the daily calibration standard
$W_s SS$ = weight of sample extracted (g)
$D_f SS$ = dilution factor
SSS = dry weight conversion factor [(100 - %moisture)/100]
$V_t SS$ = total volume of concentrated extract (µL)
$V_i SS$ = volume of the extract injected (µL)

Comments:_____

_____

_____

10. 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:_____

_____

_____

_____

9613496 0902

VOLATILES QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Acetone	MINOR	U	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	BLANKS	The method blank had positive values with associated sample results less than 10x the blank result for common laboratory contaminants.
Chloroform	MINOR	10U	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	BLANKS	The method blank had positive values with associated sample results less than 5x the blank result. Where sample results were less than the CRQL, an upward adjustment was made.
Methylene Chloride	MINOR	U	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	BLANKS	The method blank had positive values with associated sample results less than 10x the blank result for common laboratory contaminants.
1,1,1-Trichloroethane	MINOR	UJ	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	OTHER	The %D between the initial and continuing calibration exceeded 25%.
Carbon Tetrachloride	MINOR	UJ	MQ2,MQ4,MV6, MV8,MN8,MN9, MP8,MQ0	OTHER	The %D between the initial and continuing calibration exceeded 25%.

entered by: WJC
date: 9/11/94

40276QLS.XLT, Qualification Summary

checked by:
date: 9/12/94

DATA VALIDATION SUMMARY

VALIDATION SUMMARY

MAJOR DEFICIENCIES:

None

MINOR DEFICIENCIES:

The method blank had positive values with associated samples results less than 10x the blank result for Methylene Chloride and Acetone and 5x the blank result for Chloroform. These results were qualified u or 10u, the latter incorporating an upward adjustment to meet the analyte's CRQL.

The percent difference (%D) between the initial and continuing calibration for 1,1,1-Trichloroethane and Carbon Tetrachloride exceeded 25%. These results were qualified uj.

COMMENTS:

A laboratory-generated trip blank was shipped with the WHC samples form Richland to Knoxville for analysis. Trip blank contamination consistent with that found in the method blank indicates that the source of the contamination is the laboratory performing the analysis and not the trip between laboratories.

Validator: Cowan VW402.76

RELATIVE RESPONSE FACTOR

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: RRF10

Date: 30-Aug-94
Validator: Cowan

Constituent	Response for Analyte of Interest AxV	Concentration of Internal Standard CisV	Area of Internal Standard AisV	Concentration of Analyte of Interest CxV	RRF
Vinyl Chloride	7921.00	50.00	32503.00	10.00	1.219
2-Butanone	2737.00	50.00	32503.00	10.00	0.421
Toluene	18775.00	50.00	91761.00	10.00	1.023

RELATIVE STANDARD DEVIATION

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: RRF10-RRF200
Date: 30-Aug-94
Validator: Cowan

RRF1
Constituent: Chloromethane

1.204
1.068
0.961
1.06
1.516

MEAN	STDEV	RSD
1.162	0.2161	18.6

RELATIVE STANDARD DEVIATION

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: RRF10-RRF200
Date: 30-Aug-94
Validator: Cowan

RRF2
Constituent: Acetone

0.238
0.197
0.196
0.199
0.108

MEAN	STDEV	RSD
0.188	0.0479	25.5

RELATIVE STANDARD DEVIATION

Analysis: GC/MS SVOA
SDG: W0082-ITC-096
Sample ID: RRF10-RRF200
Date: 30-Aug-94
Validator: Cowan

RRF3
Constituent: 2-Butanone

0.421
0.374
0.38
0.405
0.464

MEAN	STDEV	RSD
0.409	0.0362	8.9

RELATIVE STANDARD DEVIATION

Analysis: GC/MS SVOA
SDG: W0082-ITC-096
Sample ID: RRF10-RRF200
Date: 30-Aug-94
Validator: Cowan

RRF4
Constituent: Benzene

1.134
1.001
0.899
0.933
0.835

MEAN	STDEV	RSD
0.960	0.1141	11.9

9613496.0806

PERCENT DIFFERENCE

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: RRF50

Date: 30-Aug-94
Validator: Cowan

Constituent	Initial Calibration Average RRF RRFiV	Continuing Calibration Average RRF RRFsV	%D
Bromomethane	1.27	1.317	3.7%
Chloroform	2.435	3.006	23.4%
Styrene	0.798	0.746	6.5%

9613496.0807

SURROGATE RECOVERY

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: B0BMN8

Date: 30-Aug-94
Validator: Cowan

Constituent	quantity of surrogate determined QdV	quantity of surrogate added QaV	%RV
Toluene-d8	46.80	50.00	93.6%
4-Bromofluorobenzene	45.10	50.00	90.2%
1,2-Dichloroethane	47.40	50.00	94.8%

9613496.0808

PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (MS/MSD)

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: B0BMQ2

Date: 30-Aug-94
Validator: Cowan

Constituent	MS Result MSV	MSD Result MSDV	Sample Result OSV	Spike Added SAV	MSV %R	MSDV %R	RPDV
1,1-Dichloroethen	44.40	45.40	0.00	50.00	88.8%	90.8%	2.2%
Trichloroethene	57.90	58.50	1.62	50.00	112.6%	113.8%	1.1%
Benzene	54.70	54.70	0.00	50.00	109.4%	109.4%	0.0%
Tolulene	58.50	57.10	0.00	50.00	117.0%	114.2%	2.4%
Chlorobenzene	57.00	58.40	0.00	50.00	114.0%	116.8%	2.4%

9613496.0809

RESULTS CALCULATIONS FOR VOA WATER SAMPLES

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: B0BMN9

Date: 30-Aug-94
Validator: Cowan

Constituent	Area of the Quant Ion for the Constituent of Interest	Area of the Quant Ion for the Internal Standard	Amount of Internal Standard added (ng)	Relative Response Factor	Volume of Water Purged (ml)	Dilution Factor	Conc (µg/L)
	AxVW	AisVW	IsVW	RRFVW	VoVW	DfVW	
Methylene Chloride	39409.00	30256.00	50.00	2.40	1.00	1.00	27
Acetone	3932.00	30256.00	50.00	0.19	1.00	1.00	33
Chloroform	7705.00	30256.00	50.00	3.01	1.00	1.00	4

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKAB0716

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0716

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: WB06152

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

% Moisture: not dec. ____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	22	
67-64-1	Acetone	7	J
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	3	J
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	1	J
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

8-31-94 (WTC)

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKAB0716

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Matrix: (soil/water) WATER Lab Sample ID: AB0716

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: WB06152

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

% Moisture: not dec. ____ Date Analyzed: 06/15/94

GC Column: DB624 ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

8-31-94 WJC

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 621 SAS No.: _____ SDG No.: W0082

Instrument ID: I500A Calibration date: 06/15/94 Time: 2043

Lab File ID: WS06152 Init. Calib. Date(s): 05/22/94 05/22/94

Heated Purge: (Y/N) N Init. Calib. Times: 1321 1536

GC Column: DB624 ID: 0.530(mm)

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Chloromethane	1.162	1.066		8.3	
Bromomethane	1.270	1.317	0.100	-3.7	25.0
Vinyl Chloride	1.095	1.049	0.100	4.2	25.0
Chloroethane	0.891	0.865		2.9	
Methylene Chloride	1.143	2.403		-110.2	
Acetone	0.188	0.194		-3.2	
Carbon Disulfide	2.650	2.984		-12.6	
1,1-Dichloroethene	0.961	1.046	0.100	-8.8	25.0
1,1-Dichloroethane	2.101	2.271	0.200	-8.1	25.0
1,2-Dichloroethene (total)	1.294	1.261		2.6	
Chloroform	2.435	3.006	0.200	-23.4	25.0
1,2-Dichloroethane	1.388	1.529	0.100	-10.2	25.0
2-Butanone	0.409	0.317		22.5	
1,1,1-Trichloroethane	0.507	0.645	0.100	-27.2	25.0
Carbon Tetrachloride	0.477	0.620	0.100	-30.0	25.0
Bromodichloromethane	0.539	0.599	0.200	-11.1	25.0
1,2-Dichloropropane	0.362	0.403		-11.3	
cis-1,3-Dichloropropene	0.432	0.456	0.200	-5.6	25.0
Trichloroethene	0.423	0.413	0.300	2.4	25.0
Dibromochloromethane	0.514	0.517	0.100	-0.6	25.0
1,1,2-Trichloroethane	0.349	0.328	0.100	6.0	25.0
Benzene	0.960	1.155	0.500	-20.3	25.0
trans-1,3-Dichloropropene	0.345	0.347	0.100	-0.6	25.0
Bromoform	0.433	0.394	0.100	9.0	25.0
4-Methyl-2-Pentanone	0.340	0.271		20.3	
2-Hexanone	0.223	0.153		31.4	
Tetrachloroethene	0.493	0.444	0.200	9.9	25.0
1,1,2,2-Tetrachloroethane	0.746	0.604	0.500	19.0	25.0
Toluene	0.971	0.921	0.400	5.1	25.0
Chlorobenzene	0.907	0.843	0.500	7.1	25.0
Ethylbenzene	0.363	0.337	0.100	7.2	25.0
Styrene	0.798	0.746	0.300	6.5	25.0
Xylene (total)	0.464	0.429	0.300	7.5	25.0
Toluene-d8	1.039	0.979		5.8	
Bromofluorobenzene	0.915	0.915	0.200	0.0	25.0
1,2-Dichloroethane-d4	1.402	1.485		-5.9	

All other compounds must meet a minimum RRF of 0.010.

8-31-94 WDC

9613496.0813

LATA GC/MS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT: 100-FR-3			SDG: W0082-ITC-096		
VALIDATOR: Cowan		LATA NO.: VW402.76		DATE: 8-31-94	
SAF NO.: 94-807		LAB: ITC		CASE:	
QAPP REFERENCE:			SAP REFERENCE:		
If there is no QAPP or SAP reference, contact the WHC Technical Representative. If the document(s) are not provided, default to the Method acceptance criteria.					

ANALYSES PERFORMED					
☐ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (pac column)	☑ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 8270 (pac column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX
4 WATER SAMPLES: B0BM08, B0BMQ2, B0BMV6, B0C165

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 *(see HOLDING TIME SUMMARY form)*

Are sample holding times acceptable? ..... (Yes) No N/A

Comments: _____

3. INSTRUMENT TUNING AND CALIBRATION *(see CALIBRATION DATA SUMMARY form)*

Is the GC/MS tuning/performance check acceptable? ..... (Yes) No N/A

★ **VOA:** Verify the calculation of the mass abundance percentages for the 95/96, 176/177 and 174/176 ratios.

★ **SVOA:** Verify the calculation of the mass abundance percentages for the 199/198 and 443/442 ratios.

Are initial calibrations acceptable? ..... (Yes) No N/A

★ Verify the RRF and %RSD values and recalculate the individual and average RRF values and RSD values for two TCL compounds for Volatiles (V) and Semivolatiles (S).

★

Relative Response Factor

$$RRF = \frac{A_x C_{is}}{A_{is} C_x}$$

where:
A_x (V/S) = area of the characteristic ion measured for the sample
A_{is} (V/S) = area of the characteristic ion measured for the internal standard
C_x (V/S) = concentration [(VOA ng) (SVOA ng/µL)] of the compound of interest
C_{is} (V/S) = concentration [(VOA ng) (SVOA ng/µL)] of the associated internal standard

★

Relative Standard Deviation

$$\%RSD = \frac{STDEV}{MEAN} \times 100$$

where:
MEAN = mean of the initial five relative response factors
STDEV = standard deviation of the initial five RRFs per compound

$$= \sqrt{\sum_{i=1}^{n} \frac{(RRF_i - \overline{RRF})^2}{n-1}}$$

Are continuing calibrations acceptable? ..... Yes (No) N/A

Mw 9-25-96

★ Verify that the RRF and %D values are within the required limits and recalculate the individual RRF and %D values for at least two TCL compounds for Volatiles (V) and Semivolatiles (S).

★

Percent Difference

$$\%D = \frac{(RRF_i - RRF_s)}{RRF_i} \times 100$$

where:
RRF_i (V/S) = initial calibration average relative response factor
RRF_s (V/S) = continuing calibration average relative response factor

Comments: % D for Hexachlorobenz. 7 > 25%.

LATA GC/MS DATA VALIDATION CHECKLIST

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Were laboratory blanks analyzed? ..... (Yes) No N/A

Are laboratory blank results acceptable? ..... (Yes) No N/A

Comments:

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were surrogates/System Monitoring Compounds analyzed? ..... (Yes) No N/A

Are all surrogate/System Monitoring Compound recoveries acceptable? ..... (Yes) No N/A

★

Surrogate Recovery

$$\%R = \left(\frac{Q_d}{Q_a}\right) \times 100$$

where:
Q_d (V/S) = quantity of surrogate determined (analysis result)
Q_a (V/S) = quantity of surrogate added (true value)

Were MS/MSD samples analyzed? ..... (Yes) No N/A

Are all MS/MSD recoveries acceptable? ..... (Yes) No N/A

★

Spike Recovery

$$MS\%R = \frac{MS - OS}{SA} \times 100 \quad \text{or} \quad MSD\%R = \frac{MSD - OS}{SA} \times 100$$

where:
MS/MSD (V/S) = spiked sample result
OS (V/S) = sample result
SA (V/S) = spike added

Comments: Surrogate 2,4,6-Tribromophenol > Upper Control Limit for BOC165 and BOBMQ2MSD. No qualification required as sample results < CRQL.

6. PRECISION *(see PRECISION DATA SUMMARY form)*

Are all MS/MSD RPD values acceptable? . . . . . (Yes) No N/A

★

$$\text{RPD} = \frac{\text{Relative Percent Difference}}{\left(\frac{|\text{MS} - \text{MSD}|}{\frac{(\text{MS} + \text{MSD})}{2}}\right)} \times 100$$

where =
MS = MS recovery
MSD = MSD recovery

Comments:_____

_____

_____

_____

7. FIELD QC SAMPLES

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? Yes (No) N/A

Are field/trip blank results 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)

Are performance audit sample results acceptable? . . . . . Yes No (N/A)

Comments:_____

_____

_____

_____

_____

8. 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:_____

_____

_____

_____

_____

_____

LATA GC/MS DATA VALIDATION CHECKLIST

9. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? ..... (Yes) No N/A

Is compound quantitation acceptable? ..... (Yes) No N/A

★

Results Calculations for VOA water (VW) samples

$$\text{Concentration } (\mu g/L) = \frac{(A_x VW)\,(I_s VW)\,(D_f VW)}{(A_{is} VW)\,(RRFVW)\,(V_o VW)}$$

where:

$A_x VW$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} VW$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s VW$ = amount of internal standard added (ng)
RRFVW = relative response factor (ambient temperature purge of the calibration standard)
$V_o VW$ = volume of water purged (ml)
$D_f VW$ = dilution factor

★

Results Calculations for VOA soil/sediment (VLS) samples (low level)

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x VLS)\,(I_s VLS)}{(A_{is} VLS)\,(RRFVLS)\,(W_s VLS)\,(SVLS)}$$

where:

$A_x VLS$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} VLS$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s VLS$ = amount of internal standard added (ng)
RRFVLS = relative response factor (ambient temperature purge of the calibration standard)
$W_s VLS$ = weight of sample added (g)
SVLS = dry weight conversion factor [(100 - %moisture)/100]

★

Results Calculations for VOA soil/sediment (VMS) samples (medium level)

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x VMS)\,(I_s VMS)\,(V_t VMS)\,(1000)\,(D_f VMS)}{(A_{is} VMS)\,(RRFVMS)\,(V_a VMS)\,(W_s VMS)\,(SVMS)}$$

where:

$A_x VMS$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} VMS$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s VMS$ = amount of internal standard added (ng)
RRFVMS = relative response factor (ambient temperature purge of the calibration standard)
$W_s VMS$ = weight of sample extracted (g)
$D_f VMS$ = dilution factor
SVMS = dry weight conversion factor [(100 - %moisture)/100]
$V_t VMS$ = total volume methanol extract (ml)
$V_a VMS$ = volume of the aliquot (ml)

9. COMPOUND IDENTIFICATION AND QUANTITATION (continued)

★

Results Calculations for SVOA water (SW) samples

$$\text{Concentration } (\mu g/L) = \frac{(A_x SW)\ (I_s SW)\ (V_t SW)\ (D_f SW)}{(A_{is} SW)\ (RRFSW)\ (V_o SW)\ (V_i SW)}$$

where:
$A_x SW$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} SW$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s SW$ = amount of internal standard added (ng)
RRFSW = relative response factor for the daily calibration standard
$V_o SW$ = volume of water extracted (ml)
$V_i SW$ = volume of extract injected (µL)
$V_t SW$ = volume of concentrated extract (µL)
$D_f SW$ = dilution factor

★

Results Calculations for SVOA soil/sediment (SS) samples

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x SS)\ (I_s SS)\ (V_t SS)\ (D_f SS)}{(A_{is} SS)\ (RRFSS)\ (V_i SS)\ (W_s SS)\ (SSS)}$$

where:
$A_x SS$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} SS$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s SS$ = amount of internal standard added (ng)
RRFSS = relative response factor for the daily calibration standard
$W_s SS$ = weight of sample extracted (g)
$D_f SS$ = dilution factor
SSS = dry weight conversion factor [(100 - %moisture)/100]
$V_t SS$ = total volume of concentrated extract (µL)
$V_i SS$ = volume of the extract injected (µL)

Comments:_____

_____

_____

10. 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:_____

_____

_____

_____

RELATIVE RESPONSE FACTOR

Analysis: GC/MS SVOA
SDG: W0082-ITC-096
Sample ID: RRF20

Date: 31-Aug-94
Validator: Cowan

Constituent	Response for Analyte of Interest	Concentration of Internal Standard	Area of Internal Standard	Concentration of Analyte of Interest	RRF
	AxV	CisV	AisV	CxV	
Phenol	304379	20.00	317588	10.00	1.917
Nitrobenzene	251157	20.00	1185884	10.00	0.424
Dibenzofuran	529970	20.00	602944	10.00	1.758

SEMIVOLATILES QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Hexachlorobenzene	MINOR	UJ	MP8,MQ2,MV6, BOCIG5	OTHER	The %D for the continuing calibration verification exceeded the upper control limit.

entered by: WJC
date: 9/11/94

40276QLS.XLT, Qualification Summary

checked by:
date: 9/12

DATA VALIDATION SUMMARY

VALIDATION SUMMARY

MAJOR DEFICIENCIES: None

MINOR DEFICIENCIES: The %D for the continuing calibration verification exceeded the Upper Control Limit for Hexachlorobenzene. All data were qualiffied UJ.

COMMENTS:

Validator: Cowan VW402.71

RELATIVE STANDARD DEVIATION

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: RRF20-RRF160
Date: 31-Aug-94
Validator: Cowan

RRF1
Constituent: Phenol

1.917
2.169
2.065
2.119
2.11

MEAN	STDEV	RSD
2.076	0.0962	4.6

RELATIVE STANDARD DEVIATION

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: RRF20-RRF160
Date: 31-Aug-94
Validator: Cowan

RRF2
Constituent: Nitrobenzene

0.424
0.442
0.432
0.439
0.424

MEAN	STDEV	RSD
0.432	0.0083	1.9

RELATIVE STANDARD DEVIATION

Analysis: GC/MS SVOA
SDG: W0082-ITC-096
Sample ID: RRF20-RRF160
Date: 31-Aug-94
Validator: Cowan

RRF3
Constituent: Dibenzofuran

1.758
1.835
1.766
1.829
1.761

MEAN	STDEV	RSD
1.790	0.0387	2.2

RELATIVE STANDARD DEVIATION

Analysis: GC/MS SVOA
SDG: W0082-ITC-096
Sample ID: RRF20-RRF160
Date: 31-Aug-94
Validator: Cowan

RRF4
Constituent: Acenapthene

1.174
1.236
1.213
1.244
1.163

MEAN	STDEV	RSD
1.206	0.0363	3.0

PERCENT DIFFERENCE

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: RRF50

Date: 31-Aug-94
Validator: Cowan

Constituent	Initial Calibration Average RRF	Continuing Calibration Average RRF	%D
	RRFiV	RRFsV	
Phenol	2.076	2.169	4.5%
Nitrobenzene	0.432	0.444	2.8%
Dibenzofuran	1.79	1.728	3.5%

9613496.0824

SURROGATE RECOVERY

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: B0BMP8

Date: 31-Aug-94
Validator: Cowan

Constituent	quantity of surrogate determined QdV	quantity of surrogate added QaV	%RV
2-Fluorophenol	44.35	75.00	59.1%
Phenol-d5	41.05	75.00	54.7%
2-Chlorophenol-d4	46.50	75.00	62.0%
1,2-Dichlorobenzene-d	31.60	50.00	63.2%
Nitrobenzene-d5	30.08	50.00	60.2%

PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (MS/MSD)

Analysis: GC/MS VOA
SDG: W0082-ITC-096
Sample ID: B0BMQ2

Date: 31-Aug-94
Validator: Cowan

Constituent	MS Result MSV	MSD Result MSDV	Sample Result OSV	Spike Added SAV	MSV %R	MSDV %R	RPDV
Phenol	50.60	49.20	0.00	75.00	67.5%	65.6%	2.8%
4-Nitrophenol	62.20	72.30	0.00	75.00	82.9%	96.4%	15.0%
Pyrene	28.90	32.40	0.00	50.00	57.8%	64.8%	11.4%

9613496.0826

LATA PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT: 100-FR-3			SDG: W0082-ITC-096		
VALIDATOR: Cowan		LATA NO.: VW402.T6		DATE: 9-1-94	
SAF NO.: 94-807		LAB: ITC		CASE:	
QAPP REFERENCE:			SAP REFERENCE:		
If there is no QAPP or SAP reference, contact the WHC Technical Representative. If the document(s) are not provided, default to the Method acceptance criteria.					
ANALYSES PERFORMED					
☒ CLP 3/90	☐ SW-846 8080	☐ SW-846 8081	☐	☐	☐
SAMPLES/MATRIX					
4 WATER Samples: B0BMPB, B0BMR2, B0BMV6, B0C165					

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 *(see HOLDING TIME SUMMARY form)*

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments: _____

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS *(see CALIBRATION DATA SUMMARY form)*

3.1 INSTRUMENT PERFORMANCE (METHOD 8080 AND 8081)

Are DDT retention times acceptable . . . . . Yes No (N/A)

Are DBC retention times acceptable? . . . . . Yes No (N/A)

★

$$\%D = \frac{(RT_i - RT_s)}{RT_i} \times 100$$

DBC Retention Time Percent Difference

where:
RT_i = absolute retention time of DBC (initial standard)
RT_s = absolute retention time of DBC (subsequent standards/samples)

Are calibration standard retention times acceptable? . . . . . Yes No (N/A)

★ Recalculate the retention time windows for at least two pesticide compounds. For CLP, see the table in Section 8.4 for retention time windows from the mean retention time value. For SW-846, calculate the mean plus or minus three times the standard deviation as described in Method 8000A.

Are DDT and endrin breakdowns acceptable? . . . . . Yes No (N/A)

★

$$\%\text{breakdown} = \frac{TDA}{TPA} \times 100$$

Percent Breakdown

where:
(TDA) total degradation peak area = the total peak areas of DDE + DDD or endrin aldehyde + endrin ketone
(TPA) total peak area = the total of all associated peak areas for DDE, DDE + DDT or endrin aldehyde, endrin ketone + endrin

For confirmation by GC/MS; is the GC/MS tuning/performance check acceptable (use GC/MS checklist)? . . . . . Yes No (N/A)

Comments:_____

3.2 CALIBRATIONS (METHOD 8080 AND 8081)

Are all EVAL standard calibration factors and %RSD values acceptable? ..... Yes No (N/A)

Are all quantitation column calibration factor %RSD values acceptable? ..... Yes No (N/A)

★

Relative Standard Deviation

$$\%RSD = \frac{STDEV}{MEAN} \times 100$$

where:
MEAN = mean of the initial five response (calibration) factors
STDEV = standard deviation of the initial five RFs/CFs per compound

$$= \sqrt{\sum_{i=1}^{n} \frac{(RF_i - RF)^2}{n-1}}$$

Were the analytical sequence requirements met? ..... Yes No (N/A)

Are all continuing calibration %D values acceptable? ..... Yes No (N/A)

★ Recalculate at least two of the %D values from the raw data and compare to the reported results.

★

Percent Difference

$$\%D = \frac{(RF_i - RF_s)}{RF_i} \times 100$$

where:
RF_i = initial calibration response (calibration) factor
RF_s = continuing calibration response (calibration) factor

Comments:_____

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Was the initial calibration sequence performed? ..... (Yes) No N/A

Was the resolution acceptable in the resolution check mix? ..... (Yes) No N/A

Is resolution acceptable in the PEM, INDA and INDB? ..... (Yes) No N/A

★

$$\text{resolution} = \frac{P_v}{P_h} \times 100$$

(Resolution)

where:

P_v = the peak height of the valley of the larger peak

P_h = the peak height of the smaller peak being resolved

Are DDT and Endrin breakdowns acceptable? ..... (Yes) No N/A

Are all retention times in PEMs and calibration mixes acceptable? ..... (Yes) No N/A

Are all RPD values in the PEMs acceptable? ..... (Yes) No N/A

Are all %RSD values acceptable? ..... (Yes) No N/A

Comments:_____

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Were the analytical sequence requirements met? ..... (Yes) No N/A

Is resolution acceptable in the PEMs? ..... (Yes) No N/A

Are initial calibrations acceptable? ..... (Yes) No N/A

Are all retention times acceptable in the PEMs, INDA and INDB mixes? ..... (Yes) No N/A

Are all RPD values in the PEMs acceptable? ..... (Yes) No N/A

Are the DDT and endrin breakdowns acceptable? ..... (Yes) No N/A

Was GPC cleanup performed? ..... Yes (No) N/A

Is the GPC calibration check acceptable? ..... Yes No (N/A)

Was Florisil cleanup performed? ..... (Yes) No N/A

Is the Florisil performance check acceptable? ..... (Yes) No N/A

Comments:_____

GPC cleanup was not required by CLP protocol for 9-25-94

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Were laboratory blanks analyzed? ..... (Yes) No N/A

Are laboratory blank results acceptable? ..... (Yes) No N/A

Comments: _____

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were surrogates analyzed? ..... (Yes) No N/A

Are all surrogate recoveries acceptable? ..... (Yes) No N/A

★

Surrogate Recovery

$$\%R = \left(\frac{Q_d}{Q_a}\right) \times 100$$

where:
Q_d = quantity of surrogate determined (analysis result)
Q_a = quantity of surrogate added (true value)

Were MS/MSD samples analyzed? ..... (Yes) No N/A

Are all MS/MSD recoveries acceptable? ..... (Yes) No N/A

Were LCS samples analyzed? ..... Yes No (N/A)

Are all LCS results acceptable? ..... Yes No (N/A)

★

Spike Recovery

$$\%R = \frac{MS - OS}{SA} \times 100$$

where:
MS or MSD = spiked sample result
OS = sample result
SA = spike added

Comments: gamma-BHC M/SD recovery slightly higher than UCL (127% vs 123%). Data NOT QUALIFIED AS QC, MS and surrogates, are in acceptance criteria.

6. PRECISION *(see PRECISION DATA SUMMARY form)*

Are all duplicate RPD values acceptable? . . . . . Yes No N/A

★

$$\text{RPD} = \frac{\text{Relative Percent Difference}}{\left(\frac{|\text{MS} - \text{MSD}|}{\frac{\text{MS} + \text{MSD}}{2}}\right)} \times 100$$

where:
MS = MS recovery
MSD = MSD recovery

Comments:_____

7. FIELD QC SAMPLES

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? . . . . . Yes No N/A

Are field/trip blank results 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

Are performance audit sample results acceptable? . . . . . Yes No N/A

Comments:_____

8. SYSTEM PERFORMANCE

Is chromatographic performance acceptable? . . . . . Yes No N/A

Are all positive results resolved acceptably? . . . . . Yes No N/A

Comments:_____

9. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? ..... (Yes) No N/A

Is compound quantitation acceptable? ..... (Yes) No N/A

★ Recalculate the valid detected results of at least two samples.

★

External Standard Calibration, Aqueous (EW) Samples

$$\text{Concentration } (\mu g/L) = \frac{(A_xEW)(AEW)(V_tEW)(DEW)}{(A_sEW)(V_iEW)(V_sEW)}$$

where:
A_xEW = response for sample (area counts/peak height)
AEW = amount of standard (ng)
A_sEW = response for external standard (area counts/peak height)
V_iEW = volume of extract injected (µL)
DEW = dilution factor
V_tEW = volume of total extract (µL)
V_sEW = volume of sample extracted (ml)

★

External Standard Calibration, Nonaqueous (ES) Samples

$$\text{Concentration } (\mu g/Kg) = \frac{(A_xES)(AES)(V_tES)(DES)}{(A_sES)(V_iES)(WES)(SES)}$$

where:
A_xES = response for sample (area counts/peak height)
AES = amount of standard (ng)
A_sES = response for external standard (area counts/peak height)
V_iES = volume of extract injected (µL)
DES = dilution factor
V_tES = volume of total extract (µL)
WES = weight of sample (g)
SES = dry weight conversion factor [(100 - %moisture)/100]

Comments:_____

PESTICIDES/PCBS QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED	DQO	REASON
No data qualified	N/A	N/A	NA	NA	NA

entered by: WJC
date: 9/11/94

40276QLS.XLT, Qualification Summary

checked by:
date: 9/12/94

LATA GC/MS DATA VALIDATION CHECKLIST

VALIDATION SUMMARY

MAJOR DEFICIENCIES: None

MINOR DEFICIENCIES: None

COMMENTS: None

jm 9/16/94

9613496.0835

PERCENT BREAKDOWN

Analysis: Pesticides/PCBs
SDG: W0082-ITC-096

Date: 1-Sep-94
Validator: Cowan

Constituent	Total Degradation Peak Area of DDE+DDD or endrin aldehyde +endrin ketone TDA	Total Peak Area of DDE, DDE+DDT or endrin aldehyde, endrin ketone+endrin TPA	% Breakdown
DDT Breakdown (PEMDG)	0.0019	0.1019	1.9%
Endrin Breakdown (PEMDG)	0.0007	0.0507	1.4%
Total Breakdown (PEMDG)			3.2%

RELATIVE STANDARD DEVIATION

Analysis: Pesticides/PCBs
SDG: W0082-ITC-096
Standard ID:
Date: 1-Sep-94
Validator: Cowan

RF1
Constituent: Alpha-BHC

10900000			
10500000	MEAN	STDEV	RSD
10900000	10766667	230940	2.1

RELATIVE STANDARD DEVIATION

Analysis: Pesticides/PCBs
SDG: W0082-ITC-096
Standard ID:
Date: 1-Sep-94
Validator: Cowan

RF2
Constituent: Aldrin

11600000			
10300000	MEAN	STDEV	RSD
10300000	10733333	750555	7.0

RELATIVE STANDARD DEVIATION

Analysis: Pesticides/PCBs
SDG: W0082-ITC-096
Standard ID:
Date: 1-Sep-94
Validator: Cowan

RF3
Constituent: 4,4'-DDT

6500000			
5870000	MEAN	STDEV	RSD
5240000	5870000	630000	10.7

RELATIVE STANDARD DEVIATION

Analysis: Pesticides/PCBs
SDG: W0082-ITC-096
Standard ID:
Date: 1-Sep-94
Validator: Cowan

RF4
Constituent: Endrin Ketone

7820000			
6950000	MEAN	STDEV	RSD
6110000	6960000	855044	12.3

RESOLUTION

Analysis: Pesticides/PCBs
SDG: W0082-ITC-096

Date: 1-Sep-94
Validator: Cowan

Constituent	Peak height of valley of the larger peak Pv	Peak height of smaller peak being resolved Ph	Resolution
4,4'-DDE & Dieldrin (RESCDA)	115	116	99.1%

SURROGATE RECOVERY

Analysis: Pesticides/PCBs
SDG: W0082-ITC-096
Sample ID: B0BMP8

Date: 1-Sep-94
Validator: Cowan

Constituent	quantity of surrogate determined Qd	quantity of surrogate added Qa	%R
Tetrachloro-m-xylene	0.0257	0.02	128.5%
Decachlorobiphenyl	0.0279	0.02	139.5%

PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (MS/MSD)

Analysis: Pesticides/PCBs
SDG: W0082-ITC-096
Sample ID: B0C1G5

Date: 1-Sep-94
Validator: Cowan

Constituent	MS Result MS	MSD Result MSD	Sample Result OS	Spike Added SA	MS %R	MSD %R	RPD
gamma-BHC	0.596	0.637	0.000	0.500	119.2%	127.4%	6.7%
Heptachlor	0.544	0.579	0.000	0.500	108.8%	115.8%	6.2%
Aldrin	0.486	0.583	0.000	0.500	97.2%	116.6%	18.1%
Dieldrin	1.160	1.230	0.000	1.000	116.0%	123.0%	5.9%
Endrin	1.100	1.160	0.000	1.000	110.0%	116.0%	5.3%
4,4'-DDT	1.110	1.170	0.000	1.000	111.0%	117.0%	5.3%

EXTERNAL STANDARD CALIBRATION, AQUEOUS SAMPLES

Analysis: Pesticides/PCBs
SDG: W0082-ITC-096
Sample ID: B0BMP8

Date: 34578
Validator: Cowan

Constituent	Response for sample (area counts or peak height) AxEW	Amount of standard (ng) AEW	Response for external standard (area counts or peak height) AsEW	Volume of extract injected (µL) ViEW	Dilution Factor DEW	Volume of Total Extract (µL) VtEW	Volume of Sample Extracted (mL) VsEW	Conc (µg/L)
Heptachlor	0	0.02	185240	1	1	1000	1000	0.000
TCX (surrogate)	435078	0.02	347549	1	1	1000	1000	0.025

9613496.0841

LATA GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 100-FR-3		SDG: W0082-ITC-096	
VALIDATOR: MWebb	LATA NO: VW401.402.76		DATE: 8-31-94
SAF NO.: 94-087	LAB: ITC		CASE: -
QAPP REFERENCE:		SAP REFERENCE:	

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☒ Alkalinity 310.1	☐ Chloride 325.3	☒ pH 9040/150.1	☒ TOC 9060/415.1	☒ TDS 160.1 ☐ TSS 160.2	☐
☒ Anions 300.0	☐ Chromium+6 7196	☐ Phenols 9065/420.1	☒ TOX 9020/9022	☐ Sulfate 375.4	☐
☒ Ammonia 350.3	☒ COD 410.1	☐ Phosphorus 365.2	☐ TKN 351.3	☒ Sulfide 9030/376.1	☐
☐ BOD 405.1	☒ Nitrate+Nitrite 353.2	☐ Oil & Grease 413.1	☐ TPH 9070/418.1	☒ Conductivity	☐

SAMPLES/MATRIX B0BM92, B0BMV6, B0BMP8, B0C1G5, (waters)

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 *(see HOLDING TIME SUMMARY form)*

Are sample holding times acceptable? ..... Yes (No) N/A

Comments: The hold time was not met for pH or PO4 by Brwns. The results (pH) are estimated (J). The results for PO4 are est (limited) (J) for detects, UR (unusable) for non detects.

JM 9/15/94

000140

3. INSTRUMENT CALIBRATION *(see CALIBRATION DATA SUMMARY form)*

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

★ For methods requiring a calibration curve (three standards and a blank) use the following equation for correlation coefficient (r).

$$\text{Correlation Coefficient (r)} \qquad r = \frac{N \sum x_i y_i - \sum x_i \sum y_i}{[N \sum x_i^2 - (\sum x_i)^2]^{1/2} \; [N \sum y_i^2 - (\sum y_i)^2]^{1/2}}$$

★ For methods requiring ICV/CCV or a calibration check standard, calculate recovery as follows:

$$\text{Recovery} \qquad \%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments:_____

LATA GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Were laboratory blanks analyzed? ..... (Yes) No N/A

Are laboratory blank results acceptable? ..... (Yes) No N/A

Comments: _____

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were spike samples analyzed at the required frequency? ..... (Yes) No N/A

Are all spike recoveries acceptable? ..... 4-8-94 MW (Yes) (No) N/A

★

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Were LCS analyses performed at the required frequency? ..... (Yes) No N/A

Are all LCS recoveries acceptable? ..... (Yes) No N/A

★

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments: MSD for TOX < 75% > 30% Results qualified as estimated (J/UJ-

6. PRECISION *(see PRECISION DATA SUMMARY form)*

Were laboratory duplicate samples analyzed at the required frequency? . . . . . (Yes) No N/A

Are all duplicate RPD values acceptable? . . . . . (Yes) No N/A

★

$$\text{RPD} = \frac{|OS - D|}{\left(\frac{OS + D}{2}\right)} \times 100$$

Relative Percent Difference

where:
OS = sample concentration (original sample/MS)
D = duplicate concentration (duplicate sample/MSD)

Comments:

7. FIELD QC SAMPLES

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? Yes (No) N/A

Are field/trip blank results 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)

Are performance audit sample results acceptable? . . . . . Yes No (N/A)

Comments:

No field QC submitted

8. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . (Yes) No N/A

Are results calculated properly? . . . . . (Yes) No N/A

★ For methods with calibration curves:

General Chemistry Results Calculation, water sample

Concentration (µg/L) = CONCW × DfW

where:

CONCW = concentration off calibration curve (µg/L)

DfW = dilution factor (if any)

or

General Chemistry Results Calculation, soil sample

$$\text{Concentration (mg/Kg)} = \frac{(\text{CONCS} \times \text{DfS} \times \text{VOL})}{(\text{WS} \times \text{SS})}$$

where:

CONCS = concentration off calibration curve (mg/L)

VOL = volume of final extract (ml)

WS = weight of sample (g)

DfS = dilution factor (if any)

SS = dry weight conversion [(100 - %moisture) × 100]

★ For all other results calculations, see the analytical method.

Comments:_____

9. 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

Do results meet the CRDLs? . . . . . (Yes) No N/A

Comments:_____

VO 402.76

HOLDING TIME SUMMARY

SDG: W0D82 - ITC-056	VALIDATOR: MWebb	DATE: 9-8-94	PAGE 1 OF 1
COMMENTS: INORGANIC ANALYSES			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
	pH	6-1-94 to 6-6-94	~~6-8 MW~~ NA 9-7-94	6-8-94 to 6-10-94	—	7 to 4 days	J
	Anions PO4=	6-1-94 to 6-6-94	6-27-94	6-27-94	21-26 d.	21-26 d	J/UR

A.T.

ASAP 48 hrs 9/15/94 9/16/94

PNO-DVF-014, R1

PMO 9-9-94

000142

ACCURACY DATA SUMMARY

SDG: W00B2-IFC-096	VALIDATOR: MWebb	DATE: 9-8-94	PAGE 1 OF 1

COMMENTS: GENERAL CHEMISTRY ANALYSES

FIELD SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
	TOX MSD	64%	B0BM92, MV6, MP8	J/UJ

PNO-DVF-013, R1

9613496 0848

GENERAL CHEMISTRY QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Total Organic Halogens	MINOR	J/UJ	MQ2,MV6,MP8	ACCURACY	The MS/MSD spike recoveries for accuracy were less than 75% and greater than 30%.
pH	MINOR	J	MQ2,MV6,MP8	HOLD TIME	The holding time was exceeded.
Phosphate	**MAJOR**	**UR**	MQ2,MV6,MP8	HOLD TIME	The holding time was exceeded by greater two times.

entered by: WJC
date: 9/11/94

40276QLS.XLT, Qualification Summary

checked by:
date: 9/29/94

Validator	Date	SDG	VW Number
MC Webb	9-8-94	W0082-ITC-096	402.76

GENERAL CHEMISTRY DATA QUALIFICATION SUMMARY

MAJOR DEFICIENCIES:

1. The holding time for the PO4 by IC was exceeded by more than two times. The results are qualified as unusable (UR).

MINOR DEFICIENCIES:

1. The holding time was exceeded for the pH analysis. The results are qualified as estimated (J).
2. The MSD recovery for the TOX analysis was less than 75% but greater than 30%. The results are qualified as estimated (J/UJ).

COMMENTS:

Validator	Date	SDG	VW Number
MC Webb	9-8-94	W0082-ITC-096	402.76

GENERAL CHEMISTRY DATA QUALIFICATION SUMMARY

Analyte	Qualifier	Sample	Reason
PO4	UR	BOBMQ2,BOBMV6,BOBMP8	Exceeded holding time by > 2.
TOX	J/UJ	BOBMQ2,BOBMV6,BOBMP8	MSD < 75% > 30%
pH	J	BOBMQ2,BOBMV6,BOBMP8	Holding time was exceeded.

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: Anion F
SDG: W0082-ITC-096

Calibration Date: 27-Jun-94

Date: 8-Sep-94
Validator: MC Webb

Concentration	Absorbance
0.40	630443.000
2.00	2593355.000
4.00	5241049.000

r	r^2
0.9998	0.9995
slope	x intercept
0.0000	-0.0658
1/slope	y intercept
1283083.0533	85634.3770

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: NO2NO3
SDG: W0082-ITC-096

Calibration Date: 28-Jun-94

Date: 8-Sep-94
Validator: MC Webb

Concentration	Absorbance
2.00	2.006
1.00	0.991
0.40	0.399
0.10	0.098
0.04	0.041
0.02	0.023
0.00	0.005

r	r^2
1.0000	1.0000
slope	x intercept
0.9997	-0.0003
1/slope	y intercept
1.0003	0.0003

PERCENT RECOVERY (ICV/CCV)

Analysis: General Chemistry
SDG: W0082-ITC-096

Date: 8-Sep-94
Validator: MC Webb

Constituent	Observed Value	True Value	%R
	O	A	
Anion F	1.94	2.00	97.0%
NO2NO3	0.98	1.00	98.1%
NH3-N	2.11	2.00	105.5%
TOC	24.67	25.00	98.7%
TOX	4.78	5.00	95.6%

MATRIX SPIKE RECOVERY (MS)

Analysis: General Chemistry
SDG: W0082-ITC-096
Sample ID:

Date: 8-Sep-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
F BOBMQ2	2.30	0.00	2.00	115.0%
NO2NO3 BOBMQ2	33.70	18.20	20.00	77.5%
NH3-N BOBMQ2	1.11	0.00	1.00	111.0%
S BOBMQ2	52.00	4.00	45.00	106.7%
TOC BOBMQ2	32.83	2.19	32.00	95.8%
TOX BOBMQ2	38.00	0.00	50.00	76.0%

PERCENT RECOVERY (LCS)

Analysis: General Chemistry
SDG: W0082-ITC-096

Date: 8-Sep-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
Anion F	1.90	2.00	95.0%
NO2NO3	0.98	1.00	98.1%
Alkalinity	188.00	186.00	101.1%
NH3-N	2.11	2.00	105.5%
Conductivity	1078.00	1090.00	98.9%
TOX	44.00	50.00	88.0%
TOC	26.22	25.00	104.9%

RELATIVE PERCENT DIFFERENCE

Analysis: General Chemistry
SDG: W0082-ITC-096
Sample ID:

Date: 8-Sep-94
Validator: MC Webb

Constituent	Original (Sample) concentration OS	Duplicate concentration D	RPD
F BOBMQ2	115.00	115.00	0.0%
NO2NO3 BOBMQ2	78.00	78.00	0.0%
pH BOBMQ2	7.74	7.75	0.1%
Alkalinity BOBMQ2	196.00	198.00	1.0%
NH3-N BOBMQ2	111.00	112.00	0.9%
COD 5329-13	10.00	10.00	0.0%
Sulfide BOBMQ2	106.00	113.00	6.4%
Conductivity BOBMQ	818.00	821.00	0.4%
TDS BOBMQ2	474.00	491.00	3.5%
TOC BOBMQ2	96.00	99.00	3.1%
TOX BOBMQ2	76.00	64.00	17.1%

9613496 0855

9613496.0856

GENERAL CHEMISTRY RESULTS CALCULATION, WATER

Analysis: General Chemistry
SDG: W0082-ITC-096
Sample ID: BOBMQ2

Date: 8-Sep-94
Validator: MC Webb

Constituent	Concentration from curve CONCW	Dilution Factor DfW	Concentration (µg/L)
Anion Cl	1.15	20	22.9
NO2NO3	18.23	1	18.2
NH3-N	1.11	1	1.1
TOC	1.64	1	1.6
TOX	20.70	1	20.7
Alkalinity	196.00	1	196.0
Sulfide	4.00	1	4.0
COD	10.00	1	10.0
Conductivity	818.00	1	818.0

Jm 9/15/94

MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0082
Contract Name:	Westinghouse Hanford	Job Number:	621
Client Sample ID:	BOBMQ2	Extraction Date:	N/A
Lab Sample ID:	AB0319 OS/MS/MSD	Analysis Date:	06/29/94
Sample Matrix:	Water	Concentration Units:	µg/l

Compound	Orig. Sample Result	Conc. Spike Added	Conc. MS	% Rec.	Conc. MSD	% Rec.	RPD
total organic halogens	20 U	50	38	76	32	64	17.1

MW 9-8-94

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

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 100-FR-3	SDG: W0082 - ITC - 096	
VALIDATOR: MWebb	LATA NO.: VW401. 402-76	DATE: 8-26-94
SAF NO.: 94-087	LAB: ITC	CASE:
QAPP REFERENCE:	SAP REFERENCE:	

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☒ Gross Alpha ☒ Gross Beta	☐ Strontium-89 ☒ Strontium-90	☒ Technetium-99	☒ Isotopic Anal. Alpha Spec. Am	☒ Gamma Spectroscopy	☐ Iodine-129
☐ Total Uranium (KPA)	☐ Radium-226 ☐ Radium-228	☒ (LSC) Liquid Scintillation C14	☒ Pu-ISO	☒ U-ISO	☒ H3

SAMPLES/MATRIX B0BMQ2 (40607201) Waters
B0BMV6 (40613701)
B0BMP8 (40613702)

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification forms present? ..... (Yes) No N/A
Compliance screening form present? ..... (Yes) No N/A
Is a case narrative present? ..... (Yes) No N/A
Were all analyses requested reported? ..... (Yes) No N/A
Are all results supported in the raw data? ..... (Yes) No N/A

Comments: Case narrative is incomplete. Lacks comments about Pu-ISO, U-ISO, Gross alpha, Gross beta, and gamma analyses. All analyses had a result reported, but U-ISO for B0BMV6, MP8 re-runs were not reported. Form 1 edited (to save WHC time). Package will not be put "on hold", but accuracy in reporting is poor.

2. CHAIN-OF-CUSTODY/HOLDING TIMES

Are sample holding times acceptable? ..... (Yes) No N/A
Are samples preserved correctly? ..... (Yes) No N/A
Was the pH of the sample checked prior to analysis? ..... Yes (No) N/A

Comments: No wording on the pH having been checked prior to analysis. Accepted as OK. No comments on the Sample receipt sheets to indicate otherwise. 9/15/94 jm

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

3. INITIAL CALIBRATION

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: Gamma counter was not recalibrated until beginning the count date. The cont calibration is good. The detectors are acceptable. No continuing calibration is more frequent than required by contract.

4. CONTINUING CALIBRATION

Background checked at proper frequency? ..... (Yes) No N/A

Background check acceptable? ..... (Yes) No N/A

Efficiency checked at proper frequency? ..... (Yes) No N/A

Efficiency check acceptable? ..... (Yes) No N/A

Calibration check standards NIST traceable? ..... (Yes) No N/A

Calibration check standards expired? ..... Yes (No) N/A

Comments:

5. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Method blank analyzed? ..... (Yes) No N/A

Method blank results acceptable? ..... (Yes) No N/A

Analytes detected in method blank? ..... Yes (No) N/A

Transcription/Calculation Errors? ..... Yes (No) N/A

Comments:

MU 9/15/94

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

6. MATRIX SPIKES *(see ACCURACY DATA SUMMARY form)*

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

★

$$\%R = \frac{SSR - SR}{SA} \times 100$$

Spike Recovery

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Tc 99 MS acceptable

Comments: U-235 LCS Recovery is 69.19% (< 70%) Re } 1st Rev.
Results are qualified as estimated (UJ) BUBMQ2 }
Reran LCS for U234 (Reg) 127% > 125% (QAP, P)
U235 135% > 125% (QAP, P)
BUBMV6 U234 (J) U235 ~~UJ~~ none ~~None~~ – Non detect Rev 4-27-94
BUBMC8 U234 (J) U235 ~~UJ~~ none ~~None~~ – Non detect.

7. LABORATORY CONTROL SAMPLES *(see ACCURACY DATA SUMMARY form)*

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

★

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Recovery

Comments:

JM 9/15/94

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

8. CHEMICAL RECOVERY *(see ACCURACY DATA SUMMARY form)*

Chemical carrier added?	(Yes)	No	N/A
Chemical recovery acceptable?	(Yes)	No	N/A
Tracer added?	(Yes)	No	N/A
Tracer recovery acceptable?	Yes	(No)	N/A
Standards traceable?	(Yes)	No	N/A
Standards expired?	Yes	(No)	N/A
Transcription/Calculation errors?	Yes	(No)	N/A

★

Alpha Spec Tracer Recovery

$$\frac{A.1 - B.1}{(2.22)(E.1)(T.1)}$$

where:
- A.1 = gross counts per minute
- B.1 = background counts per minute of tracer
- 2.22 = conversion factor, dpm/pCi
- E.1 = detector efficiency
- T.1 = activity (pCi) of tracer added to sample (can be determined by taking dpm of tracer added divided by 2.22)

BOBMV6, BOBMP8 were re-run by lab but not reported. The reruns had acceptable yields. Re-run results added to form 1 & original result qualified to UR.

Comments: U232 tracer recovery for BOBMV6 = .5% unusable (R/UR)
U232 tracer recovery for BOBMP8 = 3.7% " (R/UR)

9. DUPLICATES *(see PRECISION DATA SUMMARY form)*

Duplicates Analyzed?	(Yes)	No	N/A
RPD Values Acceptable?	(Yes)	No	N/A
Transcription/Calculation Errors?	(Yes)	No	N/A

★

Relative Percent Difference

$$RPD = \frac{|OS - D|}{\left(\frac{OS + D}{2}\right)} \times 100$$

where:
- OS = sample concentration (original sample/MS)
- D = duplicate concentration (duplicate sample/MSD)

MDA has transcription error since it affected how the RPD was calc'd. It is noted in this section and 9 too

↓ This info necessary to Val. the RPD - also included on Next pg under "MDA"

Comments: (TL 99 MDA reported is incorrect BOBMV6, BOBMP8)
All RPD's acceptable

9/15/94

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

10. FIELD QC SAMPLES

Field blank(s) identified?	Yes	(No)	N/A
Field blank results acceptable?	Yes	No	(N/A)
Analytes detected in field blank(s)?	Yes	No	(N/A)
Field duplicate sample(s) identified?	Yes	(No)	N/A
Field duplicate RPD values acceptable?	Yes	No	(N/A)
Field split sample(s) identified?	Yes	(No)	N/A
Field split RPD values acceptable?	Yes	No	(N/A)
Performance audit sample(s) identified?	Yes	(No)	N/A
Performance audit sample results acceptable?	Yes	No	(N/A)

Comments:_____

11. DETECTION LIMITS (LEVELS D & E)

MDA's meet required detection limits?	(Yes)	No	N/A
Transcription/calculation errors?	(Yes)	(No)	N/A

★ Yes HW 9-25-94 SOW MDA's were met

$$\frac{\text{Minimum Detectable Activity (MDA)}}{\dfrac{4.66 \times \sqrt{(B.2)(T.2)}}{2.22(E.2)(I.2)(R.2)(D.2)(V.2)(Y.2)(T.2)}}$$

where:

- B.2 = background counts per minute (cpm) or the reported standard deviation of the background (S) cpm
- T.2 = counting time for associated sample
- 2.22 = conversion dpm/pCi
- E.2 = detector efficiency
- I.2 = ingrowth correction factor (if applicable or 1)
- R.2 = carrier recovery factor (if applicable or 1)
- D.2 = decay factor (if applicable or 1)
- Y.2 = chemical yield factor (if applicable or 1)
- V.2 = sample volume in liters or grams

Comments: MDA for Tc 99 B0B3MV6, MPS reported incorrectly. Form 1 corrected by Vendor.
MDA for Cs 137 (GAP, P) is 5 pci/L This will not meet for some of the samples. Re lab used contract RDL's to evaluate their data.
JM 9/15/94

Results Calculation Equations

Gross α/β and Tritium

$$\frac{(A.3 - B.3) \times C.3}{(2.22)(E.3)(V.3)}$$

where:

A.3 = gross counts per minute
B.3 = background counts per minute
C.3 = activity of α fraction in β channel*
2.22 = conversion factor, dpm/pCi
E.3 = detector efficiency
V.3 = sample volume, liters or grams

*if for calculation of gross β, otherwise substitute 1

Strontium (total)

$$\frac{A.4 - B.4}{(2.22)(E.4)(I.4)(D.4)(R.4)(V.4)}$$

where:

A.4 = gross counts per minute
B.4 = background counts per minute
2.22 = conversion factor, dpm/pCi
E.4 = detector efficiency
I.4 = ingrowth correction factor
R.4 = carrier recovery factor
D.4 = strontium decay factor
V.4 = sample volume, liters or grams

Strontium-90 (corrected for Sr-89)

$$\frac{A.5 - B.5}{(2.22)(Y.5)(E.5)(I.5)(D.5)(R.5)(V.5)}$$

where:

A.5 = gross counts per minute
B.5 = background counts per minute
Y.5 = yttrium-90 yield factor
2.22 = conversion factor, dpm/pCi
E.5 = detector efficiency
I.5 = ingrowth correction factor
R.5 = strontium-89 yield factor
D.5 = strontium decay factor
V.5 = sample volume, liters or grams

Results Calculation Equations, continued

Technetium-99

$$\frac{A.6 - B.6}{(2.22)(E.6)(R.6)(V.6)}$$

where:

A.6 = gross counts per minute
B.6 = background counts per minute
2.22 = conversion factor, dpm/pCi
E.6 = detector efficiency
R.6 = carrier recovery factor
V.6 = sample volume, liters or grams

Alpha Spec Isotopes

$$\frac{A.7 - B.7}{(2.22)(E.7)(R.7)(V.7)}$$

where:

A.7 = gross counts per minute for isotope
B.7 = background counts per minute for detector
2.22 = conversion factor, dpm/pCi
E.7 = detector efficiency
R.7 = tracer recovery factor
V.7 = sample amount, liters or grams

Gamma Spec Isotopes

$$\frac{A.8}{(2.22)(B.8)(D.8)(E.8)(V.8)(T.8)}$$

where:

A.8 = peak area for isotope
D.8 = decay factor for isotope
2.22 = conversion factor, dpm/pCi
B.8 = abundance factor for isotope
E.8 = efficiency factor for isotope
V.8 = sample amount, liters or grams
T.8 = live time (minutes)

Results Calculation Equations, continued

Total Uranium by Laser Fluorometry

$$\frac{(W.9 - I.9)(R.9)(D.9)}{U.9 - W.9}$$

where:

W.9 = sample reading with Fluran
I.9 = initial sample reading
R.9 = concentration of uranium standard after dilution with sample (µg/L)
D.9 = dilution factor
U.9 = sample reading with uranium standard

Radium-226 by Radon Emanation

$$D = \frac{COUNT}{(2.22)(CAL)(VOL)} \times \frac{1}{1 - e^{-\lambda t_1}} \times \frac{1}{e^{-\lambda t_2}} \times \frac{t_3}{1 - e^{-\lambda t_3}}$$

where:

COUNT = net count rate, cpm
CAL = calibration constant of the de-emanation system and the scintillation cell in counts per minutes/disintigrations per minute of radon-222
VOL = sample aliquot in liters
t_1 = the elapsed time in days between the first and second de-emanations, and λ is the decay constant for radon-222 (0.181 d^{-1})
t_2 = the time interval in hours between the second de-emanation and counting, and λ is the decay constant of radon-222 (0.00755hr^{-1})
t_3 = the counting time in minutes, and λ is the decay constant of radon-222 (1.26×10^{-4} min^{-1})
2.22 = conversion factor, dpm/pCi

RADIOCHEMISTRY QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Uranium-234	**MAJOR**	**UR**	MV6,MP8	ACCURACY	The yield is less than 5%.
Uranium-235	**MAJOR**	**UR**	MV6,MP8	ACCURACY	The yield is less than 5%.
Uranium-238	**MAJOR**	**UR**	MV6,MP8	ACCURACY	The yield is less than 5%.
Uranium-234	MINOR	J	MV6,MP8	ACCURACY	The LCS recovery is greater than 125%.
Uranium-235	MINOR	UJ	MQ2	ACCURACY	The LCS recovery is less than 75%.

entered by: WJC
date: 9/11/94

40276QLS.XLT, Qualification Summary

checked by:
date: 9/12/94

Validator	Date	SDG	VW Number
MC Webb	8-27-94	W0082-ITC-096	402.76

RADIOCHEMICAL DATA QUALIFICATION SUMMARY

MAJOR DEFICIENCIES:

1. The **U-iso results reported by the laboratory** for BOBMV6 and BOBMP8 are qualified unusable (UR) due to tracer recoveries < 5%. The reanalysis results were **added to the Form 1s by the validator.** The reanalysis results, although not perfect, are usable.

MINOR DEFICIENCIES:

1. The U235 LCS had a recovery < 75% (QAPjP). The result for BOBMQ2 is qualified as estimated (UJ).
2. The U235 and U234 LCSs for the U-iso reanalysis of BOBMV6 and BOBMP8 had recoveries > 125% (QAPjP). The U234 results for both samples are qualified as estimated (J). The U235 results for both samples are both non detects. No qualifier is necessary.

COMMENTS:

1. The case narrative is present, but incomplete. It lacks comments on Pu-iso, U-iso, gross alpha, gross beta, and the gamma analyses.
2. All the analyses requested had results reported, but the laboratory did not report the acceptable reanalysis of U-iso of samples BOBMV6 and BOBMP8. In order to save time, I added the complete results to the Form 1s, avoiding the "ON HOLD" situation. The original results are qualified UR (unusable).
3. The MDA for Tc99 (samples BOBMV6 and BOBMP8) was not reported correctly. The Form 1s are edited.
4. The MDA for Cs137 (gamma analysis) (QAPjP) is 5 pCi/L. This was not met for any of the samples. The laboratory used the contract RDLs to evaluate their data. No qualifier necessary.

Validator	Date	SDG	VW Number
MC Webb	8-27-94	W0082-ITC-096	402.76

RADIOCHEMICAL DATA QUALIFICATION SUMMARY

Analyte	Qualifier	Sample	Reason
U234	UR	BOBMV6,BOBMP8	Yield < 5%
U235	UR	BOBMV6,BOBMP8	Yield < 5%
U238	UR	BOBMV6,BOBMP8	Yield < 5%
U235	UJ	BOBMQ2	LCS < 75%
U234	J	BOBMV6,BOBMP8	LCS > 125%

MATRIX SPIKE RECOVERY (MS)

Analysis: Radiochemistry
SDG: W0082-ITC-096

Date: 27-Aug-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
Tc99 BOBMQ2	92.77	0.00	90.58	102.4%

PERCENT RECOVERY (LCS)

Analysis: Radiochemistry
SDG: W0082-ITC-096

Date: 27-Aug-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
Alpha	22.04	22.60	97.5%
Beta	21.93	22.63	96.9%
Co60	80.59	76.71	105.1%
Cs137	71.60	62.62	114.3%
Eu152	153.20	153.27	100.0%
C14	1730.00	1833.00	94.4%
Sr total	13.49	13.55	99.6%
Tc99	89.14	90.03	99.0%
Tritium	2782.00	2707.75	102.7%
Am241	7.65	6.81	112.3%
Pu239	3.67	4.55	80.5%
U234	8.85	8.67	102.1%
U235	0.27	0.40	69.3%
U238	10.18	9.12	111.7%
Tritium	2817.00	2796.13	100.7%

ALPHA SPEC TRACER RECOVERY

Analysis: Radiochemistry
SDG: W0082-ITC-096

Date: 27-Aug-94
Validator: MC Webb

Constituent		Gross counts per minute	Background counts per minute of tracer	Detector efficiency	Activity (pCi) of tracer added to sample	%R
		A.1	B.1	E.1	T.1	
Am243	BOBMQ2	1.09	0.0008	3.424	5.0287	0.741627
Pu242	BOBMQ2	1.41	0.002	3.7	7.061	0.737799
U232	BOBMQ2	1.96	0.042	3.7	10.047	0.706340

000169

RELATIVE PERCENT DIFFERENCE

Analysis: Radiochemistry
SDG: W0082-ITC-096

Date: 27-Aug-94
Validator: MC Webb

Constituent		Original (Sample) concentration OS	Duplicate concentration D	RPD
Alpha	BOBMV6	4.4690	3.8560	14.73%
Beta	BOBMV6	Undetected	Undetected	NC
Sr total	BOBMQ2	Undetected	Undetected	NC
C14	BOBMQ2	Undetected	1.8920	NC
Tc99	BOBMQ2	2.9600	Undetected	NC
Tritium	BOBMQ2	10510.0000	10170.0000	3.29%
Am241	BOBMQ2	0.0437	0.0410	6.31%
Pu238	BOBMQ2	Undetected	Undetected	NC
Pu239	BOBMQ2	Undetected	Undetected	NC
U234	BOBMQ2	3.8200	3.7240	2.55%
U235	BOBMQ2	Undetected	Undetected	NC
U238	BOBMQ2	3.1430	3.7540	17.72%
GEA	BOBMQ2 nuclides	Undetected	Undetected	NC

MINIMUM DETECTABLE ACTIVITY (MDA)

Analysis: Radiochemistry
SDG: W0082-ITC-096

Date: 27-Aug-94
Validator: MC Webb

Constituent	Background counts per minute (cpm) or Standard Deviation of background (cpm)	Counting time for associated sample	Detector Efficiency	Ingrowth correction factor	Carrier recovery factor	Decay factor	Chemical yield factor	Sample volume (L or g)	MDA
	B.2	T.2	E.2	I.2	R.2	D.2	Y.2	V.2	
BOBMQ2 alpha	0.050	100.000	7.138	1.000	1.000	1.000	1.000	0.200	2.107
BOBMQ2 beta	1.014	100.000	2.681	1.000	1.000	1.000	1.000	0.200	2.991
BOBMQ2 Sr90	0.980	50.000	2.237	1.000	1.000	1.000	0.888	1.000	0.800
C14 blank	19.510	200.000	1.073	1.000	1.000	1.000	1.000	0.200	3.543
Tc99 blank	25.420	125.000	1.052	1.000	0.951	1.000	1.000	0.500	2.111
Tritium blank	7.500	125.000	2.367	1.000	0.977	1.000	1.000	0.005	253.337
U234 BOBMQ2	0.001	200.000	3.700	1.000	0.706	1.000	1.000	0.200	0.294
U235 BOBMQ2	0.001	200.000	3.700	1.000	0.706	1.000	1.000	0.200	0.294
U238 BOBMQ2	0.004	200.000	3.700	1.000	0.706	1.000	1.000	0.200	0.393
Pu238 BOBMQ2	0.002	200.000	3.703	1.001	0.738	1.000	1.000	0.200	0.319
Pu239 BOBMQ2	0.001	200.000	3.700	1.000	0.738	1.000	1.000	0.200	0.270
Am241 BOBMQ2	0.001	200.000	3.424	1.000	0.742	1.000	1.000	0.200	0.237

RESULTS CALCULATION GROSS ALPHA/BETA AND TRITIUM

Analysis: Radiochemistry
SDG: W0082-ITC-096

Date: 27-Aug-94
Validator: MC Webb

Constituent		Gross Counts per minute	Background Counts per minute	Yield (for tritium only)	Detector Efficiency	Sample volume (L or g)	Result
		A.3	B.3	C.3	E.3	V.3	
Alpha	BOBMQ2	0.550	0.050	1.00	7.167	0.200	8.0709
Beta	BOBMQ2	2.510	1.014	1.00	2.673	0.200	9.0063

LSC		DPM sample	DPM blank	Yield	Decay	Volume	
C14	BOBMV6	21.130	20.930	1.00	1.000	0.200	0.4505
H3	BOBMQ2	131.240	17.750	0.98	1.004	0.005	10506.8799

RESULTS CALCULATION TOTAL STRONTIUM

Analysis: Radiochemistry
SDG: W0082-ITC-096

Date: 27-Aug-94
Validator: MC Webb

Constituent		Gross Counts per minute	Background Counts per minute	Ingrowth correction Factor	Detector Efficiency	Carrier recovery factor	Sample volume (L or g)	Result
		A.4	B.4	I.4	E.4	R.4	V.4	
Sr total	BOBMQ2	1.040	0.980	1.689	2.237	0.888	1.00	0.0403
INGROWTH FACTOR		Sr D/C	Y D/C	delta T (hr)	= e**(-Lt)	L =1.083E-2		
	BOBMQ2	2.2370	2.010	53.08	0.3811	X	X	1.689

RESULTS CALCULATION TECHNETIUM-99

Analysis: Radiochemistry
SDG: W0082-ITC-096

Date: 27-Aug-94
Validator: MC Webb

Constituent		DPM of the sample	DPM of the blank	Decay Factor	Yield	Sample volume (L or g)	Result
		A.6	B.6	E.6	R.6	V.6	
Tc99	BOBMQ2	27.300	26.740	1.000	0.95	0.500	0.5305

9613496.0876

000174

RESULTS CALCULATION ALPHA SPEC ISOTOPES

Analysis: Radiochemistry
SDG: W0082-ITC-096

Date: 27-Aug-94
Validator: MC Webb

Constituent		Gross Counts per minute	Background Counts per minute	Detector Efficiency	Tracer recovery factor	Sample volume (L or g)	Result
		A.7	B.7	E.7	R.7	V.7	
Am241	BOBMQ2	0.0050	0.0008	3.424	0.742	0.200	0.0437
Pu238	BOBMQ2	0.0000	0.0020	3.700	0.738	0.200	-0.0226
Pu239	BOBMQ2	0.0100	0.0010	3.700	0.738	0.200	0.1016
U234	BOBMQ2	0.3250	0.0012	3.700	0.706	0.200	3.8220
U235	BOBMQ2	0.0100	0.0012	3.700	0.706	0.200	0.1039
U238	BOBMQ2	0.2700	0.0036	3.700	0.706	0.200	3.1445

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

LABORATORY CONTROL SAMPLE

LAB NAME:	ITAS-RICHLAND	**SDG:**	W0082
LAB SAMPLE ID:	L060721S	**MATRIX:**	WATER

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	7.65E+00	1.41E+00	1.94E+00	2.97E-01	pCi/L	63.80%	6.81E+00	112.33%
PU239/40	3.67E+00	9.50E-01	1.07E+00	2.94E-01	pCi/L	67.90%	4.55E+00	80.66%
U-234	8.85E+00	1.29E+00	1.70E+00	2.65E-01	pCi/L	88.80%	8.67E+00	102.08%
U-235	2.74E-01	2.30E-01	2.33E-01	2.14E-01	pCi/L	88.80%	3.96E-01	69.19%
U-238DA	1.02E+01	1.38E+00	1.88E+00	2.14E-01	pCi/L	88.80%	9.12E+00	111.84%
CO-60	8.06E+01	1.46E+01	1.67E+01	N/A	pCi/L	N/A	7.67E+01	105.08%
CS-137DA	7.16E+01	1.26E+01	1.45E+01	N/A	pCi/L	N/A	6.26E+01	114.38%
EU-152	1.53E+02	2.38E+01	2.83E+01	5.34E+01	pCi/L	N/A	1.53E+02	100.00%
ALPHA	2.20E+01	2.11E+00	4.27E+00	5.25E-01	pCi/L	100.00%	2.26E+01	97.35%
BETA	2.19E+01	2.48E+00	2.93E+00	2.63E+00	pCi/L	100.00%	2.26E+01	96.90%
STRONTIUM	1.35E+01	8.62E-01	3.53E+00	7.26E-01	pCi/L	92.90%	1.36E+01	99.26%
TRITIUM	2.78E+03	1.79E+02	3.85E+02	2.53E+02	pCi/L	97.70%	2.71E+03	102.58%

Number of Results: 12

LCS for U-235 < 70% Results are estimated (J/UJ)
LCS batch QC applies to 100BHQ2 only

LCS for U235 >125%
U234 >125%
} Rerun QC see pg 376 attached
8-26-94

for samples B0B8V6, B0B8P8
qual. U235 ; U234
↳ none ↳ estimate detects B0B8V6 (3.2)
B0B8P8 (.9)

~~0017~~

U235 - nondetects (bdl)

9613496.0879

DATE 01-Aug-94 CALCULATED RESULTS SUMMARY dir$era_caldat:R406137U PAGE 1

(NUM)	IT #	ISOTOPE	RESULT	ERROR*	COUNT ERROR*	YIELD	CALC MDA	UNITS	COMMENTS	DIAGNOSTICS
(3)	L061372B	U234	1.114E-01	7.739E-02	7.709E-02	0.942	2.62E-01	PCI/L		
(5)	L061372B	U235	4.069E-02	4.444E-02	4.437E-02	0.942	1.78E-01	PCI/L		
(7)	L061372B	U238	1.185E-01	7.727E-02	7.692E-02	0.942	2.36E-01	PCI/L		
(11)	L061372S	U234	9.986E+00	9.457E-01	7.026E-01	0.845	2.92E-01	PCI/L	127.00	
(13)	L061372S	U235	5.345E-01	1.671E-01	1.636E-01	0.845	2.25E-01	PCI/L	135.1	
(15)	L061372S	U238	8.568E+00	8.474E-01	6.504E-01	0.845	2.46E-01	PCI/L	94.4	
(19)	40613701	U234	3.206E+00	4.160E-01	3.673E-01	0.996	2.36E-01	PCI/L		
(21)	40613701	U235	7.366E-02	5.964E-02	5.947E-02	0.996	2.09E-01	PCI/L		
(23)	40613701	U238	2.732E+00	3.787E-01	3.401E-01	0.996	2.78E-01	PCI/L		
(27)	40613702	U234	4.845E-01	1.543E-01	1.514E-01	0.956	3.08E-01	PCI/L		
(29)	40613702	U235	1.638E-01	8.792E-02	8.734E-02	0.956	2.17E-01	PCI/L		
(31)	40613702	U238	6.030E-01	1.672E-01	1.631E-01	0.956	1.99E-01	PCI/L		

EQIC 156

7.8629 ± .01827

8-1-94

9.0792 ± .03987

1977 ± .000835 , 3955 ± .001667

************************ MDA, Uncertainty Calculations ************************

* Calculations are based on the average background counts (bkg) and average sample count times (Ts). Results are in Act/Unit. *

* MDA = [(4.65 * sqrt((bkg c/m)/Ts)) + 2.71/Ts] * K, where K is the factor that converts the associated result from CPM/Aliquot to Act/Unit. *

* The calculated MDA value may be lower than the True MDA. The MDA is the activity level that can be detected above the mean blank value, Xo (Xo is not included)! In addition, only the Poisson counting uncertainty is used to estimated the background variability! *

* * Uncertainty estimates (errors) are one standard deviation (1s) ! *

* The average error is calculated as follows: SQR(SUM(Random var) / N + SUM(Sym var) / N) *

****

8-1-94

2nd analysis (re-run) of MV6 & MP. good yields, but did not get reported

U235 LCS >130%

U235 results will be UJ

D376

8.055 ± .033953 / 222 × 1000/200 = × .4778 × .0219 × .5104

000177

8-27-94

961349b_0880

DATE 15-Jul-94 CALCULATED RESULTS SUMMARY dir$era_caldat:406072U PAGE 1

(NUM)	IT #	ISOTOPE	RESULT	ERROR*	COUNT ERROR*	YIELD	CALC MDA	UNITS	COMMENTS	DIAGNOSTICS
(3)	L060721B	U234	2.494E-02	4.890E-02	4.887E-02	0.869	2.84E-01	PCI/L		
(5)	L060721B	U235	-3.837E-03	3.844E-03	3.837E-03	0.869	1.93E-01	PCI/L		
(7)	L060721B	U238	3.261E-02	4.861E-02	4.857E-02	0.869	2.56E-01	PCI/L		
(11)	L060721S	U234	8.852E+00	8.503E-01	6.453E-01	0.888	2.65E-01	PCI/L	102.1 %	
(13)	L060721S	U235	2.741E-01	1.164E-01	1.151E-01	0.888	2.14E-01	PCI/L	69.3%	
(15)	L060721S	U238	1.018E+01	9.399E-01	6.914E-01	0.888	2.14E-01	PCI/L	111.7 %	
(19)	40607201	U234	3.820E+00	5.402E-01	4.757E-01	0.706	2.94E-01	PCI/L		
(21)	40607201	U235	1.038E-01	8.411E-02	8.382E-02	0.706	2.94E-01	PCI/L		
(23)	40607201	U238	3.143E+00	4.822E-01	4.337E-01	0.706	3.93E-01	PCI/L		
(27)	F0607201	U234	3.724E+00	4.809E-01	4.207E-01	0.886	3.23E-01	PCI/L		
(29)	F0607201	U235	1.335E-01	8.204E-02	8.162E-02	0.886	2.15E-01	PCI/L		
(31)	F0607201	U238	3.754E+00	4.817E-01	4.206E-01	0.886	2.15E-01	PCI/L		
(35)	40613701	U234	-2.919E+00	3.293E+00	1.459E+00	0.005	4.87E+01	PCI/L		
(37)	40613701	U235	-7.297E-01	1.038E+00	7.297E-01	0.005	3.67E+01	PCI/L		
(39)	40613701	U238	-4.378E+00	4.775E+00	1.787E+00	0.005	5.41E+01	PCI/L		
(43)	40613702	U234	7.685E-01	1.160E+00	1.144E+00	0.037	6.03E+00	PCI/L		
(45)	40613702	U235	-9.041E-02	9.309E-02	9.041E-02	0.037	4.55E+00	PCI/L		
(47)	40613702	U238	-5.424E-01	2.583E-01	2.214E-01	0.037	6.70E+00	PCI/L		

EQIC 151

9.1077 ± .03656

.3957 ± .001668

9.1167 ± .03928

spike recovery

within 3σ

Rerun

Rerun

7-15-94

$$\frac{8.0592 \pm .03397}{2.22} \times \frac{1000}{5} \times \begin{matrix} .4778 \\ .0218 \\ 1.500 \end{matrix}$$

First analysis of U-ISO results for BOBMN6 & BOBMP6 rejected by lab due to low yield

8-27-94

0315

000178

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT: 100-FR-3			SDG: W0082-ITC-096		
VALIDATOR: MWebb		LATA NO.: VW401. 402.76		DATE: 8.29-94	
SAF NO.: 94-087		LAB: ITC		CASE: —	
QAPP REFERENCE:			SAP REFERENCE:		

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☒ CLP/ICP	☒ CLP/GFAA	☒ CLP/Hg	☒ CLP/CN	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846/CN	☐	☐

SAMPLES/MATRIX B0BMQ2, B0BMQ3, B0BMP8, B0BMP9
B0BMV6, B0BMV7 (waters)
Not all analytes are requested on each sample.

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 *(see HOLDING TIME SUMMARY form)*

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments: ICP, GFAA ok
Hg. ok
CN. ok

CN preservation for B0BMQ2, B0BMV6, and B0BMP8 <12 (pH). The results may be "low biased". No qualifyers necessary. MW 9-25-94

MW 9.15.94

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS *(see CALIBRATION DATA SUMMARY form)*

Were initial calibrations performed on all instruments? . . . . . (Yes) No N/A

Are initial calibrations acceptable? . . . . . (Yes) No N/A

★ Recalculate the correlation coefficient (r) of the standard curves for atomic absorption and cyanide analyses.

$$\text{Correlation Coefficient (r)}$$

$$r = \frac{N \sum x_i y_i - \sum x_i \sum y_i}{[N \sum x_i^2 - (\sum x_i)^2]^{1/2} \; [N \sum y_i^2 - (\sum y_i)^2]^{1/2}}$$

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

★ Recalculate at least one ICV and CCV recovery for each method.

★

$$\text{ICV/CCV Recovery}$$

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments: _____

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Were ICB and CCB checks performed for all applicable analyses? . . . . . (Yes) No N/A

Are ICB and CCB results acceptable? . . . . . ND. m.w. 9-25-94 . . . (Yes) (No) N/A

Were preparation blanks analyzed? . . . . . (Yes) No N/A

Are preparation blank results acceptable? . . . . . Yes (No) N/A

Comments: See summary. All Cal Blks ok Mn qualifies for a Cal. blank. MW 9-25-94

JM 9/13/94

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were spike samples analyzed? ..... (Yes) No N/A

Are all spike sample recoveries acceptable? ..... MW 8-30-94 (Yes) (No) N/A

Were laboratory control samples (LCS) analyzed? ..... (Yes) No N/A

Are all LCS recoveries acceptable? ..... (Yes) No N/A

★

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Comments: CA did a bkl. spike in place of Matrix spike Pb MS/MSD < 75% Pb results will be est. (J/UJ) also Simplex spotted (<75>30%)

6. PRECISION *(see PRECISION DATA SUMMARY form)*

Were laboratory duplicates analyzed? ..... (Yes) No N/A

Are all duplicate RPD values acceptable? ..... (Yes) No N/A

★

$$RPD = \frac{|OS - D|}{\left(\frac{OS + D}{2}\right)} \times 100$$

where:
OS = sample concentration (original sample/MS)
D = duplicate concentration (duplicate sample/MSD)

Comments:

6. PRECISION (continued) *(see PRECISION DATA SUMMARY form)*

Were ICP serial dilution samples analyzed? ..... (Yes) No N/A

Are all ICP serial dilution %D values acceptable? ..... (Yes) No N/A

★

$$\%D = \frac{|I - S|}{I} \times 100$$

Percent Difference

where:
I = analyte concentration before dilution
S = analyte concentration after serial dilution

Comments: Cr, Fe, K, Zn < 50* IDL accepted

7. FIELD QC SAMPLES

mm 8-30-94

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? (Yes) No N/A

Are field/trip blank results 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)

Are performance audit sample results acceptable? ..... Yes No (N/A)

Comments:

8. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? ..... (Yes) No N/A

Are all duplicate injection %RSD values acceptable? ..... (Yes) No N/A

Were analytical spikes performed as required? ..... (Yes) No N/A

Are all analytical spike recoveries acceptable? ..... Yes (No) N/A

Was MSA performed as required? ..... Yes No (N/A)

Are all MSA results acceptable? ..... Yes No (N/A)

Comments: Se BOBMV6 analytical spike not acceptable result is estimated (80.Pb) 6-16
82.5 6-17 result = 2.37
IDL = 2.0 detect = J

Se AB 0441

9. 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

★

Inorganics Analysis Results Calculation, water sample

Concentration (µg/L) = CONCW × DFW

where:

CONCW = concentration off calibration curve (µg/L)

DFW = dilution factor (if any)

★

Inorganics Analysis Results Calculation, soil sample

$$\text{Concentration (mg/Kg)} = \frac{\text{CONCS} \times \text{DFS} \times \text{VOL}}{\text{WS} \times \text{SS}}$$

where:

CONCS = concentration off calibration curve (mg/L)

DFS = dilution factor (if any)

VOL = volume of final extract (ml)

WS = weight of sample (g)

SS = dry weight conversion factor [(100 - %moisture) × 100]

Do results meet the CRDLs? . . . . . (Yes) No N/A

Comments:

INORGANICS QUALIFICATION SUMMARY

ANALYTE	DISCREPANCY CATEGORY	QUALIFIER	SAMPLES AFFECTED BOB-	DQO	REASON
Lead	MINOR	J/UJ	MQ2,MQ3,MP8, MP9,MV6,MV7	ACCURACY	The MS/MSD spike recoveries for accuracy were less than 75% and greater than 30%.
Selenium	MINOR	J	MV6	ACCURACY	The analytical spike recovery for graphite furnace was outside the acceptance criteria.
Iron	MINOR	U	MQ2,MQ3,MP8, MP9,MV6,MV7	BLANKS	The preparation blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration.
Lead	MINOR	U	MQ2,MP9,MV6	BLANKS	The preparation blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration.
Manganese	MINOR	U	MP8,MP9	BLANKS	The calibration blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration.
Zinc	MINOR	U	MQ2,MQ3,MP8, MP9,MV6,MV7	BLANKS	The preparation blank values were between the IDL and the CRDL with associated sample results less than 5x the highest blank concentration.

entered by: WJC
date: 9/11/94

40276QLS.XLT, Qualification Summary

checked by:
date: 9-12-94

Validator	Date	SDG	VW Number
MC Webb	8-27-94	W0082-ITC-096	402.76

INORGANIC DATA QUALIFICATION SUMMARY

Analyte	Qualifier	Sample	Reason
Fe	U	BOBMQ2,BOBMQ3,BOBMP8 BOBMP9,BOBMV6,BOBMV7	Positive Prep Blank > IDL
Pb	U	BOBMQ2,BOBMP9,BOBMV6	Positive Prep Blank > IDL
Zn	U	BOBMQ2,BOBMQ3,BOBMP8 BOBMP9,BOBMV6,BOBMV7	Positive Prep Blank > IDL
Se	J	BOBMV6	Analytical Spike < 85%
Pb	J/UJ	BOBMQ2,BOBMQ3,BOBMP8 BOBMP9,BOBMV6,BOBMV7	MS/MSD <75% > 30%
Mn	U	BOBMP8, BOBMP9	Positive Cal Blank > IDL

Validator	Date	SDG	VW Number
MC Webb	8-27-94	W0082-ITC-096	402.76

INORGANIC DATA QUALIFICATION SUMMARY

MAJOR DEFICIENCIES:

1. None

MINOR DEFICIENCIES:

1. The Se result for sample BOBMV6 is qualified as estimated (J) because the analytical spike recovery is < 85%.
2. The Pb results for all samples are qualified as estimated (J/UJ) because the MS/MSD recovery is < 75% but > 30%.
3. The Fe and Zn results for all samples are qualified as non-detect (U) because of positive concentration in the method blank.
4. The Pb results for samples BOBMQ2, BOBMP9 and BOBMV6 are qualified as non-detect (U) because of positive concentration in the method blank.
5. The Mn results for samples BOBMP8 AND BOBMP9 are qualified as non-detect (U) because of positive concentration in a calibration blank.

COMMENTS:

1. None

BLANK AND SAMPLE DATA SUMMARY

SDG: W0082-ITL-046	VALIDATOR: MW ebb	DATE: 8-30-94	PAGE 1 OF 1

COMMENTS: INORGANIC ANALYSES

FIELD SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
Prep Blk	Ba	2.65	U			13.25		None	
	Ca	91.17	U			455.85		None	
	Co	12.97	U			64.85		None	
	✓ Fe	14.49	U			72.45		All MW 9-4-94	B → U
	✓ Pb	2.43	U			12.15	MW 9-4-94	BOBMQ2, MP9 MP8	U
	Mg	33.49	U			167.45		None	
	Na	273.39	U			1366.95		None	
	✓ Zn	15.87	U			79.35	✓	BOBMQ2, Q3 MP8, MP9, V6, V7	U
Cal Blank	✓ Mn	2.5	U			12.5		MP8, MP9	
MW 9-25-94									

~~All Cal blanks~~ OK MW 9.25-94

PNO-DVF-014, R1

0680*9415196

88000

HOLDING TIME SUMMARY

SDG: W0082-ITC-056	VALIDATOR: MWelch	DATE: 8-30-94	PAGE 1 OF 1

COMMENTS: INORGANIC ANALYSES

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER	Hold Time
	ICP	6-7 6-9		7-5- 7-1-94			none	180d
	GFAA	6-7 6-9		6-16 to 6-28			none	180d
	Hg	6-7 6-9	Glass bottles	6-23		16 14	none	28d
	CN	6-7 6-9		6-15-94		8 6	none	14d

PNO-DVF-014, R1

ACCURACY DATA SUMMARY

SDG: W0082 - ITC - 096	VALIDATOR: MWebb	DATE: 8-30-94	PAGE 1 OF 1

COMMENTS: INORGANIC ANALYSES

FIELD SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
	✓ Se analytical spk.	82.5%	B0BMV6	J
	✓ Pb MS	72%	all samples	J/UJ
	✓ Pb MSD	30.1	1	1

2680*96154196

PNO-DVF-014, R1

001190

PERCENT RECOVERY (ICV/CCV)

Analysis: Inorganic (metals/CN) Date: 29-Aug-94
SDG: W0082-ITC-096 Validator: MC Webb

Constituent	Observed Value	True Value	%R
	O	A	
GFAA As	25.81	25.00	103.2%
ICP Al	20456.31	20000.00	102.3%
Hg	4.14	4.00	103.5%
CN	224.00	200.00	112.0%

9613496.0894

RELATIVE PERCENT DIFFERENCE

Analysis: Inorganic (metals/CN)
SDG: W0082-ITC-096
Sample ID: BOBMQ2

Date: 29-Aug-94
Validator: MC Webb

Constituent	Original (Sample) concentration	Duplicate concentration	RPD
	OS	D	
As	Undetected	Undetected	NC
CN	Undetected	Undetected	NC
Hg	Undetected	Undetected	NC
Al	Undetected	51.99	NC

PERCENT RECOVERY (LCS)

Analysis: Inorganic (metals/CN)
SDG: W0082-ITC-096

Date: 29-Aug-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
GFAA As	37.58	40.00	93.9%
ICP Al	1925.47	2000.00	96.3%
CN	224.00	200.00	112.0%
Hg	4.54	4.00	113.5%

9613496.0896

MATRIX SPIKE RECOVERY (MS)

Analysis: Inorganic (metals/CN)
SDG: W0082-ITC-096
Sample ID: BOBMQ2

Date: 29-Aug-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
GFAA As MS	31.01	0.00	40.00	77.5%
GFAA As MSD	34.18	0.00	40.00	85.5%
ICP Al MS	2005.00	0.00	2000.00	100.3%
ICP Al MSD	1864.00	0.00	2000.00	93.2%
Hg MS	1.11	0.00	1.00	111.4%
Hg MSD	1.09	0.00	1.00	108.9%
CN BLK SPK	222.00	0.00	200.00	111.0%

JM 9/15/94

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: CN
SDG: W0082-ITC-096

Calibration Date: 15-Jun-94

Date: 29-Aug-94
Validator: MC Webb

Concentration	Absorbance
0.50	0.265
0.40	0.216
0.20	0.115
0.10	0.059
0.05	0.029
0.02	0.010
0.01	0.004
0.00	-0.002
0	

r	r²
0.9994	0.9988
slope	x intercept
1.8670	-0.0023
1/slope	y intercept
0.5356	0.0013

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent:
SDG:

Calibration Date:

Date: 29-Aug-94
Validator: MC Webb

Concentration	Absorbance

r	r²
#DIV/0!	#DIV/0!
slope	x intercept
#DIV/0!	#DIV/0!
1/slope	y intercept
#DIV/0!	#DIV/0!

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: GFAA As
SDG: W0082-ITC-096

Calibration Date: 22-Jun-94

Date: 29-Aug-94
Validator: MC Webb

Concentration	Absorbance
0.00	0.006
10.00	0.054
20.00	0.133
40.00	0.240
60.00	0.343
80.00	0.448

r	r^2
0.9986	0.9973
slope	x intercept
179.6357	-1.6487
1/slope	y intercept
0.0056	0.0097

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: Mercury
SDG: W0082-ITC-096

Calibration Date: 23-Jun-94

Date: 29-Aug-94
Validator: MC Webb

Concentration	Absorbance
0.00	0.050
0.50	11.000
1.00	22.000
2.00	42.000
3.00	64.500
6.00	123.000

r	r^2
0.9997	0.9994
slope	x intercept
0.0488	-0.0510
1/slope	y intercept
20.5022	1.0715

PERCENT DIFFERENCE (ICP SERIAL DILUTION)

Analysis: ICP
SDG: W0082-ITC-096
Sample ID: BOBMQ2

Date: 29-Aug-94
Validator: MC Webb

Constituent	Analyte Concentration before Dilution	Analyte Concentration after Serial Dilution	%D
	I	S	
ICP Al	Undetected	Undetected	NC
ICP Ba	49.91	50.7	1.6

INORGANICS RESULTS CALCULATION, WATER

Analysis: Inorganic (metals/CN)
SDG: W0082-ITC-096
Sample ID: BOBMQ2

Date: 29-Aug-94
Validator: MC Webb

Constituent	Concentration from curve	Dilution Factor	Concentration (µg/L)
	CONCW	DFW	
As	0.6000	1	0.6000
CN	0.0010	1	0.0010
Hg	-0.0110	1	-0.0110
Al	26.98	1	26.9800

9613496.0901

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3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO621 SAS No.: _____ SDG No.: W0082_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

APBWO61SA(0661)
PBWO614
CPBWO623B(1142)
APBWO622A(8 mL)(0998)

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank PBWO61SA (0659)	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	40.000	U	P
Antimony	50.0	U	50.0	U	50.0	U	50.0	U	50.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	2.0	U	2.0	U	2.0	U	2.0	U	2.650	B	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	5.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	91.170	B	P
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	12.970	B	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	14.490	B	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.430	B	F
Magnesium	30.0	U	30.0	U	30.0	U	30.7	B	33.490	B	P
Manganese	2.0	U	2.0	U	2.0	U	2.5	B	2.000	U	P
Mercury	0.2	U	0.2	U	0.2	U			0.200	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	20.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	5.0	U	5.0	U	5.0	U	5.0	U	5.000	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	273.390	B	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	15.870	B	P
Cyanide	10.0	U	10.0	U	10.0	U			10.000	U	AS

See Bll summary sheet

8/5/94

8-29-94

Se ID: APBW0615A Seq. No.: 00133 A/S Pos.: 1 Date: 06/17/94

Replicate 1 Time: 14:23
Peak Area (A-s): 0.000 Peak Height (A): 0.007
Background Pk Area (A-s): 0.053 Background Pk Height (A): 0.030
Blank Corrected Pk Area (A-s): 0.002
Concentration (ug/L): 0.45

Replicate 2 (Peak Stored) Time: 14:25
Peak Area (A-s): -0.001 Peak Height (A): 0.005
Background Pk Area (A-s): 0.054 Background Pk Height (A): 0.031
Blank Corrected Pk Area (A-s): 0.001
Concentration (ug/L): 0.20

Mean Conc (ug/L): 0.32 SD: 0.175 RSD(%): 53.79

Se ID: APBW0615A Seq. No.: 00134 A/S Pos.: 1 Date: 06/17/94

Replicate 1 Time: 14:28
Peak Area (A-s): 0.033 Peak Height (A): 0.057
Background Pk Area (A-s): 0.053 Background Pk Height (A): 0.038
Blank Corrected Pk Area (A-s): 0.034
Concentration (ug/L): 10.19

Replicate 2 (Peak Stored) Time: 14:31
Peak Area (A-s): 0.033 Peak Height (A): 0.058
Background Pk Area (A-s): 0.057 Background Pk Height (A): 0.039
Blank Corrected Pk Area (A-s): 0.034
Concentration (ug/L): 10.21

Mean Conc (ug/L): 10.20 SD: 0.013 RSD(%): 0.12

Recovery is 98.7%

Se ID: AB0441 BOBMV6 Seq. No.: 00135 A/S Pos.: 2 Date: 06/17/94

Replicate 1 Time: 14:33
Peak Area (A-s): 0.007 Peak Height (A): 0.012
Background Pk Area (A-s): 0.068 Background Pk Height (A): 0.035
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 2.56

Replicate 2 (Peak Stored) Time: 14:36
Peak Area (A-s): 0.006 Peak Height (A): 0.011
Background Pk Area (A-s): 0.069 Background Pk Height (A): 0.035
Blank Corrected Pk Area (A-s): 0.007
Concentration (ug/L): 2.18

Mean Conc (ug/L): 2.37 SD: 0.270 RSD(%): 11.41

Se ID: AB0441 Seq. No.: 00136 A/S Pos.: 2 Date: 06/17/94

Replicate 1 Time: 14:38
Peak Area (A-s): 0.033 Peak Height (A): 0.060
Background Pk Area (A-s): 0.063 Background Pk Height (A): 0.044

Blank Corrected Pk Area (A-s): 0.035
Concentration (ug/L): 10.42

Replicate 2 (Peak Stored) Time: 14:41
Peak Area (A-s): 0.035 Peak Height (A): 0.058
Background Pk Area (A-s): 0.063 Background Pk Height (A): 0.041
Blank Corrected Pk Area (A-s): 0.036
Concentration (ug/L): 10.81

Mean Conc (ug/L): 10.62 SD: 0.278 RSD(%): 2.62

Recovery is 82.5% BOBMW6

~~~~~~

Se ID: AB0316 Seq. No.: 00137 A/S Pos.: 3 Date: 06/17/94

Replicate 1 Time: 14:44
Peak Area (A-s): 0.008 Peak Height (A): 0.017
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.051
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 2.72

Replicate 2 (Peak Stored) Time: 14:46
Peak Area (A-s): 0.007 Peak Height (A): 0.017
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.052
Blank Corrected Pk Area (A-s): 0.009
Concentration (ug/L): 2.61

Mean Conc (ug/L): 2.66 SD: 0.080 RSD(%): 2.99

~~~~~~

Se ID: AB0316 Seq. No.: 00138 A/S Pos.: 3 Date: 06/17/94

Replicate 1 Time: 14:49
Peak Area (A-s): 0.037 Peak Height (A): 0.071
Background Pk Area (A-s): 0.074 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): 0.033
Concentration (ug/L): 11.37

Replicate 2 (Peak Stored) Time: 14:51
Peak Area (A-s): 0.036 Peak Height (A): 0.070
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.061
Blank Corrected Pk Area (A-s): 0.038
Concentration (ug/L): 11.23

Mean Conc (ug/L): 11.30 SD: 0.099 RSD(%): 0.88

Recovery is 86.4%

~~~~~~

Se ID: AB0316D Seq. No.: 00139 A/S Pos.: 4 Date: 06/17/94

Replicate 1 Time: 14:54
Peak Area (A-s): 0.007 Peak Height (A): 0.017
Background Pk Area (A-s): 0.079 Background Pk Height (A): 0.052
Blank Corrected Pk Area (A-s): 0.008
Concentration (ug/L): 2.41

6-30-94
~~~~~~

9613496.0904

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ITAS_KNOXVILLE Contract:HANFORD/WE | BOBMQ2S

Lab Code: ITSTU Case No.: WO621 SAS No.: SDG No.: W0082
Matrix: WATER Level (low/med): LOW
% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2005.0000		40.0000	U	2000.00	100.2		P
Antimony	75-125	458.6800		50.0000	U	500.00	91.7		P
Arsenic	75-125	31.0100		2.0000	U	40.00	77.5		F
Barium	75-125	1940.0000		49.9100	B	2000.00	94.5		P
Beryllium	75-125	50.4000		1.0000	U	50.00	100.8		P
Cadmium	75-125	46.3100		5.0000	U	50.00	92.6		P
Calcium									NR
Chromium	75-125	211.4500		19.2800		200.00	96.1		P
Cobalt	75-125	484.2200		10.0000	U	500.00	96.8		P
Copper	75-125	240.2100		10.0000	U	250.00	96.1		P
Iron	75-125	990.3600		17.3400	B	1000.00	97.3		P
Lead	75-125	19.8000		5.3900		20.00	72.0	N	F
Magnesium									NR
Manganese	75-125	474.6300		2.0000	U	500.00	94.9		P
Mercury	75-125	1.1140		0.2000	U	1.00	111.4		CV
Nickel	75-125	476.2600		20.0000	U	500.00	95.3		P
Potassium									NR
Selenium	75-125	11.0000		2.6600	B	10.00	83.4		F
Silver	75-125	45.0000		5.0000	U	50.00	90.0		P
Sodium									NR
Thallium	75-125	44.4000		2.0000	U	50.00	88.8		F
Vanadium	75-125	487.4300		10.0000	U	500.00	97.5		P
Zinc	75-125	488.9300		20.5400		500.00	93.7		P
Cyanide									NR

Comments:

FORM V (Part 1) - IN ILM02.1

8 7/5/94

Pb MS <75%
Pb MSD <75% >30%

JMS 8-29-94

9613496.0905

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ITAS_KNOXVILLE_____ Contract:HANFORD/WE | BOBMQ3S |

Lab Code: ITSTU_ Case No.: WO621 SAS No.: _____ SDG No.: W0082_
Matrix: __WATER_____ Level (low/med): _LOW____
% Solids for Sample: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1864.5100		40.0000	U	2000.00	93.2		P
Antimony	75-125	434.0800		50.0000	U	500.00	86.8		P
Arsenic	75-125	34.1800		2.0000	U	40.00	85.4		F
Barium	75-125	1747.3300		51.0300	B	2000.00	84.8		P
Beryllium	75-125	45.1500		1.0000	U	50.00	90.3		P
Cadmium	75-125	45.2600		5.0000	U	50.00	90.5		P
Calcium									NR
Chromium	75-125	195.1300		22.7700		200.00	86.2		P
Cobalt	75-125	437.7100		10.0000	U	500.00	87.5		P
Copper	75-125	224.3100		10.0000	U	250.00	89.7		P
Iron	75-125	900.3300		24.3600	B	1000.00	87.6		P
Lead	75-125	12.0300		2.0000	U	40.00	30.1	N	F
Magnesium									NR
Manganese	75-125	430.2400		2.0000	U	500.00	86.0		P
Mercury	75-125	1.0890		0.2000	U	1.00	108.9		CV
Nickel	75-125	425.5800		20.0000	U	500.00	85.1		P
Potassium									NR
Selenium	75-125	10.2800		2.0000	U	10.00	102.8		F
Silver	75-125	41.5900		5.0000	U	50.00	83.2		P
Sodium									NR
Thallium	75-125	47.1000		2.0000	U	50.00	94.2		F
Vanadium	75-125	440.8600		10.0000	U	500.00	88.2		P
Zinc	75-125	466.4800		17.7200	B	500.00	89.8		P
Cyanide									NR

Comments:
DISSOLVED.

8/5/94

8-29-94

Laboratory Case Narratives

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

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

July 7, 1994

Job Number: 621 & 633

This is the Certificate of Analysis for the following samples:

SDG:	W0082
Client Project ID:	WHC SAF-94-087 100-FR-3 Groundwater - 5th Round
Date Received by Lab:	June 7 & June 9, 1994
Number of Samples:	Twelve (12)
Sample Type:	Water

I. Introduction

On June 7 and June 9, 1994, twelve (12) water samples arrived at 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. One container for sample BOBMQ2 Pest/PCB was received broken. The analysis was taken from the other container. Samples BOBMQ2, BOBMV6 and BOBMP8 for cyanide were received at pH 10.

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.

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.

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
July 7, 1994
Job Number: 621 & 633
Client Project ID: WHC SAF-94-087 100-FR-3 Groundwater - 5th Round

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Compound List (TCL) pesticides and PCBs by gas chromatography/electron capture detection (GC/ECD) in accordance with the EPA CLP 3/90 Statement of Work.

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 alkalinity of the samples was determined using EPA method 310.1.

The samples were analyzed for ammonia based on EPA method 350.2.

The samples were analyzed for chemical oxygen demand (COD) at the ITAS ST. Louis laboratory based on EPA method 410.2. A copy of their report is enclosed.

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

The pH of the samples was determined using EPA methods 150.1 and 9040.

The specific conductance of the samples was measured using EPA method 120.1.

The samples were analyzed for sulfide based on EPA method 376.1.

The total dissolved solids (TDS) content of the samples was determined using EPA method 160.1.

The samples were analyzed for total organic carbon (TOC) based on EPA methods 415.1 and 9060.

The samples were analyzed for total organic halogens (TOX) based on EPA method 9020A.

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 Finnigan INCOS 500 GC/MS/DS. All QC results met method specified limits. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. The analysis of the matrix spike duplicate for sample BOBMQ2 was performed twenty-five minutes outside of holding time. The results for this sample compared well to the matrix spike results.

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III. Quality Control (Continued)

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. The recovery for surrogate standard 2,4,6-tribromophenol was high in samples BOC1G5 and BOBMQ2 MSD. These results are acceptable for this method. The percent recovery for 4-nitrophenol and pentachlorophenol were high for both the matrix spike and matrix spike duplicate of sample BOBMQ2.

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.

The samples for work order #621 were digested on June 15, 1994 for ICP and June 15, 1994 (June 22, 1994 - Lead) for GFAA. The CVAA analysis for mercury was performed on June 23, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 16 through June 28, 1994;. the remaining metals were analyzed by ICP on July 1, 1994. All run QC was acceptable. A duplicate and a spike were analyzed using sample number BOBMQ2 (total) and BOBMQ3 (dissolved). Spike recovery (accuracy) results were within acceptance limits for all parameters for both samples except for lead indicating matrix interferences. Duplicate RPD (precision) results were within acceptance limits for all parameters.

The samples for work order #633 were digested on June 15, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on June 23, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from June 16 through June 22, 1994; the remaining metals were analyzed by ICP on July 5, 1994. All run QC was acceptable. Samples were batched with QC from work order #621.

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.

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III. Quality Control (Continued)

"Q" 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.

"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 for alkalinity on June 8 and 17, 1994. A duplicate analysis was performed using sample BOBMQ2. All quality control results were acceptable.

The samples were analyzed for ammonia on June 17 and 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

The samples for work orders #621 and #633 were analyzed for chemical oxygen demand (COD) on June 16, 1994 at the ITAS St. Louis laboratory.

The samples were analyzed for nitrate/nitrite on June 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

The pH of the samples was determined on June 8 and 10, 1994. A duplicate analyses was performed using sample BOBMQ2. All quality control results were acceptable.

The samples were analyzed for sulfide on June 8 and 13, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

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5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
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III. Quality Control (Continued)

The specific conductance of the samples was determined on June 10, 1994. A duplicate analysis was performed using sample number BOBMQ2. All quality control results were acceptable.

The samples were analyzed for total organic carbon on June 14 and 28, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

The total dissolved solids content of the samples was determined on June 8 and 10, 1994. A duplicate analysis was performed using sample BOBMQ2. All quality control results were acceptable.

The samples were analyzed for total organic halogens on June 29 and 30, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

The samples were analyzed for anions on June 27, 1994. Matrix spike and matrix spike duplicate analyses were performed using sample BOBMQ2. All quality control results were acceptable.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
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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
AB0308	406071-01A-C	BOBMQ2	VOC
AB0309	406071-01D-F	"	SVOC
"	406071-01G-I	"	PEST/PCB
AB0310	406071-01J	"	CONDUCTIVITY
"	"	"	pH
"	"	"	ANIONS
AB0311	406071-01K	"	NO_3NO_2
AB0312	406071-01L	"	ALKALINITY
AB0313	406071-01M	"	TDS
AB0314	406071-01N	"	SULFIDE
AB0315	406071-01O	"	AMMONIA
AB0315 5329-016 (ST. LOUIS)	" "	" "	COD "
AB0316	406071-01P	"	METALS-T
AB0317	406071-01Q	"	CYANIDE
AB0318	406071-01R	"	TOC
AB0319	406071-01S	"	TOX
AB0320	406071-02A	BOBMQ3	METALS-D
AB0321	406071-03A-C	BOBMQ4	VOC
AB0322	406041-01A-C	BOC1G5	SVOC

IT ANALYTICAL SERVICES
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KNOXVILLE, TN

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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
AB0322	406041-01D-F	BOC1G5	PEST/PCB
AB0323	406041-01G	"	TDS
AB0324	406041-01H	"	SULFIDE
AB0433	406136-01A-C	BOBMV6	VOC
AB0434	406136-01D-F	"	SVOC
"	406136-01G-I	"	PEST/PCB
AB0435	406136-01J	"	CONDUCTIVITY
"	"	"	pH
"	"	"	ANIONS
AB0436	406136-01K	"	NO_3NO_2
AB0437	406136-01L	"	ALKALINITY
AB0438	406136-01M	"	TDS
AB0439	406136-01N	"	SULFIDES
AB0440	406136-01O	"	AMMONIA
AB0440 5329-014 (ST. LOUIS)	" "	" "	COD "
AB0441	406136-01P	"	METALS-T
AB0442	406136-01Q	"	CYANIDE
AB0443	406136-01R	"	TOC
AB0444	406136-01S	"	TOX
AB0457	406136-02A	BOBMV7	METALS-D

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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
AB0461	406136-03A-C	BOBMV8	VOC
AB0462	406136-04A-C	BOBMN8	"
AB0463	406136-05A-C	BOBMN9	"
AB0464	406136-08A-C	BOBMQ0	"
AB0445	406136-06A-C	BOBMP8	"
AB0446	406136-06D-F	"	SVOC
"	406136-06G-I	"	PEST/PCB
AB0447	406136-06J	"	CONDUCTIVITY
"	"	"	pH
"	"	"	ANIONS
AB0448	406136-06K	"	NO_3NO_2
AB0449	406136-06L	"	ALKALINITY
AB0450	406136-06M	"	TDS
AB0451	406136-06N	"	SULFIDES
AB0452	406136-06O	"	AMMONIA
AB0452 5329-015 (ST. LOUIS)	" "	" "	COD "
AB0453	406136-06P	"	METALS-T
AB0454	406136-06Q	"	CYANIDE
AB0455	406136-06R	"	TOC
AB0456	406136-06S	"	TOX
AB0458	406136-07A	BOBMP9	METALS-D

IT ANALYTICAL SERVICES
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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 his designee, as verified by the following signature:

Reviewed and Approved:

Sheree' A. Schneider

Sheree' A. Schneider
Project Manager

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

August 1, 1994

Attention: J.A.Lerch

SAF Number	:	94-087
Date SDG Closed	:	June 17, 1994
Number of Samples	:	Three (3)
Sample Type	:	Water
SDG Number	:	W0082
Data Deliverable	:	Stand Alone

I. Introduction

On June 6 and 8, 1994, three water 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:

ITAS-Richland ID	WHC ID	Matrix	Date of Receipt
406072-01A	B0BMQ2	Water	6/6/94
406137-01A	B0BMV6	Water	6/8/94
406137-02A	B0BMP8	Water	6/8/94

II. Analytical Results/Methodology

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

The requested analyses were:

Alpha Spectroscopy
Americium-241 by method ITAS-RD-3302
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
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
Tritium by method ITAS-RD-3205

III. Quality Control

The analytical results for each analysis performed under SDG W0082 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

Results from the initial radioactivity screening of these samples classified them as Category I.

Alpha Spectroscopy

Americium-241 by method ITAS-RD-3302
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BMQ2) results are within contractual limits.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BMQ2) results are within contractual requirements.

Liquid Scintillation Counting

Carbon-14 by method ITAS-RD-3247
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BMV6) results are within contractual requirements.

Technetium-99 by method ITAS-IT-RS-0001
The SDG was grouped into two batches for analysis, however, only one set of quality control samples will be billed to this SDG. In both analytical batches, the matrix spike, LCS, batch blank, sample and sample duplicate (duplicate of sample B0BMQ2 and sample B0BMP8) results are within contractual requirements.

Tritium by method ITAS-RD-3205
SDG W0082 was batched and analyzed with SDG W0090. Quality Control Samples were prepared and analyzed for each SDG. The LCS (L060721S and L060721M), batch blank (L060721X), sample and sample duplicate (duplicate of sample B0BMQ2) 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

Chain-of-Custody Information

9613496.0920

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0141
Record of Disposition No.

DATE: 6/6/94 | LABORATORY: IT

PROJECT TITLE/NO.: 100-FR-3/94-087 | NCR NO.: 052864

SAMPLE IDENTIFICATION NUMBERS:

B0BMP0, B0BMP2

DESCRIPTION OF EVENT:

This ROD replaces ROD-94-0139.

1) Sample B0BMP0 was collected on 5/17/04 and arrived at IT-Richland on 5/24/94; IT-Knoxville on 5/25/94. The 7 day holding time for Semi-VOA, PCB/Pests, TDS, and Sulfide analyses was missed.

2) The chain-of-custody for sample B0BMP2 was incomplete. The chain-of-custody was broken.

DISPOSITION OF SAMPLES:

1) With concurrence from J.M. Ayres, project engineer, do not perform analyses for which holding times have been missed (replacement aliquots for these analyses will be collected, shipped, analyzed, abd reported under B0C1G5).

2) Continue with analysis of B0BMP2 for "informational purposes only". PER ALAN KRUG. RCS 6/28/94

APPROVAL SIGNATURES:

R. C. Smith/ R Clayt Smith — 6/6/94
OSM Project Coordinator (Print/Sign Name) — Date

J. M. Ayres/ — 7/7/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

ORIGINAL → KNOXVILLE

XC: VAN
JIM
JODIE
TAMI

9m 9/15/94
~~0056~~
000317

SAMPLE RECEIPT DOCUMENTATION

9613496.0922

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

WO# 621

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/3/94 1430 Client Name WHC

Project/Client # 94-087 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) GWS008

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 ☒ (6) 6/3/94 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 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 6/3/94 1430

FORM NO. LS-042, Rev.0, 2/94

9613496.0923

WO #621

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6/6/94 1215 Client Name WHC

Project/Client # 94-087 Batch or Case # N/A

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

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: 35
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 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 Tom Gilmore Date/Time 6/6/94 1215

FORM NO. LS-042, Rev.0, 2/94

9613496.0924

WO #621

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER:_____ DATE INITIATED: 6/6/94

INITIATED BY: T Gilmore

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 6/6/94 1215

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
BOBMPO		VOA

Samples were received with the following deficiencies:

- ☐ 1. Not enough sample received for proper analysis.
- ☐ 2. Sample received without proper preservative.
- ☐ 3. No sample received in container.
- ☑ 4. Sample received without a RFA/COC form.
- ☐ 5. No sample ID on container.
- ☐ 6. Sample received broken or leaking.
- ☐ 7. Holding time exceeded at receipt.
- ☐ 8. Custody tape broken.
- ☐ 9. COC not relinquished by client.
- ☐ 10. Sample information on container does not match sample information on the paper work (Explain below).
- ☐ 11. All shipping containers (coolers) on waybill not received with shipment.
  - ☐ RFA/COC received
  - ☐ RFA/COC not received
- ☐ 12. Other (Explain below).

NOTES: COC shows 34 containers, 35 were received

SUPERVISOR REVIEW:_____

PROJECT MANAGER REVIEW:_____

TELEPHONED TO:_____ ON_____ BY_____

TELEFAXED TO:_____ ON_____ BY_____

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

FORM NO. LS-023, 3/92, Rev. 0

9613496.0925

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

WO #633

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-8-94 1035 Client Name WHC

Project/Client # SAF 94-087 Batch or Case # _____

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

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: 40
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 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 R. Boyd R. Boyd Date/Time 6-8-94 1035

FORM NO. LS-042, Rev.0, 2/94

9613496.0926

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

LDO #633

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 6-8-94 1035 Client Name WHC

Project/Client # SAF 94-087 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) Bonehead II

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: 34
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 2°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 R. Bould A. Boyd JT Date/Time 6-8-94 1035

FORM NO. LS-042, Rev.0, 2/94

WO#621

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 2

Data Turnaround: [ ] Priority [X] Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: ZONEHEAD	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks: COOL TO 4 DEGREES CENTIGRADE		

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative	HCL/2pH	COOL 4	pH 5-9	COOL 4	H2SO4<2	COOL 4	COOL 4	ZnAc *1	H2SO4<2	HNO3<2	NaOH>12	HCl<2*2	H2SO4<2	HNO3<2	HClpH<2
				Type of Container	Gs	aG	aG	P	G/P	G/P	G/P	P	G	G	P	aGs	aGs	G/P	G/P
				No. of Container(s)	3	3	3	1	1	1	1	1	1	1	1	1	1	6 3 (Red 6/1/94)	3
				Volume	40ml	1000ml	1000ml	1000ml	500ml	250ml	500ml	500ml	1000ml	1000ml	1000ml	250ml	500ml	~~4000ml~~ 1000ml (Red 6/1/94)	1000ml
				SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	PCB/ PEST (CLP)	ANIONS (IC)SO4 F,Cl, PO4 COND,pH	NO2/NO3	ALK	TDS	SULFIDE	AMMONIA COD	ICP METALS+ ARSENIC LEAD Se,Tl, Hg (CLP)P	CYANIDE (CLP)	TOC	TOX	*3	Tc-99
				406071 01	ABC	DEF	GHI	J	k	L	M	N	O		Q	R	S	406072 01	
BOBMQ2 01	W	6/1/94	1200		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BOBMQ3	W	↓	↓																
BOBMQ4	W	↓	↓																

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. Trapp/K. Trapp WHC	6/1/94 1330	C.J. Simpson WHC	6/1/94 1335
C.J. Simpson	6/6/94 1100	Loren E. Hagen	6-6-94 1100
Loren E. Hagen	6/6/94 1115	ITAS	6/6/94 1215

SPECIAL INSTRUCTIONS

*1 = or NaOH Ph>9 *2 = pH>/= to 12 *3 = GROSS ALPHA,BETA(ITAS-RD-3214), GAMMA SPEC(ITAS-RD-3219), U-235/238(ITAS-RD-3234), Pu-239/240(ITAS-RD-3209), Am-241(ITAS-RD-3302 or ITAS-RD-3206), Sr-90(ITAS-RD-3204). NOTE: LOWEST HOLDING TIME = 7 days

Matrix*

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

LABORATORY SECTION — Received By / Title / Date/Time

FINAL SAMPLE DISPOSITION — Disposal Method / Disposed By / Date/Time

0022400

9613496.0027

0000033

WO#621

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 2 of 2

Data Turnaround: [ ] Priority [X] Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: BUN ETHEDD	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative															
				N/A	HNO3<2	None			HClpH<2										
				Type of Container															
				Gs	G	aGS			Gs										
				No. of Container(s)															
				1	1	1			3										
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE				Volume															
				1000ml	1000ml	40mL			40ml										
SAMPLE ANALYSIS: 406071				TRITIUM C-14 406072 01	ICP METALS+ ARSENIC LEAD, Se Tl, Hg (CLP) FI FILTERD	Activity Scan			VOA (CLP) ~~TRIP~~ KT 6/1/94										
BOBMQ2	W	6/1/94	1200	X		X													
BOBMQ3 02A	W	↓	↓		X														
BOBMQ4 03ABC	W	↓	↓						X										

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. Trapp / K. Trapp	6/1/94 1378	A Simpson	6/1/94 1338
A Simpson	6/6/94 1100	Irene Rogers	6-6-94 1105
Irene Rogers	6-6-94 1115	ITAS	6/6/94 1215

SPECIAL INSTRUCTIONS

Matrix*
- 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

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

000225

8250-96131496

00000354

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO #624

Page 1 of 2

Data Turnaround: [ ] Priority [X] Normal

Collector: K. Tiapp / L. Rogers	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: GW5008	Field Logbook No.: EFC-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

Preservative	HCL/2pH	COOL 4	pH 5-9	COOL 4	H2SO4<2	COOL 4	COOL 4	ZnAc *1	H2SO4<2	HNO3<2	NaOH>12	HCl<2*2	H2SO4<2	HNO3<2	HClpH<2
Type of Container	Gs	aG	aG	P	G/P	G/P	G/P	P	G	G	P	aGs	aGs	G/P	G/P
No. of Container(s)	3	3	3	2 KT 6/2/94	1	1	1	1	1	1	2 KT 6/2/94	1	1	~~6~~ 3 KT 6/2/94	6 KT 6/2/94
Volume	40ml	1000ml	1000ml	~~500mL~~ ~~1000ml~~ KT 6/2/94	500ml	250ml	500ml	500ml	1000ml	1000ml	~~500mL~~ ~~1000ml~~ KT 6/2/94	250ml	500ml	~~4000ml~~ ~~4000ml~~ KT 6/2/94	~~500mL~~ ~~1000ml~~ KT 6/2/94
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	PCB/ PEST (CLP)	ANIONS (IC)SO4 F,Cl, PO4 COND,pH	NO2/NO3	ALK	TDS	SULFIDE	AMMONIA COD	ICP METALS+ ARSENIC LEAD Se,Tl, Hg (CLP)	CYANIDE (CLP)	TOC	TOX	*3 KT 6/2/94	Tc-99

Sample No.	Matrix*	Date Sampled	Time Sampled														
~~B0BMP0~~	W	~~6/2/94~~	1200	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	W																
B0C1G5	W	6/2/94	1200		X	X				X	X						
		4060410			ABC	DEF				G	H						

6-3-94

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Loren Rogers	Date/Time: 6-3-94 1200	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1 = or NaOH Ph>9 *2 = pH>/= to 12 *3 = GROSS ALPHA,BETA(ITAS-RD-3214), GAMMA SPEC(ITAS-RD-3219), U-235/238(ITAS-RD-3234), Pu-239/240(ITAS-RD-3209), Am-241(ITAS-RD-3302 or ITAS-RD-3206), Sr-90(ITAS-RD-3204). NOTE: LOWEST HOLDING TIME = 7 days

6/3/94 - B0BMP0, B0C1M1, B0BMP2 previously shipped and analyzed under different C.O.C. Please analyze B0C1G5 as indicated above. JER 6-3-94

Matrix*

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

LABORATORY SECTION	Received By	Title	Date/Time
	Tom Ellis	ITAS	6/3/94 1430
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9613496-0929

9613496-0929

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#6211

Page 2 of 2

Data Turnaround: [ ] Priority [X] Normal

Collector: K. Trapp / L. Rogers	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: GW5008	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

SAMPLE ANALYSIS	Preservative	Type of Container	No. of Container(s)	Volume														
	N/A	Gs	1	1000ml	TRITIUM C-14	HNO3<2	G	1	1000ml	ICP METALS+ ARSENIC LEAD, Se Tl, Hg (CLP) FILTERED	None	aGs	1	40mL	Activity Scan	HClpH<2	Gs	3	40ml	VOA (CLP) ~~TRIP~~ 6/2/94

Sample No.	Matrix*	Date Sampled	Time Sampled															
BOBMP1	W	6/2/94	1200		X													
BOBMP2	W									X								
BOBMP0	W			X		X												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Karen E. Rogers	Date/Time: 6-3-94 1200	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

Matrix*
- 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

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)

22300

9613496.0830

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO #1033

Page 1 of 2

Data Turnaround: [ ] Priority [X] Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: CONEHEAD	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: W44-0-0544-33	Bill of Lading/Air Bill No.: NA

Possible Sample Hazards/Remarks	Preservative	HCL/2pH	COOL 4	pH 5-9	COOL 4	H2SO4<2	COOL 4	COOL 4	ZnAc *1	H2SO4<2	HNO3<2	NaOH>12	HCl<2*2	H2SO4<2	HNO3<2	HClpH<2
	Type of Container	Gs	aG	aG	P	G/P	G/P	G/P	P	G	G	P	aGs	aGs	G/P	G/P
	No. of Container(s)	3	3	3	1	1	1	1	1	1	1	1	1	1	HT 6/14 6/8	3
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE	Volume	40ml	1000ml	1000ml	1000ml	500ml	250ml	500ml	500ml	1000ml	1000ml	1000ml	250ml	500ml	1L HT 6/14 ~~4000ml~~	1000ml

SAMPLE ANALYSIS		VOA (CLP)	SEMIVOA (CLP)	PCB/ PEST (CLP)	ANIONS (IC)SO4 F,Cl, PO4 COND,pH	NO2/NO3	ALK	TDS	SULFIDE	AMMONIA COD	ICP METALS+ ARSENIC LEAD Se,Tl, Hg (CLP)	CYANIDE (CLP)	TOC	TOX	*3	Tc-99
406136001		ABC	DEF	GHI	J	K	L	M	N	O	P	Q	R	S	40613701	

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BMV6	W	6/6/94	1000	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B0BMV7	W																
B0BMV8	W																

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. J Trapp / K. Trapp WHC	6/6/94 0515	AQ Simpson WHC	6/6/94 1515
AQ Simpson	6/8/94 0940	R Boyd DT	6-8-94 1055

SPECIAL INSTRUCTIONS

*1 = or NaOH Ph>9 *2 = pH>/= to 12 *3 = GROSS ALPHA,BETA(ITAS-RD-3214), GAMMA SPEC(ITAS-RD-3219), U-235/238(ITAS-RD-3234), Pu-239/240(ITAS-RD-3209), Am-241(ITAS-RD-3302 or ITAS-RD-3206), Sr-90(ITAS-RD-3204). NOTE: LOWEST HOLDING TIME = 7 days

Matrix*

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

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)

0013828

9613436.0931

9613436.0931

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO #633

Page 2 of 2

Date Turnaround: ☐ Priority ☒ Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: BONEHEAD	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: N/A WAG-0--0544 -33	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks:		

Preservative	N/A	HNO3<2	None			HClpH<2											
Type of Container	Gs	G	Gs			Gs											
No. of Container(s)	1	1	1			3											
Volume	1000ml	1000ml	40mL			40ml											
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE	TRITIUM C-14 406137 01	ICP METALS+ ARSENIC LEAD, Se Tl, Hg (CLP) FI FILTERD	Activity Scan			VOA (CLP) ~~TRIP~~ BLANK											

SAMPLE ANALYSIS

406136

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0BMV6	W	6/6/94	1000	X		X											
B0BMV7 02A	W				X												
B0BMV8 03ABC	W								X								
B0BMN8 04ABC	W								X								
B0BMN9 05ABC	W	↓	↓						X								

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	K. Trapp/K. Trapp WHC	6/6/94 1415
Received By	A Simpson WHC	6/6/94 1515
Relinquished By	A Simpson	6/6/94 0940
Received By	R. Boyd IT	6-8-94 1035
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

Matrix*

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

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)

623000

9613496.0932

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO # 6633

Page 1 of 2

Data Turnaround: ☐ Priority ☒ Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100F	SAF No.: 94-087
Ice Chest No.: BONEHEAD II	Field Logbook No.: EFL-1054	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: W44-0-0544-33	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HCL/2pH	COOL 4	pH 5-9	COOL 4	H2SO4<2	COOL 4	COOL 4	ZnAc *1	H2SO4<2	HNO3<2	NaOH>12	HCl<2*2	H2SO4<2	HNO3<2	HClpH<2
Type of Container	Gs	aG	aG	P	G/P	G/P	G/P	P	G	G	P	aGs	aGs	G/P	G/P
No. of Container(s)	3	3	3	1	1	1	1	1	1	1	1	1	1	6 3 (K-6/3/94)	3
Volume	40ml	1000ml	1000ml	1000ml	500ml	250ml	500ml	500ml	1000ml	1000ml	1000ml	250ml	500ml	2L ~~4000ml~~ (K-6/3/94)	1000ml
SAMPLE ANALYSIS	VOA (CLP)	SEMIVOA (CLP)	PCB/ PEST (CLP)	ANIONS (IC)SO4 F,Cl, PO4 COND,pH	NO2/NO3	ALK	TDS	SULFIDE	AMMONIA COD	ICP METALS+ ARSENIC LEAD Se,Tl, Hg (CLP)	CYANIDE (CLP)	TOC	TOX	*3	Tc-99
46613606	ABC	DEF	GHI	J	L	L	M	N	O	P	Q	R	S	40613702	

Sample No.	Matrix*	Date Sampled	Time Sampled														
60BMP8	W	6/3/94	1200	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	W																
	W																

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. Trapp / K. Trapp	6/3/94 1330	Karen E. Rogers	6-3-94 1535
Karen E. Rogers	6-7-94 0940	A J Simpson WHC	6/7/94 0940
A J Simpson WHC	6/8/94 0940	a Boyd ET	6-8-94 1035

SPECIAL INSTRUCTIONS

*1 = or NaOH Ph>9 *2 = pH>/= to 12 *3 = GROSS ALPHA,BETA(ITAS-RD-3214), GAMMA SPEC(ITAS-RD-3219), U-235/238(ITAS-RD-3234), Pu-239/240(ITAS-RD-3209), Am-241(ITAS-RD-3302 or ITAS-RD-3206), Sr-90(ITAS-RD-3204). NOTE: LOWEST HOLDING TIME = 7 days

Matrix*

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

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)

9615496.0933

000330

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO #633

Page 2 of 2

Data Turnaround: ☐ Priority ☒ Normal

Collector: K. Trapp	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 100-FR-3	Sampling Location: 100 F	SAF No.: 94-087
Ice Chest No.: BONEHEAD II	Field Logbook No.: EFL-1055	Method of Shipment: HAND DELIVER
Shipped To: IT	Offsite Property No.: N/A W44-0-C544-33	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks

Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE

SAMPLE ANALYSIS: 406130

Sample No.	Matrix*	Date Sampled	Time Sampled	Preservative																
				N/A	HNO3<2	None			HClpH<2											
				Type of Container																
				Gs	G	aGs			Gs											
				No. of Container(s)																
				1	1	1			3											
				Volume																
				1000ml	1000ml	40mL			40ml											
				TRITIUM C-14 406137 OZ	ICP METALS+ ARSENIC LEAD, Se Tl, Hg (CLP) FI FILTERD	Activity Scan			VOA (CLP) ~~TRIP~~											
BOBMP9 G7A	W	6/3/94	1200		X															
BOBMQ008A	W	↓	↓						X											
BOBMP8	W	↓	↓	X		X														

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. Trapp/K. Trapp	6/3/94 1330	Karen E. Boyd	6-3-94 1335
Karen E. Boyd	6-7-94 0940	AG Simpson WHC	6/7/94 0940
AG Simpson WHC	6/8/94 0940	R. Boyd	6-8-94 1035

SPECIAL INSTRUCTIONS

Matrix*

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

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)

0096231

0096196 0939

00000040

9613496.0935

WO #624

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0594-23

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 George Washington Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: BOCIGS, ~~BO~~ LCS 6/3/94 Cooler ID: GWS008 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: Cooler ID: 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 100 AREA

RECEIVED
JUN 3 1994
PROPERTY RECORDS

Bill of lading # NA

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

RM Clearance for Public Release	RM Survey No	Date
Michael S. Jones	157755	06-03-94

Location of Property (Area & Bldg.)	Contact	Phone
100-FR-3	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
6-3-94	8B410 PD3AA	NA

Originated By	Date	Authorized By	Date
PH Butcher	6/3/94	Michael S. Jones	6-3-94
Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
			6/3/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
ITAS				
Date 6/3/94 1430				

DISTRIBUTION

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

9613496.0936

100 #621

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W44-0-0594-26

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 George Washington Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: B0BMQ2 B0BMQ3 B0BMQ4 Cooler ID: BONEAMD Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
~~1~~ lbs.	~~Sample #:~~ BR 6-6-94 Cooler ID: 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 100 areas.

RECEIVED
JUN 6 1994
PROPERTY RECORDS

Bill of lading # NA

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

RM Clearance for Public Release	RM Survey No	Date
Michael S. Jones	157764	6-6-94

Location of Property (Area & Bldg.)	Contact	Phone
100 IR-3	P. H. Butcher	(509) 376-4308

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
6/6/94	8B410 / PD3AA	NA

Originated By	Date	Authorized By	Date
P. H. Butcher		RJ Serpan	6/6/94
Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
			10/6/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
ITAS				
Date 6/6/94 1215				

DISTRIBUTION

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

9613496.0937

Bonehead

OVERNIGHT DELIVERY!!

WO# 633

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		WALL-C-0544-33

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical services 2800 George Washington Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample #: B0BMV6 B0BMV7 B0BM8 B0BMN8 B0BMN9 Cooler ID: BONEHEAD Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs	Sample #: B0BMP8 B0BMP9 B0BMQ0 B0BMQ2 Cooler ID: BONEHEAD II 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 100 areas.

Bill of lading # NA

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

RM Clearance for Public Release	RM Survey No.	Date

Location of Property (Area & Bldg.)	Contact	Phone
100 FR-3	P.H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
6/8/94	8B410	

Originated By	Date	Authorized By	Date
P.H. Butcher		GA Simpson	6/8/94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
			6/8/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
C.R. Kelson 3C				
Date 6-8-94				

DISTRIBUTION

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

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO #621 RI #621

Reference Document No. 453683
Page 1 of 1

Project Name/No.[1] 94-087
Sample Team Members[2]
Profit Center No.[3] 4632
Project Manager[4] Van Petty
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 6/6/94
Lab Destination[8] Middlebrook
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] 762 7972 672

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]
40604101 A	BOC165/H2O	6/4/94 1200	Glass	1L	4°C	Semi Voa	3°C 6/7/94	
B							FOR LAB USE ONLY	
C								
D						PCB/Pest		
E								
F							FOR LAB USE ONLY	
G				500ml		TDS		
H			POLY	1	ZnAc	Sulfide	>9	

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): SDG W0082

1. Relinquished by[28] (Signature/Affiliation)	Date: 6/6/94 Time: 1600	1. Received by[28] (Signature/Affiliation) Bryan Blomquist ITASKN	Date: 6/07/94 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]

MCA 3/15/91

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

96134960938

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00000044

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001725*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO# 6214 EL# 820

Reference Document No. 453685

Page 1 of 2

Project Name/No.[1] 94-087

Sample Team Members[2]

Profit Center No.[3] 4632

Project Manager[4] Van Pelty

Purchase Order No.[6]

Required Report Date[11]

Samples Shipment Date[7] 6/6/94

Lab Destination[8] Middlebrook

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13] 262 7972 085

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]
40600[illegible]107 A (6/6/94)	BOBMQ2/H2O	6/1/94 1200	Glass	40ml	HCl 4°C	Voa	2°C 6/6/94	
B							FOR LAB USE ONLY	
C								
D				1L		Semi Voa		
E							FOR LAB USE ONLY	
F								
G						PCB/Pest		
H							Broken	

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): SDG W0082

1. Relinquished by[28] (Signature/Affiliation) [illegible] ITAS — Date: 6/6/94 Time: 1600	1. Received by[28] (Signature/Affiliation) Bryan Blomquist ITASKN — Date: 6/07/94 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]

Write: To accompany samples Yellow: Field copy

*See back of form for special instructions.

96134496.0939

0002238

INTERNATIONAL TECHNOLOGY CORPORATION

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

WO# 621
IRL# 820

Reference Document No.[30] 453685

Page 2 of 2

Project Name SDG W0082 | Project No. 94-087 | Samples Shipment Date 6/6/94

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.
40607101F	BOBMQ2/H2O	6/1/94/1200	glass	1L	4°C	PCB Pest	2°C	
J			poly	1		Anions F Cl SO4 PO4 pH Cond		
K				500ml	H2SO4	NO2/NO3	<2	
L				250ml		Alk		
M				500ml		TDS		
N			glass	1	ZnAc	Sulfide	9	
O				1L	H2SO4	Ammonia Cod	<2	
P					HNO3	ICP Metals As Se Pb Tl Hg	<2	
Q			Poly		NaOH	CN	10	
R			Glass	250ml	HCL	TOC	<2	
S				500ml	H2SO4	TOX	<2	
40607102A	BOBMQ3/H2O			1L	HNO3	ICP Metals As Se Pb Tl Hg	<2	
40607103A	BOBMQ4/H2O			40ml	HCL	Voa		
B								
C								

FOR USE ONLY

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

MCA 3/15/91

96134496.0940

00033237

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001737*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD *

WO #6633 WO #833 2V

Reference Document No. 453686
Page 1 of 4

Project Name/No.[1] 94-087
Sample Team Members[2]
Profit Center No.[3] 4632
Project Manager[4] VanPelt
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 6/8/94
Lab Destination[8] Middlebrook
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] 261 6147 965

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]	Preservative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
40613601 A	BOBMV6/H2O	as per	WHC	4°C	as per WHCCOC		LC BPB 6/09/94	
B							FOR LAB USE ONLY	
C								
D								
E							FOR LAB USE ONLY	
F								
G								
H								

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): SDG W0082

1. Relinquished by [28] (Signature/Affiliation)	ITAS	Date: 6/8/94 Time: 1600	1. Received by [28] (Signature/Affiliation) Bryan Blomquist ITASKN	Date: 6/09/94 Time: 8:55
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]

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

9613496.0911

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INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#633

Reference Document No.[30] 453686

Page 2 of 4

Project Name SDG W0082 Project No. 94-087 Samples Shipment Date 6/8/94

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.
406136011 I	BOBMV6/H_2O	as per	WHC COC		4°C	As per WHC COC	2°C BPB 6/09/94	
J							FOR LAB USE ONLY	
K							<2	
L								
M								
N							>9	
O							<2	
P							<2	
Q							10	
R							<2	
S							<2	
406136021A	BOBMV7/H_2O						<2	
406136031A	BOBMV8/H_2O							
B								
C								
406136041A	BOBMN8/H_2O							
B								
C								
406136051A	BOBMN9/H_2O							
1 B								

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

9613496.0942

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INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#683

Reference Document No.[30] 453686

Page 3 of 4

Project Name SDG W0082 Project No. 94-087 Samples Shipment Date 6/8/94

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.
406136605C	BOBMW9/H2O	as per	WHC	COC	4°C	as per WHC COC	2°C GPB 6/9/94	
406136606A	BOBMP8/H2O							
B								
C								
D								
E								
F								
G								
H								
I								
J								
K							<2	
L								
M								
N							9	
O							<2	
P							<2	
Q							10	
R							<2	
S							<2	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

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INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#633

Reference Document No.[30] 4536086

Page 4 of 4

Project Name SDG W0082 | Project No. 94-087 | Samples Shipment Date 6/8/94

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.
40513607 A	BOBMP9 / H_2O	as per	WHC COC		4°C	as per WHC COC	2°C DPB 6/9/94 LL	
40513608 A	BOBMQ0 / H_2O							
B								
C								
	6/8/94							

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

4460.09414

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WO #621

TENNELEC #2 SCREENING CALCULATION SPREADSHEET

O.K. JRN 3 June 94

Cust Code	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	6-3-94		6-3		6-3	10	8	226	240

Customer ID	pH	Residue Wght	Vol. Anal.	Sample Size	SMPLE CNT DATA Hldr	Total	Counts	Net Sample Counts/Minute		DPM / Aliqout		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1	Aliquot to Cat 1 Gm or L	
WHC/LIQUID	<2 Rcvd/Relq	mG	mG mL	Gm L	Num.	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta
B0C1G5		1.8	5	1.0	1	11	27	1.07	1.75	3.73E+00	2.99E+00	3.4E-04	2.7E-04	2.4E-07	1.7E-07	3.4E+02	2.7E+02	Yes	3.0E+01	3.7E+02
B0BWC9		0.5	5	1.0	2	0	5	-0.03	-0.45	-9.7E-02	-9.2E-01	-8.7E-06	-8.3E-05	-3.7E-08	-8.3E-08	-8.7E+00	-8.3E+01	Yes	-1.1E+03	-1.2E+03
B0BWD2		0.9	5	1.0	3	1	7	0.07	-0.25	2.47E-01	-5.7E-01	2.2E-05	-5.1E-05	5.4E-08	-1.4E-07	2.2E+01	-5.1E+01	Yes	4.5E+02	-2.0E+03
TOTAL uCi												3.6E-04	2.2E-04							

WO #621

O.K. JRM
6 June 94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	60694		60694		6-6	10	2	55	60

Customer ID	pH	Residue	Vol.	Sample	SMPLE CNT DATA			Net Sample Counts/Minute		DPM / Aliqout		uCi per Sample		2 Sigma Error uCi per Sample		pCi/(Gm or L)		Category 1	Aliquot to Cat 1 Gm or L	
WHC/LIQUID	<2 Rcvd/Reiq	Wght mG	Anal. mG mL	Size Gm L	Hldr Num.	Total Alpha	Counts Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta
80BMQ2		4.4	10	2.0	20	11	33	1.07	2.38	4.35E+00	4.39E+00	3.9E-04	4.0E-04	2.8E-07	2.0E-07	2.0E+02	2.0E+02	Yes	5.1E+01	5.1E+02

9460 09496

000243

000252

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

WO# 633

O.K. J.RM.
8 June 94

Customer Code WHC	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
	60894		60894		6-8	10	4	117	240

Customer ID WHC/LIQUID	pH <2 Rcvd/Req	Residue Wght mG	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Category 1 Yes/No	Aliquot to Cat 1 Gm or L Alpha	Beta
B0BMP8		3.0	10	2.0	45	3	45	0.26	4.01	1.02E+00	8.40E+00	9.2E-05	7.6E-04	1.3E-07	2.7E-07	4.6E+01	3.8E+02	Yes	2.2E+02	2.6E+02
B0BMV8		3.4	10	2.0	46	8	30	0.78	2.51	3.12E+00	4.85E+00	2.8E-04	4.4E-04	2.3E-07	2.1E-07	1.4E+02	2.2E+02	Yes	7.1E+01	4.6E+02
TOTAL uCi												3.7E-04	1.2E-03							

WO #621

SAMPLE STATUS REPORT FOR E 6442. E-BLANK 1-F5-4 TIME: 6/ 2/94 8:26
DISPATCHED: 4/ 5/94 13: 8 SAMPLE HAS NOT BEEN SLURPED.
RECEIVED: 6/ 2/94 8:17

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

BO BMQ2
BO BMQ3
BO BMQ4
BO BMQ5

961396.0949

06/03/94 07:33 ☎373 3176 222S 3B WO #621 ☑010

SAMPLE STATUS REPORT FOR E 7683. E-BLANK 199F1-2R TIME: 6/ 3/94 8:21
DISPATCHED: 5/24/94 12:49 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 2/94 14:46

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

~~B0BW20~~
~~B0BW21~~
~~B0BW22~~
~~B0BW23~~
B0C 195

wo#633

AMPLE STATUS REPORT FOR E 6441. E-BLANK 1-F5-3 TIME: 6/ 6/94 8: 0
ISPATCHED: 4/ 5/94 13: 6 SAMPLE HAS NOT BEEN SLURPED
ECEIVED: 6/ 3/94 14:56

XT.	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

BO BMP8
BO BMP9
BO BMQD
BO BMQ1

9613496.0951

06/07/94 07:07 ☎373 3176 222S 3B 002

WO #633

SAMPLE STATUS REPORT FOR E 6453. E-BLANK 1-F7-2 TIME: 6/ 7/94 7:58
DISPATCHED: 4/ 5/94 13:19 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 6/ 7/94 7:46

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

BO BMV6
BO BMV7
BO BMV8
BO BMV9

VEDD Printout

VALIDATION ELECTRONIC DELIVERABLE SDG W0082-ITC-096

HEIS-SN	Form	FormNr	LabCode	ConstID	Media	Value	ConcFlag	Qual	CountErr	Units
B0BMN8	NCLP	NA	ITASKN	75-09-2	SW			U		
B0BMN9	NCLP	NA	ITASKN	75-09-2	SW			U		
B0BMP8	NCLP	NA	ITASKN	75-09-2	SW			U		
B0BMQ0	NCLP	NA	ITASKN	75-09-2	SW			U		
B0BMQ2	NCLP	NA	ITASKN	75-09-2	SW			U		
B0BMQ4	NCLP	NA	ITASKN	75-09-2	SW			U		
B0BMV6	NCLP	NA	ITASKN	75-09-2	SW			U		
B0BMV8	NCLP	NA	ITASKN	75-09-2	SW			U		
B0BMN8	NCLP	NA	ITASKN	67-64-1	SW			U		
B0BMN9	NCLP	NA	ITASKN	67-64-1	SW			U		
B0BMP8	NCLP	NA	ITASKN	67-64-1	SW			U		
B0BMQ0	NCLP	NA	ITASKN	67-64-1	SW			U		
B0BMQ2	NCLP	NA	ITASKN	67-64-1	SW			U		
B0BMQ4	NCLP	NA	ITASKN	67-64-1	SW			U		
B0BMV6	NCLP	NA	ITASKN	67-64-1	SW			U		
B0BMV8	NCLP	NA	ITASKN	67-64-1	SW			U		
B0BMN8	NCLP	NA	ITASKN	67-66-3	SW	10		U		UG/L
B0BMN9	NCLP	NA	ITASKN	67-66-3	SW	10		U		UG/L
B0BMP8	NCLP	NA	ITASKN	67-66-3	SW	10		U		UG/L
B0BMQ0	NCLP	NA	ITASKN	67-66-3	SW	10		U		UG/L
B0BMQ2	NCLP	NA	ITASKN	67-66-3	SW	10		U		UG/L
B0BMQ4	NCLP	NA	ITASKN	67-66-3	SW	10		U		UG/L
B0BMV6	NCLP	NA	ITASKN	67-66-3	SW	10		U		UG/L
B0BMV8	NCLP	NA	ITASKN	67-66-3	SW	10		U		UG/L
B0BMN8	NCLP	NA	ITASKN	71-55-6	SW			UJ		
B0BMN9	NCLP	NA	ITASKN	71-55-6	SW			UJ		
B0BMP8	NCLP	NA	ITASKN	71-55-6	SW			UJ		
B0BMQ0	NCLP	NA	ITASKN	71-55-6	SW			UJ		
B0BMQ2	NCLP	NA	ITASKN	71-55-6	SW			UJ		
B0BMN8	NCLP	NA	ITASKN	56-23-5	SW			UJ		
B0BMN9	NCLP	NA	ITASKN	56-23-5	SW			UJ		
B0BMP8	NCLP	NA	ITASKN	56-23-5	SW			UJ		
B0BMQ0	NCLP	NA	ITASKN	56-23-5	SW			UJ		

Entered by: JM 9/26/94 Checked by: AJ 9/24/94

HEIS-SN	Form	FormNr	LabCode	ConstID	Media	Value	ConcFlag	Qual	CountErr	Units
B0BMQ2	NCLP	NA	ITASKN	56-23-5	SW			UJ		
B0BMQ4	NCLP	NA	ITASKN	56-23-5	SW			UJ		
B0BMV6	NCLP	NA	ITASKN	56-23-5	SW			UJ		
B0BMV8	NCLP	NA	ITASKN	56-23-5	SW			UJ		
B0BMP8	NCLP	NA	ITASKN	118-74-1	SW			UJ		
B0BMQ2	NCLP	NA	ITASKN	118-74-1	SW			UJ		
B0BMV6	NCLP	NA	ITASKN	118-74-1	SW			UJ		
B0C1G5	NCLP	NA	ITASKN	118-74-1	SW			UJ		
B0BMQ2	NCLP	NA	ITASKN	439-89-6	SW			U		
B0BMQ3	NCLP	NA	ITASKN	439-89-6	SW			U		
B0BMP8	NCLP	NA	ITASKN	439-89-6	SW			U		
B0BMP9	NCLP	NA	ITASKN	439-89-6	SW			U		
B0BMV6	NCLP	NA	ITASKN	439-89-6	SW			U		
B0BMV7	NCLP	NA	ITASKN	439-89-6	SW			U		
B0BMQ2	NCLP	NA	ITASKN	439-92-1	SW			UJ		
B0BMQ3	NCLP	NA	ITASKN	439-92-1	SW			UJ		
B0BMP8	NCLP	NA	ITASKN	439-92-1	SW			UJ		
B0BMP9	NCLP	NA	ITASKN	439-92-1	SW			UJ		
B0BMV6	NCLP	NA	ITASKN	439-92-1	SW			UJ		
B0BMV7	NCLP	NA	ITASKN	439-92-1	SW			J		
B0BMP8	NCLP	NA	ITASKN	439-96-5	SW			U		
B0BMP9	NCLP	NA	ITASKN	439-96-5	SW			U		
B0BMV6	NCLP	NA	ITASKN	782-49-2	SW			BJ		
B0BMP8	NCLP	NA	ITASKN	440-62-2	SW			U		
B0BMQ2	NCLP	NA	ITASKN	440-66-6	SW			U		
B0BMQ3	NCLP	NA	ITASKN	440-66-6	SW			U		
B0BMP8	NCLP	NA	ITASKN	440-66-6	SW			U		
B0BMP9	NCLP	NA	ITASKN	440-66-6	SW			U		
B0BMV6	NCLP	NA	ITASKN	440-66-6	SW			U		
B0BMV7	NCLP	NA	ITASKN	440-66-6	SW			U		
B0BMQ2	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BMV6	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BMP8	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BMQ2	NCLP	NA	ITASKN	207	SW			J		
B0BMV6	NCLP	NA	ITASKN	207	SW			J		
B0BMP8	NCLP	NA	ITASKN	207	SW			J		
B0BMQ2	NCLP	NA	ITASKN	TOC	SW			UJ		

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HEIS-SN	Form	FormNr	LabCode	ConstID	Media	Value	ConcFlag	Qual	CountErr	Units
B0BMV6	NCLP	NA	ITASKN	TOC	SW			J		
B0BMP8	NCLP	NA	ITASKN	TOC	SW			UJ		
B0BMV6	NCLP	NA	ITASRL	U-233/234	SW			UR		
B0BMP8	NCLP	NA	ITASRL	U-233/234	SW			UR		
B0BMQ2	NCLP	NA	ITASRL	5117-96-1	SW			UJ		
B0BMV6	NCLP	NA	ITASRL	5117-96-1	SW			UR		
B0BMP8	NCLP	NA	ITASRL	5117-96-1	SW			UR		
B0BMV6	NCLP	NA	ITASRL	U-238	SW			UR		
B0BMP8	NCLP	NA	ITASRL	U-238	SW			UR		
B0BMV6	NCLP	NA	ITASRL	U-233/234	SW			J		
B0BMP8	NCLP	NA	ITASRL	U-233/234	SW			J		

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