START 9613496.2715 0045472

W0042-ITC-048 352

INTERNATIONAL TECHNOLOGY CORPORATION

JUN 1994 RECEIVED SDLA

RECORD COPY

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

Dear J.A. Lerch

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

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

   Your Data Summary Packet contains the following items:

   - Case Narrative: listing of sample identifications, analyses performed, explanation of any problem associated with samples, corrective action taken.
   - Quality control sample identifications and analyses performed.
   - Data summary.

2. A data package which meets the specific requirements you requested and is easy to use as well. The package is organized in accordance with the Table of Contents which you will find at the beginning of each section. Sections are separated by color-coded tabs, making it easy to find individual analytical parameters which may be of particular interest to you. The data package is custody-sealed at the laboratory - your assurance that parts of the package are not missing.

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

Please contact me with any questions or suggestions.

Sincerely,

Sheree Schneider

Sheree' Schneider
Project Manager

OCT 1994 RECEIVED EDMC

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

IT Corporation is a wholly owned subsidiary of International Technology Corporation

9613496.2716

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

DATE: September 23, 1993

TO: W0042-ITC-048

FROM: Pat Reich H4-19

Telephone: 372-2785

cc:

SUBJECT: FINAL SUMMARY VALIDATION REPORT FOR 200-BP-5, GROUNDWATER SAMPLES.

THE FINAL SUMMARY VALIDATION REPORT FOR THIS DATA PACKAGE IS FILED IN SDG BOBRM3-TMA-755.

PAT REICH
DATA MANAGEMENT

54-3000-101 (12/92) GEF014

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

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

June 9, 1994

RECORD COPY

JUN 1994 RECEIVED SDLA

Job Number: 452; 465

This is the Certificate of Analysis for the following samples:

SDG:	W0042
Client Project ID:	WHC SAF 94-130 200-BP-5 Groundwater Round
Date Received by Lab:	April 29; April 30, 1994
Number of Samples:	Twenty (20)
Sample Type:	Water

I. Introduction

On April 29 and April 30, 1994, twenty (20) water samples arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. Sample ~~BOBNK7~~ BOBNH7 had a pH of 10, sample BOBRL9 had a pH of 11, and sample BOBNL5 had a pH of 11. See attached CUR 1547. Sample BOBRM1 had a pH of 10 and anions were received past hold time. See attached CUR 1559. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results.

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.

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

II. Analytical Results/Methodology (Continued)

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

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

The samples were analyzed for sulfate based on EPA method 375.4.

The alkalinity of the samples was determined using EPA method 310.1.

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

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

III. Quality Control

The samples for work order #452 were digested on May 13, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 19 through May 23, 1994; the remaining metals were analyzed by ICP on June 2, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample numbers BOBRK9 and BOBRL0 (dissolved). Spike recovery (accuracy) results were within acceptance limits for all requested analytes for both samples. Duplicate RPD (precision) results were within acceptance limits for all analytes for both samples. There was insufficient sample volume for the cyanide analysis to prepare QC. Blank spike and blank spike duplicate analyses were performed.

The samples for work order #465 were digested on May 17, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed on May 23, 1994; the remaining metals were analyzed by ICP on June 2, 1994. All run QC was acceptable. Samples were batched with QC from work order #452.

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
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

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 May 2, 1994. A duplicate was analyzed using sample number BOBRK9. All quality control results were acceptable.

The samples were analyzed for nitrate/nitrite on May 18 and May 19, 1994. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBRK9. All quality control results were acceptable.

The samples were analyzed for sulfate on May 16, 1994. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBRK9. All quality control results were acceptable. Sample BOBRM1 analysis for sulfate by 375.4 was cancelled by the client.

The samples were analyzed for total dissolved solids on May 3, 1994. A duplicate was analyzed using sample number BOBRK9. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, nitrite, phosphate and sulfate by EPA method 300.0 on May 19 and May 23, 1994. A matrix spike and matrix spike duplicate were analyzed using sample number BOBRK9. All quality control results were acceptable.

IT Corporation
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

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

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA7718	404497-01A	BOBRK9	METALS-T
AA7719	404497-01B	"	ANIONS
AA7720	404497-01C	"	NO2NO3
AA7721	404497-01D	"	ALKALINITY
AA7722	404497-01E	"	TDS
AA7723	404497-01F	"	SULFATE
AA7724	404497-01G	"	CYANIDE
AA7727	404497-02A	BOBRL0	METALS-D
AA7728	404497-03A	BOBNM9	METALS-T
AA7729	404497-03B	"	ANIONS
AA7730	404497-03C	"	NO2NO3
AA7731	404497-03D	"	ALKALINITY
AA7732	404497-03E	"	TDS
AA7733	404497-03F	"	SULFATE
AA7734	404497-03G	"	CYANIDE
AA7735	404497-04A	BOBNN0	METALS-D
AA7736	404497-05A	BOBNN3	METALS-T
AA7737	404497-05B	"	ANIONS
AA7738	404497-05C	"	NO2NO3

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

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
AA7739	404497-05D	BOBNN3	ALKALINITY
AA7740	404497-05E	"	TDS
AA7741	404497-05F	"	SULFATE
AA7742	404497-05G	"	CYANIDE
AA7743	404497-06A	BOBNN4	METALS-D
AA7744	404497-07A	BOBNN5	METALS-T
AA7745	404497-07B	"	ANIONS
AA7747	404497-07C	"	NO2NO3
AA7748	404497-07D	"	ALKALINITY
AA7749	404497-07E	"	TDS
AA7750	404497-07F	"	SULFATE
AA7751	404497-07G	"	CYANIDE
AA7752	404497-08A	BOBNN6	METALS-D
AA7753	404497-09A	BOBRL5	METALS-T
AA7754	404497-09B	"	ANIONS
AA7755	404497-09C	"	NO2NO3
AA7756	404497-09D	"	ALKALINITY
AA7757	404497-09E	"	TDS
AA7758	404497-09F	"	SULFATE

IT Corporation
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

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

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA7759	404497-09G	BOBRL5	CYANIDE
AA7760	404497-10A	BOBRL6	METALS-D
AA7761	404497-11A	BOBNK1	METALS-T
AA7762	404497-11B	"	ANIONS
AA7763	404497-11C	"	NO2NO3
AA7764	404497-11D	"	ALKALINITY
AA7765	404497-11E	"	TDS
AA7766	404497-11F	"	SULFATE
AA7767	404497-11G	"	CYANIDE
AA7768	404497-12A	BOBNK2	METALS-D
AA7769	404538-01A	~~BOBNK7~~ BOBNH7 RW 6/13/94	METALS-T
AA7770	404538-01B	"	ANIONS
AA7771	404538-01C	"	NO2NO3
AA7772	404538-01D	"	ALKALINITY
AA7773	404538-01E	"	TDS
AA7774	404538-01F	"	SULFATE
AA7775	404538-01G	"	CYANIDE

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

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
AA7776	404538-02A	BOBNH8	METALS-D
AA7778	404538-03A	BOBRL9	METALS-T
AA7779	404538-03B	"	ANIONS
AA7780	404538-03C	"	NO2NO3
AA7781	404538-03D	"	ALKALINITY
AA7782	404538-03E	"	TDS
AA7783	404538-03F	"	SULFATE
AA7784	404538-03G	"	CYANIDE
AA7777	404538-04A	BOBRM0	METALS-D
AA7787	404538-05A	BOBNL5	METALS-T
AA7788	404538-05B	"	ANIONS
AA7789	404538-05C	"	NO2NO3
AA7790	404538-05D	"	ALKALINITY
AA7791	404538-05E	"	TDS
AA7792	404538-05F	"	SULFATE

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

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
AA7793	404538-05G	BOBNL5	CYANIDE
AA7794	404538-06A	BOBNL6	METALS-D
AA7928	404568-01A	BOBRM1	METALS-T
AA7929	404568-01B	"	ANIONS
AA7930	404568-01C	"	NO2NO3
AA7931	404568-01D	"	ALKALINITY
AA7932	404568-01E	"	TDS
AA7933	404568-01F	"	SULFATE
AA7934	404568-01G	"	CYANIDE
AA7943	404568-02A	BOBRM2	METALS-D

IT Corporation
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IV. Certification

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

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBWM9
~~BOBMN9~~ 6/9/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7728
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium	29000			P
7439-89-6	Iron	104			P
7439-95-4	Magnesium	8600			P
7439-96-5	Manganese	11.8	B		P
7440-09-7	Potassium	8130			P
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	20100			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	16600			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
8 6/7/94

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM9
~~BOBMN9~~

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7734
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

FORM I - IN

ILM02.1
8 6/7/94

9613496.2728

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNH8

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_
Matrix (soil/water): WATER Lab Sample ID: AA7776
Level (low/med): LOW__ Date Received: 04/29/94
% 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
7440-70-2	Calcium	38500			P
7439-89-6	Iron	21.4	B		P
7439-95-4	Magnesium	10000			P
7439-96-5	Manganese	4.2	B		P
7440-09-7	Potassium	5410			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	19500			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	14000			P
5955-70-0	Cyanide				NR

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

Comments:
DISSOLVED.

FORM I - IN

ILM02.1
8 6/7/94

9613496.2729

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK1

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7761
Level (low/med): LOW Date Received: 04/29/94
% 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	44.6	B		P
7440-70-2	Calcium	31800			P
7439-89-6	Iron	45.4	B		P
7439-95-4	Magnesium	9440			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	5440			P
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	14800			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	14900			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
8 6/7/94

9613496.2730

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK1

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7767
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

FORM I - IN

ILM02.1
8 6/7/94

9613496.2731

U.S. EPA - CLP

1.

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK2

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7768

Level (low/med): LOW Date Received: 04/29/94

% 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
7440-70-2	Calcium	32800			P
7439-89-6	Iron	22.4	B		P
7439-95-4	Magnesium	9740			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	5590			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	15400			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	15500			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

8 6/3/94

9613496.2732

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BCBNH7
~~BOBNK7~~
PW 6/13/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7769
Level (low/med): LOW Date Received: 04/29/94
% 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	52.6	B		P
7440-70-2	Calcium	43100			P
7439-89-6	Iron	466			P
7439-95-4	Magnesium	11100			P
7439-96-5	Manganese	13.5	B		P
7440-09-7	Potassium	5870			P
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	21300			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	15200			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
8 6/1/94

9613496.2733

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNH7
~~BOBNK7~~
PW 6/13/94

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_
Matrix (soil/water): WATER Lab Sample ID: AA7775
Level (low/med): LOW__ Date Received: 04/29/94
% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	27.0			AS

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY.

FORM I - IN

ILM02.1
8 6/7/94

9613496.2734

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL5

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7787
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium	28600			P
7439-89-6	Iron	197			P
7439-95-4	Magnesium	9130			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6170			P
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	9230			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	25500			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
8 6/7/94

9613496.2735

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL5

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7793

Level (low/med): LOW Date Received: 04/29/94

% 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
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

8 6/3/94

9613496.2736

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7794

Level (low/med): LOW__ Date Received: 04/29/94

% 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_	49.6	B		P
7440-70-2	Calcium__	26900			P
7439-89-6	Iron____	18.5	B		P
7439-95-4	Magnesium	8580			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6880			P
7782-49-2	Selenium_	2.0	U	N	F
7440-23-5	Sodium___	8540			P
	Bismuth__	10.0	U		F
7440-31-5	Silicon__	24100			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

8 6/7/94

9613496.2737

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN0

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7735
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium	33000			P
7439-89-6	Iron	18.4	B		P
7439-95-4	Magnesium	9710			P
7439-96-5	Manganese	10.8	B		P
7440-09-7	Potassium	9130			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	21600			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	18600			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
8 6/2/94

9613496.2738

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN3

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7736
Level (low/med): LOW Date Received: 04/29/94
% 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	51.9	B		P
7440-70-2	Calcium	58300			P
7439-89-6	Iron	61.1	B		P
7439-95-4	Magnesium	16400			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	8980			P
7782-49-2	Selenium	6.7		SN	F
7440-23-5	Sodium	24600			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	18600			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
8/6/94

9613496.2739

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN3

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7742
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	15.0			AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

FORM I - IN

ILM02.1

6/7/94

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN4

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7743
Level (low/med): LOW Date Received: 04/29/94
% 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	76.9	B		P
7440-70-2	Calcium	57300			P
7439-89-6	Iron	25.4	B		P
7439-95-4	Magnesium	16100			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	7900			P
7782-49-2	Selenium	5.4		S	F
7440-23-5	Sodium	24300			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	18400			P
5955-70-0	Cyanide				NR

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

Comments:
DISSOLVED.

9613496.2741

U.S. EPA - CLP

1.

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN5

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7744
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium	27700			P
7439-89-6	Iron	427			P
7439-95-4	Magnesium	9000			P
7439-96-5	Manganese	4.2	B		P
7440-09-7	Potassium	7580			P
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	11900			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	28000			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
8 6/5/94

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN5

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_
Matrix (soil/water): WATER Lab Sample ID: AA7751
Level (low/med): LOW__ Date Received: 04/29/94
% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY.

FORM I - IN

ILM02.1
8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN6

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7752

Level (low/med): LOW Date Received: 04/29/94

% 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	47.8	B		P
7440-70-2	Calcium	28200			P
7439-89-6	Iron	77.2	B		P
7439-95-4	Magnesium	9140			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	8130			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	12100			P
	Bismuth	10.0	U	W	F
7440-31-5	Silicon	28500			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

6/7/94

9613496.2744

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRK9

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7718
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium	141	B		P
7439-89-6	Iron	21.8	B		P
7439-95-4	Magnesium	30.0	U		P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	1000	U		P
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	368	B		P
	Bismuth	10.0	U		F
7440-31-5	Silicon	55.5	B		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

8 6/7/94

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRK9

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7724
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE_ONLY.

FORM I - IN

ILM02.1
8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRLO

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7727

Level (low/med): LOW__ Date Received: 04/29/94

% 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_	67.4	B		P
7440-70-2	Calcium__	107	B		P
7439-89-6	Iron____	21.0	B		P
7439-95-4	Magnesium	30.0	U		P
7439-96-5	Manganese	2.1	B		P
7440-09-7	Potassium	1000	U		P
7782-49-2	Selenium_	2.0	U		F
7440-23-5	Sodium___	445	B		P
	Bismuth__	10.0	U		F
7440-31-5	Silicon__	208			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

8 6/7/94

9613496.2747

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL5

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7753
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium	77.0	B		P
7439-89-6	Iron	10.3	B		P
7439-95-4	Magnesium	30.0	U		P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	1000	U		P
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	247	B		P
	Bismuth	10.0	U		F
7440-31-5	Silicon	76.1	B		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
8 6/7/94

9613496.2748

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL5

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7759
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

FORM I - IN

ILM02.1
8 6/7/94

9613496.2749

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7760

Level (low/med): LOW__ Date Received: 04/29/94

% 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_	52.7	B		P_
7440-70-2	Calcium__	84.7	B		P_
7439-89-6	Iron_____	12.2	B		P_
7439-95-4	Magnesium	30.0	U		P_
7439-96-5	Manganese	2.0	U		P_
7440-09-7	Potassium	1080	B		P_
7782-49-2	Selenium_	2.0	U		F_
7440-23-5	Sodium___	291	B		P_
	Bismuth__	10.0	U		F_
7440-31-5	Silicon__	47.8	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

8 6/3/94

9613496.2750

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL9

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_
Matrix (soil/water): WATER Lab Sample ID: AA7784
Level (low/med): LOW__ Date Received: 04/29/94
% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	30.0			AS

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY.

FORM I - IN

ILM02.1
8/1/94

9613496.2751

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL9

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7778

Level (low/med): LOW__ Date Received: 04/29/94

% 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_	56.0	B		P_
7440-70-2	Calcium__	40600			P_
7439-89-6	Iron____	480			P_
7439-95-4	Magnesium	10600			P_
7439-96-5	Manganese	13.2	B		P_
7440-09-7	Potassium	6500			P_
7782-49-2	Selenium_	2.0	U	N	F_
7440-23-5	Sodium___	20900			P_
	Bismuth__	10.0	U		F_
7440-31-5	Silicon__	14900			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

8 6/1/94

9613496.2752

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRMO

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7777
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium	39800			P
7439-89-6	Iron	22.0	B		P
7439-95-4	Magnesium	10300			P
7439-96-5	Manganese	4.4	B		P
7440-09-7	Potassium	5700			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	20200			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	14400			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
8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRM1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO465 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7934

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

% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

8 6/7/94

9613496.2754

U.S. EPA - CLP

1.

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRM1

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO465 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7928

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

% 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	43.5	B		P
7440-70-2	Calcium	29100			P
7439-89-6	Iron	212			P
7439-95-4	Magnesium	9340			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6780			P
7782-49-2	Selenium	2.0	U	WN	F
7440-23-5	Sodium	9330			P
	Bismuth	10.0	U	W	F
7440-31-5	Silicon	26100			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

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRM2

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0465 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7943

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

% 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	63.3	B		P
7440-70-2	Calcium	27600			P
7439-89-6	Iron	38.5	B		P
7439-95-4	Magnesium	8870			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6680			P
7782-49-2	Selenium	2.0	U	WN	F
7440-23-5	Sodium	8900			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	24900			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

6/7/94

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/03/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6170	1.0	U
BOBRL5	AA7757	23	+
~~BOBNK7~~ BOBNH7 Rev 6/13/94	AA7773	414	+
BOBRL9	AA7782	339	+
BOBNK1	AA7765	279	+
BOBNN5	AA7749	219	+
BOBNL5	AA7791	193	+
BOBRK9	AA7722	59	+
BOBNN3	AA7740	361	+
BOBNM9	AA7732	246	+

\+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	465
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/03/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6170	1.0	U
BOBRM1	AA7932	249	+

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

9613496.2758

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/02/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6143	2	U
Method Blank	P6144	2	U
BOBRK9	AA7721	4	+
BOBNN3	AA7739	108	+
BOBNM9	AA7731	118	+
BOBRL5	AA7756	4	+
BOBNH7 ~~BOBNK7~~ Rev 4/13/94	AA7772	102	+
BOBRL9	AA7781	100	+
BOBNK1	AA7764	106	+
BOBNN5	AA7748	114	+
BOBNL5	AA7790	118	+

Method blank P6143 applies to sample: BOBRK9
Method blank P6144 applies to samples: BOBNN3, BOBNM9, BOBRL5, BOBNK7, BOBRL9, BOBNK1, BOBNN5 and BOBNL5

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	465
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/02/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6145	2	U
BOBRM1	AA7931	106	+

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

SULFATE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/16/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6207	5.0	U
BOBNM9	AA7733	58	+
BOBRK9	AA7723	5.2	+
BOBNN5	AA7750	17	+
BOBRL9	AA7783	48	+
BOBNH7 ~~BOBNK7~~ Rw 6/13/94	AA7774	48	+
BOBNN3	AA7741	114	+
BOBNK1	AA7766	39	+
BOBNL5	AA7792	16	+
BOBRL5	AA7758	5	U

\+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/18/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6212	0.02	U
BOBRK9	AA7720	0.03	+
BOBNM9	AA7730	2.2	+
BOBNN3	AA7738	10	+
BOBNN5	AA7747	0.26	+
BOBRL5	AA7755	0.02	U
BOBNK1	AA7763	7.3	+
~~BOBNK7~~ BOBNH7 RWd13/94	AA7771	24	+
BOBRL9	AA7780	19	+
BOBNL5	AA7789	0.33	+

\+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	465
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/19/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6219	0.02	U
BOBRM1	AA7930	0.25	+

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBRK9	Preparation Date:	05/19/94
Lab Sample ID:	AA7719	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	0.40	U	0.40
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	1.5	U	1.5

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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNM9	Preparation Date:	05/19/94
Lab Sample ID:	AA7729	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.50	+	0.40
chloride	16.0	+	2.0
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	64	+	7.5

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

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNN3	Preparation Date:	05/19/94
Lab Sample ID:	AA7737	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.50	+	0.40
chloride	16	+	2.0
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	90	+	7.5

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

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNN5	Preparation Date:	05/19/94
Lab Sample ID:	AA7745	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	14	+	2.0
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	15	+	1.5

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

9613496.2767

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBRL5	Preparation Date:	05/19/94
Lab Sample ID:	AA7754	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	0.40	U	0.40
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	1.5	U	1.5

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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNK1	Preparation Date:	05/19/94
Lab Sample ID:	AA7762	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	9.8	+	2.0
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	37	+	7.5

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

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNH7	Preparation Date:	05/23/94
Lab Sample ID:	AA7770	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	8.5	+	0.80
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	48	+	3.0

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBRL9	Preparation Date:	05/23/94
Lab Sample ID:	AA7779	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.70	+	0.80
chloride	8.1	+	0.80
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	47	+	3.0

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNL5	Preparation Date:	05/23/94
Lab Sample ID:	AA7788	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.80	+	0.80
chloride	10	+	0.80
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	14	+	1.5

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

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	465
Client Sample ID:	BOBRM1	Preparation Date:	05/19/94
Lab Sample ID:	AA7929	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	9.2	+	0.80
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	14	+	1.5

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

9613496.2773

CUR #1547

Work Order No.: 452

Condition Upon Receipt Variance Report

ITAS - -KNOXVILLE Laboratory

Client: ITAS - Richland

Date: 4-29-94

Project No: Westinghouse Hanford (SAF94-130

Initiated by: KAK

Analysis Requested: Metals, Anions NO2/NO3, Alk, TDS, SO4, CN⁻

RFA/COC Numbers: 453621

Client Sample Numbers Affected: 404538-01 ; -03 ; - 05

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 -01 = 10 ; -03 = 11 ; -05 = 11
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
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): _____

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: _____ Date: _____

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

9613496.2774

CUR # 1548

Work Order No.: 452

Condition Upon Receipt Variance Report

ITAS - KNOXVILLE Laboratory

Client: ITAS-Richland

Date: 4-29-94

Project No: Westinghouse Hanford (SAF94-130)

Initiated by: KAK

Analysis Requested: Metals, Anions, NO_2/NO_3, Alk., TDS, SO4, CN^-

RFA/COC Numbers: 453608

Client Sample Numbers Affected: ~~404497-01 through~~ 404497-03, -05, -07, -09, -11

KAK 4.29.94

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 (all) 11
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
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): _____

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: _____ Date: _____

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

9613496.2775

CUR #1559

Work Order No.: 465

Condition Upon Receipt Variance Report

ITAS - -KNOXVILLE Laboratory

Client: WHC

Date: 5/02/94

Project No: 94-130

Initiated by: [illegible]

Analysis Requested: CN^-, Anions

RFA/COC Numbers: 453617

Client Sample Numbers Affected: 404568-01G, 404568-01B

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 10
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
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): Anions rec'd post H.T.

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: Ka. Klemm Date: 5-3-94

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

WO #452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priorty [X] Normal

Collector: K D. Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: FR-8	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: LT	Offsite Property No.: W194-0-0518-13	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 3A AJS 4/25/94		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE
Type of Container	~~P~~ G	G	P	P	P	P	P	P	Gs	P	~~P~~ G	aGs
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	40mL
SAMPLE ANALYSIS 404497	*1 A	IC ANIONS- F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 404498	TRITIUM 01	Tc-99	*3 02 A	ACTIVI-TY SCAN

Sample No.	Matrix*	Date Sampled	Time Sampled														
BOBRK9 01	W	04/25/94	1030	X	X	X	X	X	X	X	X	X	X		X		
BOBRL0 02	W	04/25/94	1030											X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K D Lee K.D. Lee	4/27/94 0732	C.F. Simpson	4/27/94 0732
C.F. Simpson	4/27/94 0719	L Sweeney L Sweeney	4/27/94 0919
L Sweeney L Sweeney	4/27/94 1210	Hardiline	4/27 1210
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2776

0000036

WO #452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: EK-8	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W24-0-0516-13	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refgis 3A AJ SIMPSON 4/27/94 1342		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	40ml			
SAMPLE ANALYSIS 404497	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 404498 02	TRITIUM	Tc-99	*3 04 A	TOTAL ACTIVITY			

Sample No.	Matrix*	Date Sampled	Time Sampled														
BOBNM4 03	W	04/25/94	1430	X	X	X	X	X	X	X	X	X	X				
BOBNN0 04	W	04/25/94	1430											X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
[signature]	4/25/94 1328	AJ Simpson	4/26/94 1530
AJ Simpson	4/27/94 0918	L Sweeney	4/27/94 0915
L Sweeney	4/27/94 1210	[signature]	4/27/94 1210
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2777

0000037

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#452

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-8	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-051 LCS 4/28/94 W94-0-0518-13	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Perfmd SB AJS 4/26/94 1435		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	G	G	P	P	P	P	P	P	Gs	P	G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	40mL			
SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL ACTIVITY			
404538	A	B	C	D	E	F	G	4045		3901	02A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
BOBN H7 01	W	04/26/94	0930	X	X	X	X	X	X	X	X	X	X		X			
BOBN H7 02	W	04/26/94	0930											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kelly A Lee	4/26/94 1429	AJ SIMPSON	4/26/94 1435
AJ SIMPSON	4/27/94 0956	L Sweeney	4/28/94 0956
L Sweeney	4-28-94 1155	C. Boyd	4/28/94 1155

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2778

0000038

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#452

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-11	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0-0518-20	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Relinq 3B AJS 4/26/94 1432		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	aGs			
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	40mL			
SAMPLE ANALYSIS 404538	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 404539 02	TRITIUM	Tc-99	*3 04A	ACTIVITY SCAN			

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F	G								
BOBRL9 03	W	04/26/94	0930	X	X	X	X	X	X	X	X	X	X		X			
BOBRM0 02	W	04/26/94	0930											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
[signature]	4/26/94 1425	AJ SIMPSON [signature]	4/26/94 1433
Relinquished By AJ SIMPSON [signature]	Date/Time 4/26/94 0955	Received By [signature]	Date/Time 4/26/94 0955
Relinquished By [signature]	Date/Time 4-26-94 1155	Received By [signature]	Date/Time 4/26/94 1155
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2779

00000039

WO# 452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K. D. Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-9	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0-0518-20	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig JC AJS 4/27/94 1320		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	G P	G	P	P	P	P	P	P	Gs	P	G P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	40mL			
SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL ACTIVITY			
404538	A	B	C	D	E	F	G	404538 03			06A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
B0BNL5 05	W	04/27/94	1005	X	X	X	X	X	X	X	X	X	X		X			
B0BNL6 06	W	04/27/94	1005											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K D Lee	4/27/94 1311	AJ Simpson	4/27/94 1317
A Simpson	4/28/94 0953	L Sweeney	4/28/94 0953
L Sweeney	4-28-94 1155	R. Bond	4/28/94 1155

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2780

0000040

WO#452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K.D Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: E 12.13	Field Logbook No.:	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: WT4-0-0518-1314 LCS 4/27/94	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A
Type of Container	~~P~~ G	G	P	P	P	P	P	P	Gs	P	~~P~~ G	G
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 ~~1~~	1	1
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L ~~2L~~	1L	40 ml
SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL RETINITY
404497	A	B	C	D	E	F	G	404498		06	12 A	

Special Handling and/or Storage: Cool to 4 C. Bfug 2C AJS 4/26/94 1030

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F	G								
BOBNK1 11	W	04/26/94	10:45	X	X	X	X	X	X	X	X	X	X		X			
BOBNK2 12	W	04/26/94	10:45											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Katherine K.D Lee	4/26/94 1025	AJ Simpson AJ Simpson	4/26/94 1430
AJ Simpson AJ Simpson	4/27/94 1026	L Sweeney L Sweeney	4/27/94 1026
L Sweeney L Sweeney	4/27/94 1210	J Heidelberg J Heidelberg	4/27 1210
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2781

0000041

WO #452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K.D Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: SMC-494	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0-0518-14	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 2C AJS 4/26/94		

SAMPLE ANALYSIS: 404497

	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	ACTIVITY SCAN			
Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	aGs			
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	40mL			
Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F	G	404498	404499	805	10 A	
BOBRL5 09	W	04/26/94	0755	X	X	X	X	X	X	X	X	X	X		X
BOBRL6 10	W	04/26/94	0755											X	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	K.D Lee	4/26/94 1029
Received By	A J Simpson	4/26/94 1030
Relinquished By	A J Simpson	4/27/94 1026
Received By	L Sweeney	4/27/94 1026
Relinquished By	L Sweeney	4/27/94 1210
Received By	H Heidelberg	4/27 1210
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2782

0000042

WO#452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: 1NL736	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: 094-00518-16	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 3A AJS 4/26/94 1442		

SAMPLE ANALYSIS: 404497

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	P G	G	P	P	P	P	P	P	Gs	P	P G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	40 mL			
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total Activity			
	A	B	C	D	E	F	G	404498			08 A				

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total Activity			
BOBNN5 07	W	04/26/94	1300	X	X	X	X	X	X	X	X	X	X		X			
BOBNN6 08	W	04/26/94	1300											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature]	4/26/94 1428	AJ Simpson [signature]	4/26/94 1442
AJ SIMPSON [signature]	4/27/94 1015	L Sweeney L Sweeney	4/27/94 1015
L Sweeney L Sweeney	4/27/94 1210	[signature]	4/27 1210

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2783

0000043

WO#452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K.D Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-10	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W74-0-0518-13	Bill of Lading/Air Bill No.: None
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig ZC A351 15/45		

SAMPLE ANALYSIS: 404497

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	G	G	P	P	P	P	P	P	Gs	P	G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	2	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1 pt	Yank.			
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total Actinide			
	A	B	C	D	E	F	G	404149803			06 A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
BOBNN3 05	W	04/25/94	1130	X	X	X	X	X	X	X	X	X	X		X		
BOBNN4 06	W	04/25/94	1130											X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D Lee K.D Lee	4/25/94 1528	AJ Simpson AJ Simpson	4/25/94 1545
AJ Simpson AJ Simpson	4/27/94 0918	L Sweeney L Sweeney	4/27/94 0918
L Sweeney L Sweeney	4-27-94 1210	[illegible]	4/27/1210
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2784

0000044

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#465

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K.D Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-6	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0-0518-24	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 3C AJS 4/27/94 1312		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE
Type of Container	~~P~~ G	G	P	P	P	P	P	P	Gs	P	~~P~~ G	aGs
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 ~~1~~	1	1
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L ~~2L~~	1L	40mL
SAMPLE ANALYSIS	*1 A	IC ANIONS- F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 404569	TRITIUM 01	Tc-99	*3 02 A	ACTIVI-TY SCAN
404568												

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKALINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	ACTIVITY SCAN
BOBRM1 01	W	04/27/94	1005	X	X	X	X	X	X	X	X	X	X		X
BOBRM2 02	W	04/27/94	1005											X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D. Lee (K D Lee)	4/27/94 1311	AJ Simpson (AJSimpson)	4/27/94 1312
AJ Simpson (AJ Simpson)	4/27/94 1027	L Sweeney (L Sweeney)	4-27-94 1030
L Sweeney (L Sweeney)	4-28-94 1210	Karen Stittsberry	4-28-94 12:10

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

SDG-W0042

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)

9613496.2785

0000045

9613496.2786

0000046

WO #452

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		WS4 C-C518-20

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 #: BOBRL9, BOBRM0. Cooler ID: ER-11 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: BOFNL5, BOBNL6 Cooler ID: ER-5 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 200 AREA

Bill of lading # NONE

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
K. Nothing	15794c	4/28/94

Location of Property (Area & Bldg.)	Contact	Phone
200-BP-5	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
1-28-94	88410 PN5370	

Originated By	Date	Authorized By	Date
PH Butcher	4/28/94	[illegible]	4/28/94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[illegible]	4/28/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
[illegible]				
Date [illegible]				

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

54-3000-479 (09/90)

0000047

9613496.2787

WO #452

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		WG4-C-C 518-17

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 #: BOBNH7, BOBNH8 Cooler ID: ER-8 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 200 AREA

Bill of lading # NONE

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
L. Mathes	157740	4/28/94

Location of Property (Area & Bldg.)	Contact	Phone
200-BP-5	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
4-28-94	88410 PL53A	NA

Originated By	Date	Authorized By	Date
PH Butcher	4/28/94	CR Simpson	4/28/94
Signature and Name of Property Control	**Custodian Date**	**Property Management Approval**	**Date**
		JP Henkel	4/28/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
C Boyd IT				
Date 4/28/94 1155				

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

54-3000-479 (09/89)

9613496.2788

0000048

WO#452

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		WSU [illegible] 518-1[illegible]

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 #: BUBNN5, BUBNN6 Cooler ID: FNL73L 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

NC

☐ 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

Bill of lading # NONE

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
[illegible]	157[illegible]	[illegible]

Location of Property (Area & Bldg.)	Contact	Phone
2[illegible]-B[illegible]5	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
1-23-94	8B410	NC

Originated By	Date	Authorized By	Date
PH Butcher	1/23/94	G. Smart	1/27/94
Signature and Name of Property Control	**Custodian Date**	**Property Management Approval**	**Date**
		[illegible]	

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
[illegible]				
Date 1-27-94				

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

54-3000-479 (09/89)

0000049

9613496.2789

WO#452

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0518-13

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
IT Analytical Services
2800 George Washington Way
Richland, WA 99352

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: BOBRK5, BOBRLC, BOBNN3, BOBNN0 Cooler ID: ER-8 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: BOBNN5, BOBNN4 Cooler ID: ER-10 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

Bill of lading # NONE

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

RM Clearance for Public Release [illegible]	RM Survey No 157033	Date 4/27/94
Location of Property (Area & Bldg.) 200-BP-5	Contact P. H. Butcher	Phone (509) 376-4388
Date Ready for Shipment 4/27/94	Cost Code to be Charged 88410 PL53A	Approximate Date This Property will be Returned NA
Originated By PH Butcher	Date 4/27/94	Authorized By [illegible] Date 4/27/94
Signature and Name of Property Control	Custodian Date	Property Management Approval [illegible] Date [illegible]

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
[illegible]				
Date 4/27/94				

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

54-3000-479 (09/89)

0000050

9613496.2790

WO #452

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0518-14

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
IT Analytical Services
2800 George Washington Way
Richland, WA 99352

Off-site Custodian

Full Title

Quantity	Description - (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: B0BRL5, B0BRL6 Cooler ID: SMC-1194 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: B0BNK1, B0BNK2. Cooler ID: EA-13 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 200 AREA

Bill of lading # NONE

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
[illegible]	152933	4/22/94

Location of Property (Area & Bldg.)	Contact	Phone
200-BP-5	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
4/22/94	88410 PL53A	NA

Originated By	Date	Authorized By	Date
PH Butcher	4/22/94	[illegible]	4/22/94
Signature and Name of Property Control	**Custodian Date**	**Property Management Approval**	**Date**
		[illegible]	4/22/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
[illegible]				
Date 1/27/94				

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

COC NO. *0001548*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO#452 RL#562

Reference Document No. 453608
Page 1 of 3

Project Name/No. [1] SAF 94-130
Sample Team Members [2]
Profit Center No. [3] 4632
Project Manager [4] VAN PETTEY
Purchase Order No. [6]
Required Report Date [11]

Samples Shipment Date [7] 4-28-94
Lab Destination [8] Middlebrook
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13] 150 9385 473

Bill to: [5] IT Richland
Report to: [10] IT 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]
40449701 A	BOBRK9 /water	4/25 1030	glass	1 L.	Cool 4°	Metals, GFAA	5°C BPB 4/29/94 <2	
B				500ml		Anions, SO_4, NO_2, PO_4	FOR LAB USE ONLY	
C			poly	↓		NO_2, NO_3	<2	
D				250ml		alka.		
E						TDS		
F				↓		Sulfate	FOR LAB USE ONLY	
G				1 L.		Cyanide	>12	
40449702A	BOBRL0 /water	↓	glass	1 L.		Metals, GFAA	<2	

Special Instructions: [23] As per WHC Contract

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: [25]
Return to Client ☒ Disposal by Lab ☐ Archive ____ (mos.)

Turnaround Time Required: [26]
Normal ☒ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0042

1. Relinquished by [28] (Signature/Affiliation) Heidelberg IT — Date: 4-28-94 Time: 16:00	1. Received by [28] (Signature/Affiliation) Bryan Blanquist IT ASKW — Date: 4/29/94 Time: 8:45
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.

9613496.2791

0000051

INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#452
RL#562

Reference Document No.[30] 453608

Project Name SAF 94-130

Project No. SDL-W0042

Samples Shipment Date 4-28-94

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.
40449703 A	BOBNM9 /water	4/25 1430	glass	1 L.	Cool 4°	Metals, G-FAA	5°C BPB 1/24/94 <2	
B			↓	500ml		ANIONS, SO_4, NO_2, PO_4		
C			poly	↓		NO_2 NO_3	<2	
D				250ml		alka.		
E						TDS		
F				↓		Sulfate		
G			↓	1 L.		Cyanide	>12	
40449704 A	BOBNN0 /water	↓	glass	↓		Metals, G-FAA	<2	
40449705 A	BOBNN3 /water	4/25 1130		1 L.		Metals, G-FAA	<2	
B			↓	500ml		ANIONS, SO_4, NO_2, PO_4		
C			poly	↓		NO_2, NO_3	<2	
D				250ml		alka.		
E						TDS		
F				↓		Sulfate		
G			↓	1 L		Cyanide	>12	
40449706 A	BOBNN4 /water	↓	glass	↓		Metals, G-FAA	<2	
40449707 A	BOBNN5 /water	4/26 1300		1 L.		Metals, G-FAA	<2	
B			↓	500ml		ANIONS, SO_4, NO_2, PO_4		
C			poly	↓		NO_2, NO_3	<2	
D			↓	250ml		alka.		

White: To accompany samples
Yellow: Field copy

*See back of form for special instructions.

FOR LAB USE ONLY

MCA 3/15/91

9613496.2792

0000052

INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#45~~7~~ RL#562

Reference Document No.[30] 453608

Page 3 of 3

Project Name SAF 94-130

Project No. SDG W0042

Samples Shipment Date 4-28-94

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.
40449707 E	BOBNN5/Water	4/26 1300	poly	250ml	Cool 4°	TDS	5°C BPB 4/29/94	
F						Sulfate		
G				1L		Cyanide	>12	
40449708 A	BOBNN6/water		glass			Metals, GFAA	<2	
40449709 A	BOBRL5/Water	4/26 0755		1L		Metals, GFAA	<2	
B				500ml		ANIONS, SO4, NO2, PO4		
C			poly			NO2, NO3	<2	
D				250ml		alka.		
E						TDS		
F				1L		~~Sulfate~~ TH 4/26/94		
G				1L		Cyanide	>12	
40449710 A	BOBRN6/water		glass			Metals, GFAA	<2	
40449711 A	BOBNK1/water	4/26 1045		1L		Metals, GFAA	<2	
B				500ml		ANIONS, SO4, NO2, PO4		
C			poly			NO2, NO3	<2	
D				250ml		alka		
E						TDS		
F						Sulfate		
G				1L		Cyanide	>12	
40449712 A	BOBNK2/water		glass			Metals, GFAA	<2	

OK. TH 4/26/94

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

FOR LAB USE ONLY

9613496.2793

0000053

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001547*

WO#452

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

RL#563

Reference Document No. 453621

Page 1 of 2

Project Name/No. 1: 94-130

Samples Shipment Date 7: 4/28/94

Bill to: 5: ITAS Richland

Sample Team Members 2:

Lab Destination 8: Middle brook

Profit Center No. 3: 4632

Lab Contact 9:

Project Manager 4: VanPetty

Project Contact/Phone 12:

Report to: 10: ITAS Richland

Purchase Order No. 6:

Carrier/Waybill No. 13: FedEx ~~1509313924~~ KMK 4-29-94 → 150 9407 794

Required Report Date 11:

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
40453801A	BOBNH7 / H_2O	4/26/94 0930	Glass	1000ml	HNO_3 4°C	Metals ICP GFAA	5°C KMK 4-29-94 pH=<2	
B				500ml		Anions F Cl SO4 NO2 PO4		
C			Poly		H_2SO_4	NO2/NO3	pH=<2	
D				250ml		Alka		
E						TDS		
F						Sulfate		
G				1000ml	NaOH	CN	pH=10	
40453802A 4/28/94	BOBNH8 / H_2O		Glass		HNO_3	Metals ICP GFAA	pH=<2	

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: 26
Normal ☐ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0042

1. Relinquished by 28 (Signature/Affiliation) Tom [signature] ITAS	Date: 4/28/94 Time: 1600	1. Received by 28 (Signature/Affiliation) Kenny A Klemm ITAS-KN	Date: 4-29-94 Time: 12:25
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

Wipes #54 = cooler
#55 - samples

MCA 3/15/91

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

9613496.2794

0000054

WO#452

INTERNATIONAL TECHNOLOGY CORPORATION

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

Reference Document No.[30] 45362

Page 2 of 2

Project Name

Project No: 94-130

Samples Shipment Date 4/28/94

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.
→ 40453803A	BOBRL9 / H_2O	4/26/94 0930	G	1000 ml	HNO_3 4°C	Metals ICP GFAA	5°C pH<2 KML 4/29/94	
B				500 ml		Anions F Cl SO4 NO2 PO4		
C			P		H_2SO_4	NO2/NO3	pH<2	
D				250 ml		Alkq		
E						TDS		
F						Sulfate		
G				1000 ml	NaOH	CN	pH=11	
→ 40453804A	BOBRM0 / H_2O		G		HNO_3	Metals ICP GFAA	pH<2	
→ 40453805A	BOBNL5 / H_2O	4/27/94 1005					pH<2	
B				500 ml		Anions F Cl SO4 NO2 PO4		
C			P		H_2SO_4	NO2/NO3	pH<2	
D				250 ml		Alkq		
E						TDS		
F						Sulfate		
G				1000 ml	NaOH	CN	pH=11	
→ 40453806A	BOBNL6 / H_2O		G		HNO_3	Metals ICP GFAA		
4/28/94								

FOR LAB USE ONLY

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

96 13496.2795

0000055

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001559*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO# 465
RL# 588

Reference Document No. 453617
Page 1 of 1

Project Name/No. [1] SAF 94-130
Sample Team Members [2]
Profit Center No. [3] 4632
Project Manager [4] Van Pettey
Purchase Order No. [6]
Required Report Date [11]

Samples Shipment Date [7] 4-29-94
Lab Destination [8] Middlebrook
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13] 150 9933 747

Bill to: [5] IT Richland
Report to: [10] IT Richland

White: To accompany samples
Yellow: Field copy

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]
40456801 A	BOBRM1 / Water	4/27 1005	G	1 L.	Cool 4°	Metals, GFAA	4°C BPD 4/30/94 <2	
B			G	500ml		ANIONS, SO4, NO2, PO4	FOR LAB USE ONLY	
C			P	↓		NO2, NO3	<2	
D			P	250ml		alka.		
E			P			TDS	FOR LAB USE ONLY	
F			P	↓		Sulfate		
G			P	1 L.		Cyanide	10 BPD 5/10	
40456802 A	BOBRM2 / Water		G	1 L.		Metals, GFAA	<2	

Special Instructions: [23] As per WHC Contract

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: [25]
Return to Client ☒ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: [26]
Normal ☒ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0042

1. Relinquished by [28] (Signature/Affiliation) Heidelberg IT	Date: 4-29-94 Time: 16:00
2. Relinquished by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:
1. Received by [28] (Signature/Affiliation) Bryan Blanquart ITAS KH	Date: 4/30/94 Time: 9:35
2. Received by (Signature/Affiliation)	Date: Time:
3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

*See back of form for special instructions.

MCA 3/15/91

9613496.2796

0000056

WO#452

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			4/28/9		4/28	10	11	204	240

Customer ID WHC/WATER	pH <2 Rcvd/Relq	RESIDUE Wght (mGrms)	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	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BNH7		1.5	5	4.0	7	5	44	0.45	3.55	1.7E+00	7.3E+00	6.1E-04	2.6E-03	6.6E-07	9.9E-07	1.5E+02	6.6E+02	Yes	6.6E+01	1.5E+02
B0BRL9		1.8	5	4.0	8	3	49	0.25	4.05	8.8E-01	8.5E+00	3.2E-04	3.1E-03	4.9E-07	1.1E-06	7.9E+01	7.6E+02	Yes	1.3E+02	1.3E+02
B0BNL5		1.3	5	4.0	9	0	15	-0.05	0.65	-2E-01	1.4E+00	-7E-05	5.1E-04	-2E-07	2.8E-06	-2E+01	1.3E+02	Yes	-6E+02	7.8E+02
44-43B		0.5	5	1.0	10	0	12	-0.05	0.35	-2E-01	7.8E-01	-2E-05	7.0E-05	-5E-08	3.0E-07	-2E+01	7.0E+01	Yes	-6E+02	1.4E+03
TOTAL	uCi							-0.05	-0.85	-2E-01	-2E+00	8.4E-04	6.3E-03	ERR	ERR	ERR	ERR	Yes	ERR	ERR

OK. JRM
28 Apr 94

0000057

9613496.2797

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

WO#452

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			4/28/9		4/28	10	11	204	240

Customer ID WHC/WATER	pH <2 Rcvd/Relq	RESIDUE Wght (mGrms)	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	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BNH7		1.5	5		4.0		7	5	44	0.45	3.55	1.7E+00	7.3E+00	6.1E-04	2.6E-03	6.6E-07	9.9E-07	1.5E+02	6.6E+02	Yes	6.6E+01	1.5E+02
B0BRL9		1.8	5		4.0		8	3	49	0.25	4.05	8.8E-01	8.5E+00	3.2E-04	3.1E-03	4.9E-07	1.1E-06	7.9E+01	7.6E+02	Yes	1.3E+02	1.3E+02
B0BNL5		1.3	5		4.0		9	0	15	-0.05	0.65	-2E-01	1.4E+00	-7E-05	5.1E-04	-2E-07	2.8E-06	-2E+01	1.3E+02	Yes	-6E+02	7.8E+02
44-43B		0.5	5		1.0		10	0	12	-0.05	0.35	-2E-01	7.8E-01	-2E-05	7.0E-05	-5E-08	3.0E-07	-2E+01	7.0E+01	Yes	-6E+02	1.4E+03
TOTAL	uCi									-0.05	-0.85	-2E-01	-2E+00	8.4E-04	6.3E-03	ERR	ERR	ERR	ERR	Yes	ERR	ERR

O.K. JRM
28 Apr 94

0000058

9613496.2798

KMK 4-29-94

WO# ~~42~~ 452

all below mmf 4-27-94

all Cat I mmf 4-27-94

0000059

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			42794		427	10	20	228	240

Customer ID WHC/WATER	pH <2 Rcvd/Relq	RESIDUE Wght (mGrms)	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	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BNM9		0.9	5		4.0		1	8	42	0.72	3.25	2.7E+00	6.5E+00	9.7E-04	2.3E-03	8.4E-07	9.5E-07	2.4E+02	5.8E+02	Yes	4.1E+01	1.7E+02
B0BNN1		1.8	5		4.0		2	3	49	0.22	3.95	7.4E-01	8.3E+00	2.7E-04	3.0E-03	4.5E-07	1.0E-06	6.6E+01	7.5E+02	Yes	1.5E+02	1.3E+02
B0BNK1		1.5	5		4.0		3	2	46	0.12	3.65	3.4E-01	8.1E+00	1.2E-04	2.9E-03	3.2E-07	2.3E-05	3.1E+01	7.3E+02	Yes	3.3E+02	1.4E+02
B0BRK9		0.1	5		4.0		4	1	9	0.02	-0.05	6.6E-02	-1E-01	2.4E-05	-4E-05	1.2E-07	-2E-07	5.9E+00	-1E+01	Yes	1.7E+03	-9E+03
B0BP06		0.5	5		1.0		5	2	14	0.12	0.45	4.4E-01	8.8E-01	4.0E-05	7.9E-05	7.9E-08	1.7E-07	4.0E+01	7.9E+01	Yes	2.5E+02	1.3E+03
B0BNN5		1.1	5		4.0		6	5	23	0.42	1.35	1.6E+00	2.6E+00	5.7E-04	9.4E-04	6.3E-07	9.6E-07	1.4E+02	2.3E+02	Yes	7.0E+01	4.3E+02
B0BP30		0.2	5		1.0		7	0	11	-0.08	0.15	-3E-01	3.7E-01	-3E-05	3.4E-05	-7E-08	5.6E-08	-3E+01	3.4E+01	Yes	-3E+02	3.0E+03
B0BP20		1.7	5		1.0		8	5	20	0.42	1.05	1.6E+00	2.0E+00	1.5E-04	1.8E-04	1.6E-07	1.6E-07	1.5E+02	1.8E+02	Yes	6.9E+01	5.6E+02
B0BRL7		1.7	5		4.0		9	2	42	0.12	3.25	3.6E-01	6.9E+00	1.3E-04	2.5E-03	3.2E-07	1.7E-05	3.2E+01	6.2E+02	Yes	3.1E+02	1.6E+02
B0BNN3		2.2	5		4.0		10	1	41	0.02	3.15	-3E-02	6.7E+00	-1E-05	2.4E-03	-1E-07	1.7E-04	-3E+00	6.1E+02	Yes	-3E+03	1.7E+02
B0BP12		1.8	5		1.0		11	1	16	0.02	0.65	4.6E-02	1.4E+00	4.1E-06	1.2E-04	3.0E-08	3.0E-06	4.1E+00	1.2E+02	Yes	2.4E+03	8.1E+02
B0BRL5		0.3	5		4.0		12	1	10	0.02	0.05	6.3E-02	9.6E-02	2.3E-05	3.4E-05	1.2E-07	1.7E-07	5.7E+00	8.6E+00	Yes	1.8E+03	1.2E+04
B0BNY8		1.7	5		1.0		13	1	24	0.02	1.45	2.0E-02	3.1E+00	1.8E-06	2.8E-04	2.9E-08	2.2E-05	1.8E+00	2.8E+02	Yes	5.5E+03	3.6E+02
B0BNY6		1.8	5		1.0		14	1	19	0.02	0.95	3.6E-02	2.0E+00	3.3E-06	1.8E-04	3.0E-08	6.6E-06	3.3E+00	1.8E+02	Yes	3.1E+03	5.5E+02
B0BP42		0.1	5		1.0		15	1	11	0.02	0.15	6.0E-02	3.1E-01	5.4E-06	2.8E-05	2.9E-08	2.4E-07	5.4E+00	2.8E+01	Yes	1.9E+03	3.6E+03
TOTAL	uCi									-0.08	-0.95	-3E-01	-2E+00	2.3E-03	1.5E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

9613496.2799

Rec'd at 3:15 pm KMK

0000060

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

WO#465

All are Category I
JRN 29 Apr 94

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

Customer ID WHC/WATER	pH <2 Rcvd/Reiq	RESIDUE Wght (mGrms)	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	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BNL1		1.9	5	4.0	1	1	25	0.03	1.55	5.0E-02	3.3E+00	1.8E-05	1.2E-03	1.5E-07	6.4E-07	4.5E+00	3.0E+02	Yes	2.2E+03	3.4E+02
B0BNJ3		2.0	5	4.0	2	4	23	0.33	1.35	1.3E+00	2.7E+00	4.5E-04	9.6E-04	5.6E-07	6.0E-07	1.1E+02	2.4E+02	Yes	8.9E+01	4.1E+02
B0BNJ9		2.0	5	4.0	3	5	48	0.43	3.85	1.6E+00	8.0E+00	5.7E-04	2.9E-03	6.4E-07	4.9E-06	1.4E+02	7.2E+02	Yes	7.1E+01	1.4E+02
B0BP08		1.6	5	1.0	4	3	20	0.23	1.05	8.6E-01	2.1E+00	7.8E-05	1.9E-04	1.1E-07	3.1E-07	7.8E+01	1.9E+02	Yes	1.3E+02	5.3E+02
B0BNL9		0.6	5	4.0	5	1	7	0.03	-0.25	1.0E-01	-5E-01	3.8E-05	-2E-04	1.4E-07	-1E-06	9.5E+00	-5E+01	Yes	1.1E+03	-2E+03
B0BRM1		1.2	5	4.0	6	2	11	0.13	0.15	4.9E-01	2.5E-01	1.6E-04	8.9E-05	3.3E-07	1.0E-07	4.4E+01	2.2E+01	Yes	2.3E+02	4.5E+03
B0BNK9		1.1	5	4.0	7	0	12	-0.08	0.25	-3E-01	5.9E-01	-1E-04	2.1E-04	-3E-07	4.9E-07	-3E+01	5.3E+01	Yes	-4E+02	1.9E+03
TOTAL	uCi							-0.08	-0.95	-3E-01	-2E+00	1.2E-03	5.3E-03	ERR	ERR	ERR	ERR	Yes	ERR	ERR

9613496.2800

9613496.2801

04/27/94 08:04 ☎373 3176 222S 3B WO#452 007

SAMPLE STATUS REPORT FOR E 6206. E-BLANK 299E33-7 TIME: 4/27/94 8:35
DISPATCHED: 4/ 1/94 13:46 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/26/94 14:51

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 BNH7
BO BNH8

AJS
4/27/94

BO BRL9
BO BRM0

BO BRM5
BO BRM6

9613496.2802

WO #452

/94 07:42 ☎373 3178 222S 3B

SA STATUS REPORT FOR E 6219. E-BLANK 6994955B TIME: 4/28/94 81303
DISPATCHED: 4/ 1/94 13:57 SAMPLE HAS NOT BEEN SLURPED
RE D: 4/28/94 7:43

EX	TER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
**	******	**********	***	***	******
12	T-ACT	< 5.00000E 01 pCi/G	N	Y	VO

END OF REPORT

BO13NL5
BO13NL6
LCS
4/28/94

WO#452

04/27/94 08:04 ☎373 3176 222S 3B 008

SAMPLE STATUS REPORT FOR E 6213. E-BLANK 299E3338 TIME: 4/27/94 8:35
DISPATCHED: 4/ 1/94 13:51 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/26/94 14:52

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 BNK1
BO BNK2

AJS
4/27/94

9613496.2804

WO#452

04/27/94 08:05 ☎373 3176 222S 3B 010

SAMPLE STATUS REPORT FOR E 6638. E-BLANK FTBLK-2 TIME: 4/27/94 8:35
DISPATCHED: 4/11/94 8:16 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/26/94 14:52

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 BRL5
BO BRL6

AJS
4/27/94

9613496.2805

WO#452

04/27/94 08:04 ☎373 3176 222S 3B 009

SAMPLE STATUS REPORT FOR E 6229. E-BLANK 69954-57 TIME: 4/27/94 8:35
DISPATCHED: 4/ 1/94 14: 5 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/26/94 14:52

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 BNN5
BO BNN6

AJS
4/27/94

9613496.2806

0000067

WO#452

04/26/94 09:36 ☎373 3176 222S 3B 012

SAMPLE STATUS REPORT FOR E 6226. E-BLANK 6995355A TIME: 4/26/94 10:24
DISPATCHED: 4/ 1/94 14: 2 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/26/94 8: 8

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 BNM9
BO BNNO

AJS
4/26/94

9613496.2807

0000068

WO #452

04/26/94 09:36 ☎373 3176 222S 3B 011

SAMPLE STATUS REPORT FOR E 6635. E-BLANK EQBLK-1 TIME: 4/26/94 10: 3
DISPATCHED: 4/11/94 8:13 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/26/94 8: 8

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 BRK9
BU BRLO

AJS
4/26/94
A

9613496.2808

0000069

WO#452

04/26/94 09:37 ☎373 3176 222S 3B 014

SAMPLE STATUS REPORT FOR E 6228. E-BLANK 6995355C TIME: 4/26/94 10:24
DISPATCHED: 4/ 1/94 14: 4 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/26/94 8: 8

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 BRL7
BO BRL8

AJS 4/26/94

BO BRM3
BO BRM4

BOBNN3
BOBNN4

WO#465

/94 07:42 ☎373 3176 222S 3B

SAMPLE STATUS REPORT FOR E 6219. E-BLANK 6994955B TIME: 4/28/94 8:30
DISPATCHED: 4/ 1/94 13:57 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/28/94 7:43

EXTN.	PARAMETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
12[illegible]	[illegible]T-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

BOBNL5
BOBNL6
LCS
4/28/94

BOBRM1
BOBRM2
LCS
4/28/94

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

June 16, 1994

Attention: J.A.Lerch

SAF Number	:	94-130
Date SDG Closed	:	April 29, 1994
Number of Samples	:	Ten (10)
Sample Type	:	Water
SDG Number	:	W0042
Data Deliverable	:	Stand Alone

I. Introduction

On April 27, 28, and 29, 1994, ten 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
404498-01A	B0BRK9	Water	4/27/94
404498-02A	B0BNM9	Water	4/27/94
404498-03A	B0BNN3	Water	4/27/94
404498-04A	B0BNN5	Water	4/27/94
404498-05A	B0BRL5	Water	4/27/94
404498-06A	B0BNK1	Water	4/27/94
404539-01A	B0BNH7	Water	4/28/94
404539-02A	B0BRL9	Water	4/28/94
404539-03A	B0BNL5	Water	4/28/94
404569-01A	B0BRM1	Water	4/29/94

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
Plutonium-238, -239/40 by method ITAS-RD-3209
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
Technetium-99 by method ITAS-IT-RS-0001
Tritium by method ITAS-RD-3205
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0042 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

Plutonium-238, -239/40 by method ITAS-RD-3209
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNN5) results are within contractual limits.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
The detection limit for Eu-152 was not met on the first count of sample B0BNL5. The detection limits were achieved for all analytes on the recount of that sample. The detection limit for Fe-59 was not met for samples B0BNK1 and B0BRL9. The sample data were accepted due to the elapsed time from sample collection to sample counting (35 days) vs. the half-life of Fe-59 (44.5 days). The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BRK9) results are within contractual limits.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNK1) results are within contractual limits.

Gross Beta by method ITAS-RD-3222
Sample B0BNN5 and B0BRL5 were recounted at the analyst's request due to a lack of significant counts recorded on the analytical work cards for the initial analysis of these samples. The recount results for these samples are accepted and reported. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNK1) results are within contractual limits.

Strontium-90 by method ITAS-RD-3204
Samples B0BNM9 and B0BNK1 were reanalyzed because their chemical yields were below 30%. The reanalysis LCS, blank, and sample data are within contractual requirements. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNH7) results are within contractual requirements.

Liquid Scintillation Counting

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

The matrix spikes, LCS, batch blank, sample and sample duplicate (duplicate of sample B0BRL9) results are within contractual requirements.

Tritium by method ITAS-RD-3205

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BRK9) results are within contractual requirements.

Total Uranium

Total Uranium by method ITAS-RD-4200

The matrix spikes, LCS, batch blank, sample and sample duplicate (duplicate of B0BNN3) 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

Suzanne Gaines
Project Manager

9613496.2814

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0042
LAB SAMPLE ID: 40449801
MATRIX: WATER
WHC ID: B0BRK9
DATE RECEIVED: 4/27/94
REPORTING UNITS: pCi/L & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.08E-02	2.15E-02	2.16E-02	2.58E-01	0.775	RD3209
PU-238	0.00E+00	0.00E+00	1.62E-01	1.46E-01	0.775	RD3209
CO-60	1.41E+00	3.59E+00	3.59E+00	6.95E+00	N/A	RD3219
FE-59	-1.07E+01	1.11E+01	1.12E+01	1.75E+01	N/A	RD3219
EU-152	2.52E+00	1.72E+01	1.72E+01	3.31E+01	N/A	RD3219
CO-58	7.90E-01	3.83E+00	3.83E+00	7.19E+00	N/A	RD3219
CS-137DA	-1.44E+00	2.80E+00	2.80E+00	4.65E+00	N/A	RD3219
RU-106DA	2.32E+01	2.40E+01	2.41E+01	4.69E+01	N/A	RD3219
CE-144	5.18E+00	1.25E+01	1.25E+01	2.10E+01	N/A	RD3219
EU-154	-5.17E+00	8.06E+00	8.08E+00	1.27E+01	N/A	RD3219
ALPHA	2.24E-01	3.00E-01	3.03E-01	5.86E-01	1	RD3222
BETA	-5.26E-01	1.15E+00	1.15E+00	2.69E+00	1	RD3222
TOTAL-SR	2.67E-01	2.89E-01	2.97E-01	7.45E-01	0.957	RD3204
TC-99	1.52E-01	9.26E-01	4.11E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	1.42E+02	1.04E+02	1.94E+02	2.34E+00	0.973	RD3205
URANIUM	0.00E+00	N/A	1.00E-02	3.54E-03	1	RD4200

682A-6-93

9613496.2815

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40449802	MATRIX:	WATER
WHC ID:	B0BNM9	DATE RECEIVED:	4/27/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-5.41E-02	5.41E-02	5.48E-02	4.64E-01	0.616	RD3209
PU-238	5.41E-02	1.38E-01	1.38E-01	3.24E-01	0.616	RD3209
CO-60	3.28E+00	4.22E+00	4.23E+00	9.94E+00	N/A	RD3219
FE-59	4.63E+00	1.27E+01	1.27E+01	2.67E+01	N/A	RD3219
EU-152	1.80E+01	1.47E+01	1.48E+01	4.23E+01	N/A	RD3219
CO-58	8.23E-01	4.72E+00	4.72E+00	9.61E+00	N/A	RD3219
CS-137DA	2.84E+00	3.75E+00	3.76E+00	7.79E+00	N/A	RD3219
RU-106DA	-1.66E+01	3.58E+01	3.59E+01	6.26E+01	N/A	RD3219
CE-144	-8.66E+00	2.02E+01	2.02E+01	3.34E+01	N/A	RD3219
EU-154	-7.24E+00	1.31E+01	1.31E+01	2.24E+01	N/A	RD3219
ALPHA	1.78E+00	9.64E-01	9.87E-01	1.22E+00	1	RD3222
BETA	1.07E+01	2.10E+00	2.24E+00	3.10E+00	1	RD3222
TOTAL-SR	1.14E-01	2.77E-01	2.79E-01	7.71E-01	0.958	RD3204
TC-99	3.95E+00	9.91E-01	4.41E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	1.55E+02	1.04E+02	1.95E+02	2.34E+00	0.973	RD3205
URANIUM	2.79E+00	N/A	4.18E-01	3.54E-03	1	RD4200

682A-6-93

9613496.2816

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40449803	MATRIX:	WATER
WHC ID:	B0BNN3	DATE RECEIVED:	4/27/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.08E-02	2.15E-02	2.16E-02	2.57E-01	0.775	RD3209
PU-238	-2.15E-02	3.05E-02	3.06E-02	3.04E-01	0.775	RD3209
CO-60	1.11E+01	7.02E+00	7.11E+00	1.54E+01	N/A	RD3219
FE-59	5.59E+00	9.24E+00	9.25E+00	2.13E+01	N/A	RD3219
EU-152	1.76E+01	2.01E+01	2.02E+01	4.59E+01	N/A	RD3219
CO-58	-7.60E+00	6.01E+00	6.06E+00	8.73E+00	N/A	RD3219
CS-137DA	1.70E+00	3.54E+00	3.54E+00	7.12E+00	N/A	RD3219
RU-106DA	1.18E+01	3.38E+01	3.38E+01	6.63E+01	N/A	RD3219
CE-144	2.51E+00	1.87E+01	1.87E+01	3.24E+01	N/A	RD3219
EU-154	-7.88E+00	1.46E+01	1.46E+01	2.44E+01	N/A	RD3219
ALPHA	3.62E+00	1.43E+00	1.48E+00	1.14E+00	1	RD3222
BETA	7.75E+00	1.83E+00	1.91E+00	2.77E+00	1	RD3222
TOTAL-SR	-3.18E-01	6.63E-01	6.66E-01	2.05E+00	0.329	RD3204
TC-99	5.88E+02	4.49E+00	6.69E+01	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	3.29E+02	1.10E+02	2.04E+02	2.34E+00	0.973	RD3205
URANIUM	4.89E+00	N/A	7.34E-01	3.54E-03	1	RD4200

682A-6-93

9613496.2817

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40449804	MATRIX:	WATER
WHC ID:	B0BNN5	DATE RECEIVED:	4/27/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-2.70E-02	3.81E-02	3.84E-02	3.81E-01	0.618	RD3209
PU-238	0.00E+00	0.00E+00	2.02E-01	1.83E-01	0.618	RD3209
CO-60	-2.68E+00	4.85E+00	4.85E+00	8.07E+00	N/A	RD3219
FE-59	-2.28E+00	1.34E+01	1.34E+01	2.41E+01	N/A	RD3219
EU-152	1.80E+01	1.47E+01	1.48E+01	4.23E+01	N/A	RD3219
CO-58	5.17E+00	5.60E+00	5.63E+00	1.22E+01	N/A	RD3219
CS-137DA	-6.95E-01	4.66E+00	4.66E+00	8.24E+00	N/A	RD3219
RU-106DA	1.61E+01	3.83E+01	3.83E+01	7.36E+01	N/A	RD3219
CE-144	2.42E+00	1.80E+01	1.81E+01	3.11E+01	N/A	RD3219
EU-154	1.69E+01	1.35E+01	1.36E+01	3.24E+01	N/A	RD3219
ALPHA	1.40E+00	8.41E-01	8.60E-01	1.21E+00	1	RD3222
BETA	7.48E+00	1.80E+00	1.87E+00	2.75E+00	1	RD3222
TOTAL-SR	-1.91E-01	2.88E-01	2.92E-01	9.16E-01	0.767	RD3204
TC-99	-5.12E-01	9.17E-01	4.07E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	-9.30E-01	9.86E+01	1.86E+02	2.34E+00	0.973	RD3205
URANIUM	2.86E+00	N/A	4.29E-01	3.54E-03	1	RD4200

682A-6-93

9613496.2818

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40449805	MATRIX:	WATER
WHC ID:	B0BRL5	DATE RECEIVED:	4/27/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.04E-02	2.08E-02	2.09E-02	2.49E-01	0.802	RD3209
PU-238	-2.08E-02	2.94E-02	2.96E-02	2.94E-01	0.802	RD3209
CO-60	-2.77E-01	5.02E+00	5.02E+00	9.49E+00	N/A	RD3219
FE-59	-1.06E+01	1.48E+01	1.49E+01	2.29E+01	N/A	RD3219
EU-152	1.39E+01	1.25E+01	1.25E+01	3.65E+01	N/A	RD3219
CO-58	1.67E-01	5.07E+00	5.07E+00	9.06E+00	N/A	RD3219
CS-137DA	-3.27E+00	4.44E+00	4.45E+00	7.29E+00	N/A	RD3219
RU-106DA	1.01E+00	2.06E+01	2.06E+01	4.02E+01	N/A	RD3219
CE-144	-3.50E+00	1.48E+01	1.48E+01	2.46E+01	N/A	RD3219
EU-154	6.72E+00	1.01E+01	1.02E+01	2.37E+01	N/A	RD3219
ALPHA	6.01E-02	1.84E-01	1.84E-01	4.48E-01	1	RD3222
BETA	7.12E-01	1.29E+00	1.29E+00	2.76E+00	1	RD3222
TOTAL-SR	-6.55E-02	2.65E-01	2.66E-01	7.99E-01	0.921	RD3204
TC-99	8.15E-01	9.44E-01	4.17E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	1.15E+02	1.03E+02	1.92E+02	2.34E+00	0.973	RD3205
URANIUM	0.00E+00	N/A	1.00E-02	3.54E-03	1	RD4200

682A-6-93

9613496.2819

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0042
LAB SAMPLE ID: 40449806
MATRIX: WATER
WHC ID: B0BNK1
DATE RECEIVED: 4/27/94
REPORTING UNITS: pCi/L & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.01E-02	2.03E-02	2.03E-02	2.43E-01	0.822	RD3209
PU-238	0.00E+00	0.00E+00	1.52E-01	1.37E-01	0.822	RD3209
CO-60	1.47E+01	7.61E+00	7.75E+00	1.73E+01	N/A	RD3219
FE-59	1.01E+01	1.64E+01	1.64E+01	3.41E+01	N/A	RD3219
EU-152	1.82E+01	1.48E+01	1.50E+01	4.27E+01	N/A	RD3219
CO-58	-3.78E+00	5.51E+00	5.52E+00	9.15E+00	N/A	RD3219
CS-137DA	-1.63E+00	5.11E+00	5.11E+00	8.64E+00	N/A	RD3219
RU-106DA	-2.10E+01	4.41E+01	4.42E+01	7.19E+01	N/A	RD3219
CE-144	1.56E+01	1.77E+01	1.77E+01	3.29E+01	N/A	RD3219
EU-154	2.61E+01	1.31E+01	1.33E+01	3.48E+01	N/A	RD3219
ALPHA	4.46E+00	1.32E+00	1.44E+00	9.41E-01	1	RD3222
BETA	1.15E+01	2.11E+00	2.26E+00	2.98E+00	1	RD3222
TOTAL-SR	1.37E-01	2.95E-01	2.97E-01	8.15E-01	0.961	RD3204
TC-99	7.67E+02	5.16E+00	8.64E+01	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	3.74E+03	1.93E+02	4.24E+02	2.34E+00	0.973	RD3205
URANIUM	7.01E+00	N/A	1.05E+00	3.54E-03	1	RD4200

682A-6-93

9613496.2820

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG NO.:**	W0042
LAB SAMPLE ID:	40453901	**MATRIX:**	WATER
WHC ID:	B0BNH7	**DATE RECEIVED:**	4/28/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-5.71E-02	5.71E-02	5.78E-02	4.90E-01	0.584	RD3209
PU-238	-1.43E-02	2.86E-02	2.87E-02	3.42E-01	0.584	RD3209
CO-60	1.42E+01	8.24E+00	8.36E+00	1.80E+01	N/A	RD3219
FE-59	-1.25E+01	1.40E+01	1.40E+01	2.14E+01	N/A	RD3219
EU-152	1.26E+01	2.08E+01	2.09E+01	4.60E+01	N/A	RD3219
CO-58	-5.53E+00	5.86E+00	5.88E+00	9.04E+00	N/A	RD3219
CS-137DA	1.13E+00	4.80E+00	4.80E+00	8.67E+00	N/A	RD3219
RU-106DA	-3.54E+01	4.81E+01	4.82E+01	7.30E+01	N/A	RD3219
CE-144	-1.18E+01	2.15E+01	2.15E+01	3.36E+01	N/A	RD3219
EU-154	1.14E+01	8.64E+00	8.72E+00	2.44E+01	N/A	RD3219
ALPHA	1.33E+00	8.91E-01	9.04E-01	1.31E+00	1	RD3222
BETA	1.16E+01	2.16E+00	2.31E+00	3.09E+00	1	RD3222
TOTAL-SR	3.52E-02	2.61E-01	2.61E-01	7.56E-01	0.886	RD3204
TC-99	6.46E+02	4.69E+00	7.32E+01	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	5.76E+03	2.29E+02	5.66E+02	2.34E+00	0.973	RD3205
URANIUM	2.76E+00	N/A	4.13E-01	3.54E-03	1	RD4200

682A-6-93

9613496.2821

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG NO.:**	W0042
LAB SAMPLE ID:	40453902	**MATRIX:**	WATER
WHC ID:	B0BRL9	**DATE RECEIVED:**	4/28/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-2.71E-02	3.83E-02	3.86E-02	3.83E-01	0.615	RD3209
PU-238	-1.36E-02	2.71E-02	2.72E-02	3.25E-01	0.615	RD3209
CO-60	5.94E+00	8.38E+00	8.40E+00	1.62E+01	N/A	RD3219
FE-59	-9.40E+00	1.88E+01	1.88E+01	3.20E+01	N/A	RD3219
EU-152	-1.36E+01	2.61E+01	2.61E+01	4.62E+01	N/A	RD3219
CO-58	6.47E-01	6.35E+00	6.35E+00	1.21E+01	N/A	RD3219
CS-137DA	-3.94E+00	5.12E+00	5.13E+00	7.82E+00	N/A	RD3219
RU-106DA	-4.09E+01	4.11E+01	4.13E+01	5.55E+01	N/A	RD3219
CE-144	2.23E+00	1.89E+01	1.89E+01	3.13E+01	N/A	RD3219
EU-154	1.80E+01	1.08E+01	1.10E+01	2.95E+01	N/A	RD3219
ALPHA	2.80E+00	1.12E+00	1.16E+00	9.22E-01	1	RD3222
BETA	2.40E+02	7.66E+00	1.86E+01	2.92E+00	1	RD3222
TOTAL-SR	2.01E-01	4.33E-01	4.35E-01	1.20E+00	0.538	RD3204
TC-99	6.21E+02	4.64E+00	7.05E+01	2.14E+00		ITAS-IT-RS-0001
TRITIUM	5.80E+03	2.31E+02	5.69E+02	2.34E+00	0.973	RD3205
URANIUM	2.80E+00	N/A	4.20E-01	3.54E-03	1	RD4200

682A-6-93

9613496.2822

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0042
LAB SAMPLE ID: 40453903
MATRIX: WATER
WHC ID: B0BNL5
DATE RECEIVED: 4/28/94
REPORTING UNITS: pCi/L & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.96E-02	2.77E-02	2.79E-02	2.77E-01	0.85	RD3209
PU-238	0.00E+00	0.00E+00	1.47E-01	1.33E-01	0.85	RD3209
CO-60	1.29E-01	2.60E+00	2.60E+00	4.49E+00	N/A	RD3219
FE-59	-1.15E-01	8.54E+00	8.54E+00	1.57E+01	N/A	RD3219
EU-152	-3.65E+00	1.61E+01	1.61E+01	2.82E+01	N/A	RD3219
CO-58	2.66E+00	3.52E+00	3.53E+00	6.95E+00	N/A	RD3219
CS-137DA	2.05E+00	3.12E+00	3.12E+00	5.79E+00	N/A	RD3219
RU-106DA	2.08E+01	2.29E+01	2.30E+01	4.38E+01	N/A	RD3219
CE-144	-3.04E+00	1.33E+01	1.33E+01	2.15E+01	N/A	RD3219
EU-154	-1.62E+00	7.40E+00	7.40E+00	1.35E+01	N/A	RD3219
ALPHA	3.45E+00	1.17E+00	1.26E+00	1.06E+00	1	RD3222
BETA	7.31E+00	1.78E+00	1.85E+00	2.72E+00	1	RD3222
TOTAL-SR	2.96E-01	4.63E-01	4.68E-01	1.26E+00	0.562	RD3204
TC-99	-1.04E-01	9.19E-01	4.10E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	5.12E+01	1.01E+02	1.89E+02	2.34E+00	0.973	RD3205
URANIUM	3.12E+00	N/A	4.68E-01	3.54E-03	1	RD4200

682A-6-93

9613496.2823

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40456901	MATRIX:	WATER
WHC ID:	B0BRM1	DATE RECEIVED:	4/29/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	0.00E+00	0.00E+00	1.32E-01	1.19E-01	0.947	RD3209
PU-238	-8.80E-03	1.76E-02	1.77E-02	2.11E-01	0.947	RD3209
CO-60	2.01E+00	5.22E+00	5.22E+00	1.01E+01	N/A	RD3219
FE-59	-2.32E+00	1.79E+01	1.79E+01	3.20E+01	N/A	RD3219
EU-152	6.56E+00	1.90E+01	1.90E+01	4.27E+01	N/A	RD3219
CO-58	-8.24E-01	4.59E+00	4.59E+00	8.71E+00	N/A	RD3219
CS-137DA	2.13E+00	3.21E+00	3.22E+00	7.00E+00	N/A	RD3219
RU-106DA	6.62E+00	4.19E+01	4.19E+01	7.63E+01	N/A	RD3219
CE-144	1.73E+01	1.55E+01	1.56E+01	3.05E+01	N/A	RD3219
EU-154	6.81E+00	1.12E+01	1.13E+01	.2.58E+01	N/A	RD3219
ALPHA	3.08E+00	1.07E+00	1.15E+00	7.84E-01	1	RD3222
BETA	8.63E+00	1.90E+00	1.99E+00	2.83E+00	1	RD3222
TOTAL-SR	1.42E-01	2.88E-01	2.90E-01	7.94E-01	0.923	RD3204
TC-99	6.82E-01	9.38E-01	4.15E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	5.95E+01	1.01E+02	1.89E+02	2.34E+00	0.973	RD3205
URANIUM	3.04E+00	N/A	4.56E-01	3.54E-03	1	RD4200

682A-6-93

9613496.2824

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order Nos: 404498, 4539, 4569

Lab Sample Numbers or SDG: W0042

Method/Test/Parameter: RD 3322 Pu

	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: M Kellogg Date: 6-2-94

Second Level Review: Sung Lewis Date: 6/7/94

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

OK to transfer 6-2-94 MMM

029

9613496.2825

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404498 404539 404569

Lab Sample Numbers or SDG: WCC 42

Method/Test/Parameter: Gamma Water

	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: [signature] Date: 6-2-94 MK 6-6-94

Second Level Review: [signature] Date: 6/15/94

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

Transfer recount data for 4045390S. MK 6-6-94

9613496.2826

INTERNATIONAL TECHNOLOGY CORPORATION

0206

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

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0042

NCM INITIATED BY (Name/Date): Joel T Kemperman 6-3-94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: 4C4553903

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): Eu152 MDA>CL
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): Sergio Maines 6/13/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613496.2827

0206

IT CORPORATION

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

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE JTK 6-3-94

uncertain

☒ CORRECTIVE ACTION: INITIALS/DATE JTK 6-3-94

6-6-94 JTK

recount 200mm Recount data accepted MDA<CL

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: Joel T Kimmann DATE: 6-6-94

RESPONSIBLE MANAGER: Lin Macklin DATE: 6/15/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED

ASSIGNED TO

QC COORDINATOR: Jodie Carr DATE: 6/16/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Carr DATE: 6/16/94

032

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

9613496.2828

INTERNATIONAL TECHNOLOGY CORPORATION

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

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

0418

PROJECT ID (Name/Number): WHC WCAD

NCM INITIATED BY (Name/Date): Joel T Kongsma 6-2-94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: 40453902, 40449806

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): MDA Fe 59 > CL
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): Sig Davies 6/13/94

033

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613496.2829

C418

IT CORPORATION

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

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE ATK 6-3-94

lapsed time to ~~process~~ correctly (.35 days) vs half life 44.5 days ATK 6-3-94

☒ CORRECTIVE ACTION: INITIALS/DATE ATK 6-3-94

data accepted

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [signature] DATE: 6-3-94

RESPONSIBLE MANAGER: [signature] DATE: 6/15/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED.

ASSIGNED TO

QC COORDINATOR: [signature] DATE: 6/16/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 6/16/94

034

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

9613496.2830

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404498, 404539, 404569

Lab Sample Numbers or SDG: WC042

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: [signature] Date: 5-30-99

Second Level Review: [signature] Date: 6/7/99

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

9613496.2831

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404498, 404539, 404569

Lab Sample Numbers or SDG: 100042

Method/Test/Parameter: Beta

Review item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. Calibration 1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis 1. Are the sample Yields within acceptance criteria?			✓	✓
2. Were all sample holding times met?	✓			✓
C. QC Samples 1. 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. Other 1. 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 T Kempema Date: 6-3-94

Second Level Review: Sergi Davies Date: 6/15/94

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

Transfer Percent results 404498 04 + 05

9613496.2832

0205

INTERNATIONAL TECHNOLOGY CORPORATION

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

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joel T Kempema 6-1-94

PARAMETER(S): Beta

SAMPLE NUMBER(S) AFFECTED: 40449804, 40449805 W0042

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):
10. ☒ Comments/Explanation: Recount to verify low count rate

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 Jones 6/15/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613496.2833

C205

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

CORRECTIVE ACTION

☒ **ROOT CAUSE:** INITIALS/DATE JTK 6-1-94

inaccuracy

☒ **CORRECTIVE ACTION:** INITIALS/DATE JTK 6-3-94

recount data accepted

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

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

FIRST LEVEL SUPERVISOR: [signature] DATE: 6-3-94

RESPONSIBLE MANAGER: [signature] DATE: 6/16/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: [signature] DATE: 6/16/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 6/16/94

038

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

9613496.2834

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404499

Lab Sample Numbers or SDG: W0042.

Method/Test/Parameter: Sr TOT

	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?	X			✓
5.	Were all calculations checked at a minimum frequency?	X			✓
6.	Units checked?	X			✓

Comments on any "No" response:

NCM- Report reanalysis

Analyst: [signature] Date: 6/10/94

Second Level Review: [signature] Date: 6/15/94

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

9613496.2835

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404498, 404539, 404569

Lab Sample Numbers or SDG: - WD042

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 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?			✓	—
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: 6/8/94

Second Level Review: [signature] Date: 6/15/94

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

9613496.2836

0204

INTERNATIONAL TECHNOLOGY CORPORATION

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

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0012

NCM INITIATED BY (Name/Date): SBM 6/10/94

PARAMETER(S): SVOT

SAMPLE NUMBER(S) AFFECTED: 40449802, 6

MATRIX: H_2O

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): Reanalysis original chem yield below 30%
   Reruns OK
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 Davis 6/15/94

041

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613496.2837

0204

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

CORRECTIVE ACTION

☒ **ROOT CAUSE:** INITIALS/DATE LE 6/10/94

Suspect insufficient $(NH_4)_2CO_3$ in soln for ppt. due to ~~[illegible]~~ 5.6/10/94 larger than normal HNO_3 residual in sample at that point.

☒ **CORRECTIVE ACTION:** INITIALS/DATE LE 6/10/94.

Repeat reanalysis

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

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

FIRST LEVEL SUPERVISOR: [signature] DATE: 6/10/94.

RESPONSIBLE MANAGER: [signature] DATE: 6/10/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: [signature] DATE: 6/10/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 6/10/94

042

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

9613496.2838

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): W4C

Lab Sample Numbers or SDG: W004Z

Method/Test/Parameter: TC99 H2O

	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?	✓		6/10/91	✓
8.	MS/MSD results and yield meet acceptance criteria?	✓		✓ 9a	✓
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: [signature] Date: 6/10/91

Second Level Review: [signature] Date: 6/15/91

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

9613496.2839

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404498 404539 404569

Lab Sample Numbers or SDG: - W0042

Method/Test/Parameter: H3

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. Calibration 1. Is the calibration documentation included where applicable?			X	—
B. Sample Analysis 1. Are the sample Yields within acceptance criteria?			X	—
2. Were all sample holding times met?			X	—
C. QC Samples 1. 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. Other 1. 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: 5/30/94

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

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

9613496.2840

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404498, 404539, 404569

Lab Sample Numbers or SDG: W 0042

Method/Test/Parameter: LL nat

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?	✓		✓ 5-31-94	✓
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? RJ 31 May 94	✓			✓ 5-31-94
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: [illegible] Tidwell Date: 5-31-94

Second Level Review: Sey [illegible] Date: 6/15/94

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

INTERNATIONAL TECHNOLOGY CORPORATION

0613496.2841

DUE DATE 6/3/94

MK 6-3-94

~~REANALYSIS~~ / RECOUNT

CHAIN-OF-CUSTODY BATCH ~~ANALYSIS~~ RECORD

ANALYSIS Gamma

NAME/DATE MK, 6-3-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP WC042

MATRIX Water

BATCH NUMBER ~~W~~ MK 6-3-94

ITAS ID	CUSTOMER ID	COMMENTS
1) 414539 03		200 min
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

MK 6-3-94

REFERENCED QC

ITAS ID - BLANK _____

ITAS ID - SPIKE _____

CLIENT CODE _____

ACTIONS (Initial & Date)

PREP LAB RECEIVED _____

SAMPLE REMAINDER RETURNED TO SCG ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB _____

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT SK 6-3-94

DATA REVIEWED MK 6-6-94

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

9613496.2842

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 6/3/94

JTK 6-1-94

~~REANALYSIS~~ / RECOUNT

CHAIN-OF-CUSTODY BATCH ~~ANALYSIS~~ RECORD

ANALYSIS Beta

NAME/DATE JTK / 6-1-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0042

MATRIX Water

BATCH NUMBER 4-498

ITAS ID	CUSTOMER ID	COMMENTS
1) 40449804		100min
2) 40449805		"
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

6-1-94 JTK

REANALYSIS

REFERENCED QC

ITAS ID - BLANK _____

ITAS ID - SPIKE _____

CLIENT CODE _____

ACTIONS (Initial & Date)

PREP LAB RECEIVED _____

SAMPLE REMAINDER RETURNED TO SCG _____ ☐ (CHECK ONE)

NO SAMPLE REMAINING _____ ☐

SEPARATION LAB _____

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT SK 6-2-94

DATA REVIEWED JTK 6-3-94

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

097

JTK

9613496.2843

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Total-SR

NAME/DATE DM / 6-9-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0042

MATRIX WATER

BATCH NUMBER 4-498

ITAS ID	CUSTOMER ID	COMMENTS
1) 40449802		
2) 40449806		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L044982B

ITAS ID - SPIKE L044982S

CLIENT CODE EQL 1096-30.012t.3447

ACTIONS (Initial & Date)

PREP LAB RECEIVED 6-8-94 DM

SAMPLE REMAINDER RETURNED TO SCG ☑ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 6-9-94 DM

COUNTING/MEASUREMENT RM 6/10/94

DATA REVIEWED GE 6/10/94

ANALYTICAL PREP STORED 6/10/94 GE

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 3

9613496.2844

Los Alamos Technical Associates, Inc.

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

4 AUG 1994 RECEIVED TQS

August 31, 1994

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

Dear Karl,

Attached is the data validation report for analytical results for 200-BP-5 Groundwater Operable Unit (SDG W0042-ITC-048). The package was received by Los Alamos Technical Associates on July 15, 1994. Validation of this package began on July 20, and was placed on hold on August 5, awaiting technetium data. The data was received on August 18 and the package was completed on August 30, 1994.

If you have any questions, please let me know.

Sincerely,

Janet M. Jones
Senior Environmental Engineer

cc: Chris Haecker, LATA
VW402.24

RECEIVED
AUG 31 1994
VALIDATION DOCUMENTATION
SDLA

9613496.2845

AUG 1994
RECEIVED
TQO

DATA VALIDATION REPORT
for
200-BP-5 Groundwater Operable Unit
SDG W0042-ITC-048
LATA VW402.24

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

August 30, 1994

RECEIVED
AUG 1 1994
DOCUMENTATION
SDLA

000000

9613496.2846

Table of Contents

Data Validation Narrative 2
INTRODUCTION 2
ANALYSES REQUESTED 2
DATA QUALITY OBJECTIVES 3
MAJOR DEFICIENCIES 4
MINOR DEFICIENCIES 4
COMMENTS 5
REFERENCES 6
DATA VALIDATION APPLIED QUALIFIERS. 7
LABORATORY APPLIED QUALIFIERS 8

Data Qualification Summary. 10

Data Summary Tables 12

Sample Results. 19

Checklist. 77

Laboratory Case Narratives 135

Chain-of-Custody Information 143

VEDD Printout 164

200-BP-5 Groundwater Operable Unit
Data Validation Narrative

INTRODUCTION

All samples in Sample Delivery Group (SDG) W0042-ITC-048 were validated at level "D" as defined in the Data Validation Procedures for Chemical Analysis (WHC-SD-EN-SPP-002) and Data Validation Procedures for Radiochemical Analyses (WHC-SD-EN-SPP-001).

The data package was received by Los Alamos Technical Associates (LATA) on July 15, 1994. Validation began on July 20, and was placed on hold on August 5, awaiting technetium data. The data was received on August 18 and the package was completed on August 30, 1994.

The chemical analyses were performed by International Technology Corporation, ITAS-Knoxville. Samples requiring radiochemical analyses were analyzed by International Technology Corporation, ITAS-Richland.

ANALYSES REQUESTED

Ten (10) water samples numbered B0BRM2, B0BNH8, B0BNK2, B0BNL6, B0BNN0, B0BNN4, B0BNN6, B0BRL0, B0BRL6, and B0BRM0 were collected on April 25, 26, and 27, 1994 by WHC and transferred to International Technology Corporation (ITC) for analysis. The following determinations were conducted on this subset of the twenty (20) samples in this SDG:

ICP Metals (filtered)	Method CLP ILM03*
Selenium (filtered)	Method CLP ILM03*

A second subset of the same SDG which included ten (10) water samples numbered B0BRM1, B0BNM9, B0BNK1, B0BNH7, B0BNL5, B0BNN3, B0BNN5, B0BRK9, B0BRL5, and B0BRL9 had the following determinations conducted:

ICP Metals (Unfiltered)	Method CLP ILM03*
Selenium (Unfiltered)	Method CLP ILM03*
Total Cyanide	Method CLP ILM03*
Total Dissolved Solids	Method 160.1*
Anions (F, Cl, SO_4, NO_2, PO_4)	Method 300.0*
Alkalinity	Method 310.1*
Sulfate	Method 375.4*
Nitrate+Nitrite	Method 353.2*
Gross Alpha/Beta	Method ITAS-RD-3222*
Plutonium 238, 239/240	Methods ITAS-RD-3209*
Strontium 90	Method ITAS-RD-3204*

* Methods sited in laboratory narrative.

ANALYSES REQUESTED (cont.)

Activity Scan	
Total Uranium	Method ITAS-RD-4200*
Tritium	Method ITAS-RD-3205*
Technetium-99	Method ITAS-IT-RS-0001*
Gamma Spectrometry for Cs-137, Co-60, Ru-106.	Method ITAS-RD-3219

COMMENTS

* The analysis of sulfate by methods EPA 300.0 and EPA 375.4 was requested on the Sampling Authorization Form (SAF). This redundancy in analysis was not necessary. The analysis of sulfate by EPA 375.4 was discontinued.

* The sample bottle for anions was broken at the lab. Westinghouse advised TMA to use the sulfate aliquot (analysis cancelled by ROD-94-0107) to run anions analysis.

Two Westinghouse Records of Disposition are included in the chain-of-custody section of this report.

DATA QUALITY OBJECTIVES

The data quality objectives for 200-BP-5 Groundwater Operable Unit are specified in the *Quality Assurance Program Plan for the 200-BP-5 Groundwater Operable Unit* (DOE/RL 88-32, Rev. 1). Precision, accuracy, and detection limit requirements for the project have been derived from *USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses* (EPA 1989a).

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 with the exception of those discussed under "Minor Deficiencies".
Sample Result Verification.	Goals for sample results were met with the exception of those discussed under "Comments."

DATA QUALITY OBJECTIVES (cont.)

Detection Limits. Goals for detections limits were all met.

Completeness. The data package was 96% complete for the requested analysis.

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 were identified during validation which required qualification of data as unusable.

The nitrite by IC and phosphate by IC analyses exceeded hold times by greater than two times the limit. All sample results 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.

METALS/CYANIDE

* Calcium was qualified non-detect (U) in samples BOBRK9, BOBRL0, BOBRL5, and BOBRL6 because of positive concentration in preparation blank.

* Iron was qualified non-detect (U) in samples BOBNH8, BOBNK1, BOBNK2, BOBNL6, BOBNN0, BOBNN3, BOBNN4, BOBNN6, BOBRK9, BOBRL0, BOBRL0, BOBRL5, BOBRL6, and BOBRM0 because of positive concentration in the preparation blank.

* Silicon was qualified non-detect (U) in samples BOBRK9, BOBRL0, BOBRL5, and BOBRL6 because of positive concentration in the preparation blank.

* Potassium was qualified non-detect (U) in BOBRM1, BOBRM2, BOBNM9, BOBNH8, BOBNK1, BOBNK2, BOBNH7, BOBNL5, BOBNL6, BOBNN4, BOBNN5, BOBNN6, BOBRL6, BOBRL9, and BOBRM0 because of positive concentration in a calibration blank.

* Selenium was qualified estimated, non-detect (UJ) in samples BOBRM1, and BOBRM2 because the analytical spike recovery was <85%.

MINOR DEFICIENCIES (cont.)

* Selenium was qualified as estimated (J) in samples BOBNN3 and BOBNN4 because the matrix spike recovery was > 125%.

* Bismuth was qualified as estimated, non-detect (UJ) in samples BOBNN6 and BOBRM1 because the analytical spike recovery was >115%.

* Cyanide was qualified as estimate (J) in samples BOBNN3 and BOBNH7 because of negative concentration in the preparation blank.

GENERAL CHEMISTRY

* No deficiencies were detected.

RADIOCHEMISTRY

* No deficiencies were detected.

COMMENTS

* A matrix spike/matrix spike duplicate was not run for the cyanide analysis due to insufficient sample. However, a blank spike duplicate was done and the results were acceptable. No qualifier was assigned to the data.

* The laboratory did not use the correct values on the Form 1 for the uranium (total) analysis of BOBNN3 duplicate (page 20) RPD calculation.

* The laboratory did not enter the correct MDA for the tritium analysis (all samples). The Form 1's have been corrected by the validator.

* The field QC samples BOBRM1, BOBRM2 and BOBRL9, BOBRM0 did not meet the criteria for precision.

9613496.2651

REFERENCES

EPA *USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses*, EPA 1989a, 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.

WHC 1994, *Quality Assurance Program Plan for the 200-BP-5 Groundwater Operable Unit*, DOE/RL 88-32, Rev. 1, Department of Energy-Hanford, 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.

9613496.2855

Data Qualification Summary

INORGANICS QUALIFICATION SUMMARY

ANALYTE	QUALIFIER	SAMPLES AFFECTED	DQO	REASON
Calcium	U	BOBRK9 BOBRL0 BOBRL5 BOBRL6	BLANKS	Preparation blank positive
Iron	U	BOBNH8 BOBNK1 BOBNK2 BOBNL6 BOBNN0 BOBNN3 BOBNN4 BOBNN6 BOBRK9 BOBRL0 BOBRL5 BOBRL6 BOBRM0	BLANKS	Preparation blank positive
Silicon	U	BOBRK9 BOBRL0 BOBRL5 BOBRL6	BLANKS	Preparation blank positive
Potassium	U	BOBRM1 BOBRM2 BOBNM9 BOBNH8 BOBNK1 BOBNK2 BOBNH7 BOBNL5 BOBNL6 BOBNN4 BOBNN5 BOBNN6 BOBRL6 BOBRL9 BOBRM0	BLANKS	Preparation blank positive
Selenium	UJ	BOBRM1 BOBRM2	ACCURACY	Analytical spike recovery < 85%
Selenium	J	BOBNN3 BOBNN4	ACCURACY	Matrix spike recovery > 125%, sample results detected
Bismuth	UJ	BOBNN6 BOBRM1	ACCURACY	Analytical spike recovery > 115%
Cyanide	J	BOBNN3 BOBNH7	BLANKS	Preparation blank negitive

GENERAL CHEMISTRY QUALIFICATION SUMMARY

ANALYTE	QUALIFIER	SAMPLES AFFECTED	DQO	REASON
Nitrite	UR	BOBRM1 BOBNM9 BOBNK1 BOBNH7 BOBNL5 BOBNN3 BOBNN5 BOBRK9 BOBRL5 BOBRL9	HOLD TIME	Hold time exceeded by > 2x, sample results non-detect
Phosphate	UR	BOBRM1 BOBNM9 BOBNK1 BOBNH7 BOBNL5 BOBNN3 BOBNN5 BOBRK9 BOBRL5 BOBRL9	HOLD TIME	Hold time exceeded by > 2x, sample results non-detect

entered by: BM
date: 9.15.94

checked by:
date:

9613496.2857

Data Summary Tables

9613496.2858

METALS/CYANIDE DATA SUMMARY TABLE

FILE#:VW402.24		HEIS #:	B0BRM1		B0BRM2		B0BNM9		B0BNH8	
		Date:	27-Apr-94		27-Apr-94		25-Apr-94		26-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	43.5	B	63.3	B	40.0	U	40.0	U
Calcium	7440-70-2	ug/L	29100.0		27600.0		29000.0		38500.0	
Iron	7439-89-6	ug/L	212.0		38.5	B	104.0		21.4	U
Magnesium	7439-95-4	ug/L	9340.0		8870.0		8600.0		10000.0	
Manganese	7439-96-5	ug/L	2.0	U	2.0	U	11.8	B	4.2	B
Potassium	7440-09-7	ug/L	6780.0	U	6680.0	U	8130.0	U	5410.0	U
Selenium	7782-49-2	ug/L	2.0	UJ	2.0	UJ	2.0	U	2.0	U
Sodium	7440-23-5	ug/L	9330.0		8900.0		20100.0		19500.0	
Bismuth	7440-69-9	ug/L	10.0	UJ	10.0	U	10.0	U	10.0	U
Silicon	7440-31-5	ug/L	26100.0		24900.0		16600.0		14000.0	
Cyanide	5955-70-0	ug/L	10.0	U			10.0	U		

FILE#:VW402.24		HEIS #:	B0BNK1		B0BNK2		B0BNH7		B0BNL5	
		Date:	26-Apr-94		26-Apr-94		26-Apr-94		27-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	44.6	B	40.0	U	52.6	B	40.0	U
Calcium	7440-70-2	ug/L	31800.0		32800.0		43100.0		28600.0	
Iron	7439-89-6	ug/L	45.4	U	22.4	U	466.0		197.0	
Magnesium	7439-95-4	ug/L	9440.0		9740.0		11100.0		9130.0	
Manganese	7439-96-5	ug/L	2.0	U	2.0	U	13.5	B	2.0	U
Potassium	7440-09-7	ug/L	5440.0	U	5590.0	U	5870.0	U	6170.0	U
Selenium	7782-49-2	ug/L	2.0	U	2.0	U	2.0	U	2.0	U
Sodium	7440-23-5	ug/L	14800.0		15400.0		21300.0		9230.0	
Bismuth	7440-69-9	ug/L	10.0	U	10.0	U	10.0	U	10.0	U
Silicon	7440-31-5	ug/L	14900.0		15500.0		15200.0		25500.0	
Cyanide	5955-70-0	ug/L	10.0	U			27.0	J	10.0	U

FILE#:VW402.24		HEIS #:	B0BNL6		B0BNN0		B0BNN3		B0BNN4	
		Date:	27-Apr-94		25-Apr-94		25-Apr-94		25-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	49.6	B	40.0	U	51.9	B	76.9	B
Calcium	7440-70-2	ug/L	26900.0		33000.0		58300.0		57300.0	
Iron	7439-89-6	ug/L	18.5	U	18.4	U	61.1	U	25.4	U
Magnesium	7439-95-4	ug/L	8580.0		9710.0		16400.0		16100.0	
Manganese	7439-96-5	ug/L	2.0	U	10.8	B	2.0	U	2.0	U
Potassium	7440-09-7	ug/L	6880.0	U	9130.0		8980.0		7900.0	U
Selenium	7782-49-2	ug/L	2.0	U	2.0	U	6.7	J	5.4	J
Sodium	7440-23-5	ug/L	8540.0		21600.0		24600.0		24300.0	
Bismuth	7440-69-9	ug/L	10.0	U	10.0	U	10.0	U	10.0	U
Silicon	7440-31-5	ug/L	24100.0		18600.0		18600.0		18400.0	
Cyanide	5955-70-0	ug/L					15.0	J		

shaded areas indicate changes by the validator

ITC048

entered by: BM
date: 9.15.94

checked by:
date:

000013

9613496.2859

METALS/CYANIDE DATA SUMMARY TABLE

FILE#:VW402.24		HEIS #:	B0BRM1		B0BRM2		B0BNM9		B0BNH8	
		Date:	27-Apr-94		27-Apr-94		25-Apr-94		26-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	43.5	B	63.3	B	40.0	U	40.0	U
Calcium	7440-70-2	ug/L	29100.0		27600.0		29000.0		38500.0	
Iron	7439-89-6	ug/L	212.0		38.5	B	104.0		21.4	U
Magnesium	7439-95-4	ug/L	9340.0		8870.0		8600.0		10000.0	
Manganese	7439-96-5	ug/L	2.0	U	2.0	U	11.8	B	4.2	B
Potassium	7440-09-7	ug/L	6780.0	U	6680.0	U	8130.0	U	5410.0	U
Selenium	7782-49-2	ug/L	2.0	UJ	2.0	UJ	2.0	U	2.0	U
Sodium	7440-23-5	ug/L	9330.0		8900.0		20100.0		19500.0	
Bismuth	7440-69-9	ug/L	10.0	UJ	10.0	U	10.0	U	10.0	U
Silicon	7440-31-5	ug/L	26100.0		24900.0		16600.0		14000.0	
Cyanide	5955-70-0	ug/L	10.0	U			10.0	U		

FILE#:VW402.24		HEIS #:	B0BNK1		B0BNK2		B0BNH7		B0BNL5	
		Date:	26-Apr-94		26-Apr-94		26-Apr-94		27-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	44.6	B	40.0	U	52.6	B	40.0	U
Calcium	7440-70-2	ug/L	31800.0		32800.0		43100.0		28600.0	
Iron	7439-89-6	ug/L	45.4	U	22.4	U	466.0		197.0	
Magnesium	7439-95-4	ug/L	9440.0		9740.0		11100.0		9130.0	
Manganese	7439-96-5	ug/L	2.0	U	2.0	U	13.5	B	2.0	U
Potassium	7440-09-7	ug/L	5440.0	U	5590.0	U	5870.0	U	6170.0	U
Selenium	7782-49-2	ug/L	2.0	U	2.0	U	2.0	U	2.0	U
Sodium	7440-23-5	ug/L	14800.0		15400.0		21300.0		9230.0	
Bismuth	7440-69-9	ug/L	10.0	U	10.0	U	10.0	U	10.0	U
Silicon	7440-31-5	ug/L	14900.0		15500.0		15200.0		25500.0	
Cyanide	5955-70-0	ug/L	10.0	U			27.0	J	10.0	U

FILE#:VW402.24		HEIS #:	B0BNL6		B0BNN0		B0BNN3		B0BNN4	
		Date:	27-Apr-94		25-Apr-94		25-Apr-94		25-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	ug/L	49.6	B	40.0	U	51.9	B	76.9	B
Calcium	7440-70-2	ug/L	26900.0		33000.0		58300.0		57300.0	
Iron	7439-89-6	ug/L	18.5	U	18.4	U	61.1	U	25.4	U
Magnesium	7439-95-4	ug/L	8580.0		9710.0		16400.0		16100.0	
Manganese	7439-96-5	ug/L	2.0	U	10.8	B	2.0	U	2.0	U
Potassium	7440-09-7	ug/L	6880.0	U	9130.0		8980.0		7900.0	U
Selenium	7782-49-2	ug/L	2.0	U	2.0	U	6.7	J	5.4	J
Sodium	7440-23-5	ug/L	8540.0		21600.0		24600.0		24300.0	
Bismuth	7440-69-9	ug/L	10.0	U	10.0	U	10.0	U	10.0	U
Silicon	7440-31-5	ug/L	24100.0		18600.0		18600.0		18400.0	
Cyanide	5955-70-0	ug/L					15.0	J		

shaded areas indicate changes by the validator

ITC048

entered by: BM
date: 9-15-94

checked by:
date:

000014

9613496.2860

GENERAL CHEMISTRY DATA SUMMARY TABLE

FILE #: VW 402.24		HEIS #:	B0BRK9		B0BNM9		B0BNN3		B0BNN5	
		Date:	25-Apr-94		25-Apr-94		25-Apr-94		26-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Fluoride	16984-48-8	mg/l	0.4	U	0.5		0.5		0.4	U
Chloride	16884-00-6	mg/l	0.4	U	16.0		16.0		14.0	
Nitrite	14797-65-0	mg/l	0.4	UR	0.4	UR	0.4	UR	0.4	UR
Phosphate	14265-44-2	mg/l	1.0	UR	1.0	UR	1.0	UR	1.0	UR
Sulfate	14808-79-8	mg/l	1.5	U	64.0		90.0		15.0	
Nitrite Nitrate	NO_2+NO_3-N	mg/l	0.03		2.2		10.0		0.26	
Sulfate	14808-79-8	mg/l	5.2		58.0		114.0		17.0	
Total Dis. Solids	TDS	mg/l	59.0		246.0		361.0		219.0	
Alkalinity	ALKALINITY	mg/l	4.0		118.0		108.0		114.0	

FILE #: VW 402.24		HEIS #:	B0BRL5		B0BNK1		B0BNH7		B0BRL9	
		Date:	26-Apr-94		26-Apr-94		26-Apr-94		26-Apr-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Fluoride	16984-48-8	mg/l	0.4	U	0.4	U	0.4	U	0.7	
Chloride	16884-00-6	mg/l	0.4	U	9.8		8.5		8.1	
Nitrite	14797-65-0	mg/l	0.4	UR	0.4	UR	0.4	UR	0.4	UR
Phosphate	14265-44-2	mg/l	1.0	UR	1.0	UR	1.0	UR	1.0	UR
Sulfate	14808-79-8	mg/l	1.5	U	37.0		48.0		47.0	
Nitrite Nitrate	NO_2+NO_3-N	mg/l	0.02	U	7.3		24.0		19.0	
Sulfate	14808-79-8	mg/l	5.0	U	39.0		48.0		48.0	
Total Dis. Solids	TDS	mg/l	23.0		279.0		414.0		339.0	
Alkalinity	ALKALINITY	mg/l	4.0		106.0		102.0		100.0	

FILE #: VW 402.24		HEIS #:	B0BNL5		B0BRM1	
		Date:	27-Apr-94		27-Apr-94	
		Matrix:	WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q
Fluoride	16984-48-8	mg/l	0.8		0.4	U
Chloride	16884-00-6	mg/l	10.0		9.2	
Nitrite	14797-65-0	mg/l	0.4	UR	0.4	UR
Phosphate	14265-44-2	mg/l	1.0	UR	1.0	UR
Sulfate	14808-79-8	mg/l	14.0		14.0	
Nitrite Nitrate	NO_2+NO_3-N	mg/l	0.33		0.25	
Sulfate	14808-79-8	mg/l	16.0			
Total Dis. Solids	TDS	mg/l	193.0		249.0	
Alkalinity	ALKALINITY	mg/l	118.0		106.0	

Shaded areas indicate changes by the validator

ITC048

entered by: BM
date: 9-15-94

checked by:
date:

9613496.2861

RADIOCHEMISTRY DATA SUMMARY TABLE

FILE #:VW402.24		HEIS #:	B0BRK9			B0BNM9		
		Date:	25-Apr-94			25-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Plutonium-239/240	PU-239-240	pCi/L	-0.0108	U	0.258	-0.0541	U	0.464
Plutonium-238	13981-16-3	pCi/L	0	U	0.146	0.0541	U	0.324
Cobalt-60	10198-40-0	pCi/L	1.41	U	6.95	3.28	U	9.94
Iron-59	41596-12-4	pCi/L	-10.7	U	17.5	4.63	U	26.7
Europium-152	14683-23-9	pCi/L	2.52	U	33.1	18	U	42.3
Cobalt-58	13981-38-9	pCi/L	0.79	U	7.19	0.823	U	9.61
Cesium-137DA	10045-97-3	pCi/L	-1.44	U	4.65	2.84	U	7.79
Ruthenium-106DA	13967-48-1	pCi/L	23.2	U	46.9	-16.6	U	62.6
Cerium-144	14762-78-8	pCi/L	5.18	U	21	-8.66	U	33.4
Europium-154	15585-10-1	pCi/L	-5.17	U	12.7	-7.24	U	22.4
Gross Alpha	ALPHA	pCi/L	0.224	U	0.586	1.78		1.22
Gross Beta	BETA	pCi/L	-0.526	U	2.69	10.7		3.1
TOTAL-SR	7440-24-6	pCi/L	0.267	U	0.745	0.114	U	0.77
Technetium-99	14133-76-7	pCi/L	0.152	U	2.14	3.95		2.14
Tritium	10028-17-8	pCi/L	142	U	234	155	U	234
Uranium	7440-61-8	µg/L	0	U	0.00354	2.79		0.00354

FILE #:VW402.24		HEIS #:	B0BNN3			B0BNN5		
		Date:	25-Apr-94			26-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Plutonium-239/240	PU-239-240	pCi/L	-0.0108	U	0.257	-0.027	U	0.381
Plutonium-238	13981-16-3	pCi/L	-0.0215	U	0.304	0	U	0.183
Cobalt-60	10198-40-0	pCi/L	11.1	U	15.4	-2.68	U	8.07
Iron-59	41596-12-4	pCi/L	5.59	U	21.3	-2.28	U	24.1
Europium-152	14683-23-9	pCi/L	17.6	U	45.9	18	U	42.3
Cobalt-58	13981-38-9	pCi/L	-7.6	U	8.73	5.17	U	12.2
Cesium-137DA	10045-97-3	pCi/L	1.7	U	7.12	-0.695	U	8.24
Ruthenium-106DA	13967-48-1	pCi/L	11.8	U	66.3	16.1	U	73.6
Cerium-144	14762-78-8	pCi/L	2.51	U	32.4	2.42	U	31.1
Europium-154	15585-10-1	pCi/L	-7.88	U	24.4	16.9	U	32.4
Gross Alpha	ALPHA	pCi/L	3.62		1.14	1.4		1.21
Gross Beta	BETA	pCi/L	7.75		2.77	7.48		2.75
TOTAL-SR	7440-24-6	pCi/L	-0.318	U	2.05	-0.191	U	0.916
Technetium-99	14133-76-7	pCi/L	588		2.14	-0.512	U	2.14
Tritium	10028-17-8	pCi/L	329		234	-0.93	U	234
Uranium	7440-61-8	µg/L	4.89		0.00354	2.86		0.00354

Shaded areas indicate changes by the validator

entered by: BM date: 9.15.94 ITC048.XLS checked by: date:

9613496.2862

RADIOCHEMISTRY DATA SUMMARY TABLE

FILE #:VW402.24		HEIS #:	B0BRL5			B0BNK1		
		Date:	26-Apr-94			26-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Plutonium-239/240	PU-239-240	pCi/L	-0.0104	U	0.249	-0.0101	U	0.243
Plutonium-238	13981-16-3	pCi/L	-0.0208	U	0.294	0	U	0.137
Cobalt-60	10198-40-0	pCi/L	-0.277	U	9.49	14.7	U	17.3
Iron-59	41596-12-4	pCi/L	-10.6	U	22.9	10.1	U	34.1
Europium-152	14683-23-9	pCi/L	13.9	U	36.5	18.2	U	42.7
Cobalt-58	13981-38-9	pCi/L	0.167	U	9.06	-3.78	U	9.15
Cesium-137DA	10045-97-3	pCi/L	-3.27	U	7.29	-1.63	U	8.64
Ruthenium-106DA	13967-48-1	pCi/L	1.01	U	40.2	-21	U	71.9
Cerium-144	14762-78-8	pCi/L	-3.5	U	24.6	15.6	U	32.9
Europium-154	15585-10-1	pCi/L	6.72	U	23.7	26.1	U	34.8
Gross Alpha	ALPHA	pCi/L	0.0601	U	0.448	4.46		0.941
Gross Beta	BETA	pCi/L	0.712	U	2.76	11.5		2.98
TOTAL-SR	7440-24-6	pCi/L	-0.0655	U	0.799	0.137	U	0.815
Technetium-99	14133-76-7	pCi/L	0.815	U	2.14	767		2.14
Tritium	10028-17-8	pCi/L	115	U	234	3740		234
Uranium	7440-61-8	µg/L	0	U	0.00354	7.01		0.00354

FILE #:VW402.24		HEIS #:	B0BNH7			B0BRL9		
		Date:	26-Apr-94			26-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Plutonium-239/240	PU-239-240	pCi/L	-0.0571	U	0.49	-0.0271	U	0.383
Plutonium-238	13981-16-3	pCi/L	-0.0143	U	0.342	-0.0136	U	0.325
Cobalt-60	10198-40-0	pCi/L	14.2	U	18	5.94	U	16.2
Iron-59	41596-12-4	pCi/L	-12.5	U	21.4	-9.4	U	32
Europium-152	14683-23-9	pCi/L	12.6	U	46	-13.6	U	46.2
Cobalt-58	13981-38-9	pCi/L	-5.53	U	9.04	0.647	U	12.1
Cesium-137DA	10045-97-3	pCi/L	1.13	U	8.67	-3.94	U	7.82
Ruthenium-106DA	13967-48-1	pCi/L	-35.4	U	73	-40.9	U	55.5
Cerium-144	14762-78-8	pCi/L	-11.8	U	33.6	2.23	U	31.3
Europium-154	15585-10-1	pCi/L	11.4	U	24.4	18	U	29.5
Gross Alpha	ALPHA	pCi/L	1.33		1.31	2.8		0.922
Gross Beta	BETA	pCi/L	11.6		3.09	240		2.92
TOTAL-SR	7440-24-6	pCi/L	0.0352	U	0.756	0.201	U	1.20
Technetium-99	14133-76-7	pCi/L	646		2.14	621		2.14
Tritium	10028-17-8	pCi/L	5760		234	5800		234
Uranium	7440-61-8	µg/L	2.76		0.00354	2.8		0.00354

Shaded areas indicate changes by the validator

entered by: BM date: 9.15.94 ITC048.XLS checked by: date:

9613496.2863

RADIOCHEMISTRY DATA SUMMARY TABLE

FILE #:VW402.24		HEIS #:	B0BNL5			B0BRM1		
		Date:	27-Apr-94			27-Apr-94		
		Matrix:	WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA
Plutonium-239/240	PU-239-240	pCi/L	-0.0196	U	0.277	0	U	0.119
Plutonium-238	13981-16-3	pCi/L	0	U	0.133	-0.0088	U	0.211
Cobalt-60	10198-40-0	pCi/L	0.129	U	4.49	2.01	U	10.1
Iron-59	41596-12-4	pCi/L	-0.115	U	15.7	-2.32	U	32
Europium-152	14683-23-9	pCi/L	-3.65	U	28.2	6.56	U	42.7
Cobalt-58	13981-38-9	pCi/L	2.66	U	6.95	-0.824	U	8.71
Cesium-137DA	10045-97-3	pCi/L	2.05	U	5.79	2.13	U	7
Ruthenium-106DA	13967-48-1	pCi/L	20.8	U	43.8	6.62	U	76.3
Cerium-144	14762-78-8	pCi/L	-3.04	U	21.5	17.3	U	30.5
Europium-154	15585-10-1	pCi/L	-1.62	U	13.5	6.81	U	25.8
Gross Alpha	ALPHA	pCi/L	3.45		1.06	3.08		0.784
Gross Beta	BETA	pCi/L	7.31		2.72	8.63		2.83
TOTAL-SR	7440-24-6	pCi/L	0.296	U	1.26	0.142	U	0.79
Technetium-99	14133-76-7	pCi/L	-0.104	U	2.14	0.682	U	2.14
Tritium	10028-17-8	pCi/L	51.2	U	234	59.5	U	234
Uranium	7440-61-8	µg/L	3.12		0.00354	3.04		0.00354

Shaded areas indicate changes by the validator

entered by: BM date: 8.15.94 ITC048.XLS checked by: date:

9613496.2864

Sample Results (Form I's)

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRM1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO465 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7928

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

% 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_	43.5	B		P_	
7440-70-2	Calcium__	29100			P_	
7439-89-6	Iron_____	212			P_	
7439-95-4	Magnesium	9340			P_	
7439-96-5	Manganese	2.0	U		P_	
7440-09-7	Potassium	6780			P_	U
7782-49-2	Selenium_	2.0	~~U~~	WN	F_	UJ
7440-23-5	Sodium___	9330			P_	
	Bismuth__	10.0	~~U~~	W	F_	UJ
7440-31-5	Silicon__	26100			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

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRM1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0465 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7934

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

% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRM2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO465 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7943

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

% 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_	63.3	B		P
7440-70-2	Calcium__	27600			P
7439-89-6	Iron____	38.5	B		P
7439-95-4	Magnesium	8870			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6680			P
7782-49-2	Selenium_	2.0	~~U~~	WN	F
7440-23-5	Sodium___	8900			P
	Bismuth__	10.0	U		F
7440-31-5	Silicon__	24900			P
5955-70-0	Cyanide__				NR

U UJ

mw 4-10-94

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

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED.

FORM I - IN

ILM02.1 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM9
~~BOBMN9~~ JK 6/8/97

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0452 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7728

Level (low/med): LOW Date Received: 04/29/94

% 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
7440-70-2	Calcium	29000			P
7439-89-6	Iron	104			P
7439-95-4	Magnesium	8600			P
7439-96-5	Manganese	11.8	B		P
7440-09-7	Potassium	8130			P U
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	20100			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	16600			P
5955-70-0	Cyanide				NR

mm 8-6-94

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

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ILM02.1
8 6/7/94

U.S. EPA - CLP

1.

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNMQ ~~BOBMNS~~ JDK 6/9/94

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7734

Level (low/med): LOW__ Date Received: 04/29/94

% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNH8

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7776

Level (low/med): LOW Date Received: 04/29/94

% 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
7440-70-2	Calcium	38500			P
7439-89-6	Iron	21.4	B		P
7439-95-4	Magnesium	10000			P
7439-96-5	Manganese	4.2	B		P
7440-09-7	Potassium	5410			P
7782-49-2	Selenium	2.0	U		F
7440-23-5	Sodium	19500			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	14000			P
5955-70-0	Cyanide				NR

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

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

DISSOLVED.

FORM I - IN

ILM02.1

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_
Matrix (soil/water): WATER Lab Sample ID: AA7761
Level (low/med): LOW__ Date Received: 04/29/94
% 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_	44.6	B		P_	
7440-70-2	Calcium__	31800			P_	
7439-89-6	Iron____	45.4	B		P_	U
7439-95-4	Magnesium	9440			P_	
7439-96-5	Manganese	2.0	U		P_	
7440-09-7	Potassium	5440			P_	U
7782-49-2	Selenium_	2.0	U	N	F_	
7440-23-5	Sodium___	14800			P_	
	Bismuth__	10.0	U		F_	
7440-31-5	Silicon__	14900			P_	
5955-70-0	Cyanide__				NR	

per 4 level

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN

ILM02.1
8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK1

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7767

Level (low/med): LOW__ Date Received: 04/29/94

% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

8 6/3/94

pw 9-6-94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK2

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7768
Level (low/med): LOW Date Received: 04/29/94
% 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	
7440-70-2	Calcium	32800			P	
7439-89-6	Iron	22.4	~~B~~		P	U
7439-95-4	Magnesium	9740			P	
7439-96-5	Manganese	2.0	U		P	
7440-09-7	Potassium	5590			P	U
7782-49-2	Selenium	2.0	U		F	
7440-23-5	Sodium	15400			P	
	Bismuth	10.0	U		F	
7440-31-5	Silicon	15500			P	
5955-70-0	Cyanide				NR	

mw 8-6-94

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

Comments:
DISSOLVED.

FORM I - IN

ILM02.1
8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNH7
~~BOBNK7~~
Rw 6/13/94

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_
Matrix (soil/water): WATER Lab Sample ID: AA7769
Level (low/med): LOW__ Date Received: 04/29/94
% 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_	52.6	B		P
7440-70-2	Calcium__	43100			P
7439-89-6	Iron____	466			P
7439-95-4	Magnesium	11100			P
7439-96-5	Manganese	13.5	B		P
7440-09-7	Potassium	5870			P
7782-49-2	Selenium_	2.0	U	N	F
7440-23-5	Sodium___	21300			P
	Bismuth__	10.0	U		F
7440-31-5	Silicon__	15200			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
8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BCBNH7
~~BOBNK7~~
Pw 6/13/94

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_
Matrix (soil/water): WATER Lab Sample ID: AA7775
Level (low/med): LOW__ Date Received: 04/29/94
% 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	
7440-70-2	Calcium__				NR	
7439-89-6	Iron_____				NR	
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium_				NR	
7440-23-5	Sodium___				NR	
	Bismuth__				NR	
7440-31-5	Silicon__				NR	
5955-70-0	Cyanide__	27.0			AS	J

pw 8-6-94

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY.

FORM I - IN

ILM02.1
8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL5

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7787
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium	28600			P
7439-89-6	Iron	197			P
7439-95-4	Magnesium	9130			P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	6170			P U
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	9230			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	25500			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
8 6/7/94

mw 8.6.94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL5

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7793

Level (low/med): LOW__ Date Received: 04/29/94

% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	10.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

8 6/3/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7794

Level (low/med): LOW__ Date Received: 04/29/94

% 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_	49.6	B		P	
7440-70-2	Calcium__	26900			P	
7439-89-6	Iron____	18.5	~~B~~		P	U
7439-95-4	Magnesium	8580			P	
7439-96-5	Manganese	2.0	U		P	
7440-09-7	Potassium	6880			P	U
7782-49-2	Selenium_	2.0	U	N	F	
7440-23-5	Sodium__	8540			P	
	Bismuth__	10.0	U		F	
7440-31-5	Silicon__	24100			P	
5955-70-0	Cyanide__				NR	

pw 6/6/94

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

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED.

FORM I - IN

ILM02.1

8 6/7/94

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN0

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_
Matrix (soil/water): WATER Lab Sample ID: AA7735
Level (low/med): LOW__ Date Received: 04/29/94
% 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
7440-70-2	Calcium__	33000			P
7439-89-6	Iron____	18.4	~~B~~		P
7439-95-4	Magnesium	9710			P
7439-96-5	Manganese	10.8	B		P
7440-09-7	Potassium	9130			P
7782-49-2	Selenium_	2.0	U		F
7440-23-5	Sodium___	21600			P
	Bismuth__	10.0	U		F
7440-31-5	Silicon__	18600			P
5955-70-0	Cyanide__				NR

U

MW 4-6-94

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
DISSOLVED.

FORM I - IN

ILM02.1
8 6/1/94

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN3

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7736
Level (low/med): LOW Date Received: 04/29/94
% 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	51.9	B		P	
7440-70-2	Calcium	58300			P	
7439-89-6	Iron	61.1	B		P	U
7439-95-4	Magnesium	16400			P	
7439-96-5	Manganese	2.0	U		P	
7440-09-7	Potassium	8980			P	
7782-49-2	Selenium	6.7		SN	F	J
7440-23-5	Sodium	24600			P	
	Bismuth	10.0	U		F	
7440-31-5	Silicon	18600			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
8/6/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN3

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7742

Level (low/med): LOW__ Date Received: 04/29/94

% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron_____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	15.0			AS J

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

6/7/94

9613496.2882

U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN4

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7743
Level (low/med): LOW Date Received: 04/29/94
% 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	76.9	B		P	
7440-70-2	Calcium	57300			P	
7439-89-6	Iron	25.4	B		P	U
7439-95-4	Magnesium	16100			P	
7439-96-5	Manganese	2.0	U		P	
7440-09-7	Potassium	7900			P	U
7782-49-2	Selenium	5.4		S	F	J
7440-23-5	Sodium	24300			P	
	Bismuth	10.0	U		F	
7440-31-5	Silicon	18400			P	
5955-70-0	Cyanide				NR	

pw 8-6-94

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

Comments:
DISSOLVED.

FORM I - IN

ILM02.1
8/6/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN5

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7744
Level (low/med): LOW Date Received: 04/29/94
% 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
7440-70-2	Calcium	27700			P
7439-89-6	Iron	427			P
7439-95-4	Magnesium	9000			P
7439-96-5	Manganese	4.2	~~B~~		P
7440-09-7	Potassium	7580			P
7782-49-2	Selenium	2.0	U	N	F
7440-23-5	Sodium	11900			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	28000			P
5955-70-0	Cyanide				NR

U no qual BM 9/5/94

U

PW 8/10/94

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

Comments:

FORM I - IN

ILM02.1
8 6/2/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN5

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7751

Level (low/med): LOW__ Date Received: 04/29/94

% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	10.0	U		AS

mw 8-6-94

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNN6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7752

Level (low/med): LOW__ Date Received: 04/29/94

% 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_	47.8	B		P_	
7440-70-2	Calcium__	28200			P_	
7439-89-6	Iron_____	77.2	~~B~~		P_	U
7439-95-4	Magnesium	9140			P_	
7439-96-5	Manganese	2.0	U		P_	
7440-09-7	Potassium	8130			P_	U
7782-49-2	Selenium_	2.0	U		F_	
7440-23-5	Sodium___	12100			P_	
	Bismuth__	10.0	~~U~~	W	F_	UJ
7440-31-5	Silicon__	28500			P_	
5955-70-0	Cyanide__				NR	

pw 6-10-94

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

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED.

FORM I - IN

ILM02.1

8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRK9

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0452 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7718

Level (low/med): LOW Date Received: 04/29/94

% 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	
7440-70-2	Calcium	141	~~B~~		P	U
7439-89-6	Iron	21.8	~~B~~		P	U
7439-95-4	Magnesium	30.0	U		P	
7439-96-5	Manganese	2.0	U		P	
7440-09-7	Potassium	1000	U		P	
7782-49-2	Selenium	2.0	U	N	F	
7440-23-5	Sodium	368	B		P	
	Bismuth	10.0	U		F	
7440-31-5	Silicon	55.5	~~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:

FORM I - IN

ILM02.1

8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRK9

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7724

Level (low/med): LOW Date Received: 04/29/94

% 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
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRLO

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7727

Level (low/med): LOW__ Date Received: 04/29/94

% 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_	67.4	B		P_	
7440-70-2	Calcium__	107	~~B~~		P_	U
7439-89-6	Iron____	21.0	~~B~~		P_	U
7439-95-4	Magnesium	30.0	U		P_	
7439-96-5	Manganese	2.1	~~B~~		P_	~~B~~ no qual BM 9-15-94
7440-09-7	Potassium	1000	U		P_	
7782-49-2	Selenium_	2.0	U		F_	
7440-23-5	Sodium___	445	B		P_	
	Bismuth__	10.0	U		F_	
7440-31-5	Silicon__	208			P_	U
5955-70-0	Cyanide__				NR	

MW 8-6-94

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

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED.

FORM I - IN

ILM02.1

8 6/3/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL5

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7753
Level (low/med): LOW Date Received: 04/29/94
% 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	
7440-70-2	Calcium	77.0	~~B~~		P	U
7439-89-6	Iron	10.3	~~B~~		P	U
7439-95-4	Magnesium	30.0	U		P	
7439-96-5	Manganese	2.0	U		P	
7440-09-7	Potassium	1000	U		P	
7782-49-2	Selenium	2.0	U	N	F	
7440-23-5	Sodium	247	B		P	
	Bismuth	10.0	U		F	
7440-31-5	Silicon	76.1	~~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:

FORM I - IN

ILM02.1
8 6/7/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL5

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042

Matrix (soil/water): WATER Lab Sample ID: AA7759

Level (low/med): LOW Date Received: 04/29/94

% 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
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE ONLY.

FORM I - IN

ILM02.1

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7760

Level (low/med): LOW__ Date Received: 04/29/94

% 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_	52.7	B		P_	
7440-70-2	Calcium__	84.7	~~B~~		P_	U
7439-89-6	Iron____	12.2	~~B~~		P_	U
7439-95-4	Magnesium	30.0	U		P_	
7439-96-5	Manganese	2.0	U		P_	
7440-09-7	Potassium	1080	~~B~~		P_	U
7782-49-2	Selenium_	2.0	U		F_	
7440-23-5	Sodium___	291	B		P_	
	Bismuth__	10.0	U		F_	
7440-31-5	Silicon__	47.8	~~B~~		P_	U
5955-70-0	Cyanide__				NR	

MW 8-6-94

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

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED.

FORM I - IN

ILM02.1

8 6/2/94

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL9

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7778

Level (low/med): LOW__ Date Received: 04/29/94

% 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_	56.0	B		P
7440-70-2	Calcium__	40600			P
7439-89-6	Iron____	480			P
7439-95-4	Magnesium	10600			P
7439-96-5	Manganese	13.2	B		P
7440-09-7	Potassium	6500			P
7782-49-2	Selenium_	2.0	U	N	F
7440-23-5	Sodium___	20900			P
	Bismuth__	10.0	U		F
7440-31-5	Silicon__	14900			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

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL9

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_

Matrix (soil/water): WATER Lab Sample ID: AA7784

Level (low/med): LOW__ Date Received: 04/29/94

% 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
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
	Bismuth__				NR
7440-31-5	Silicon__				NR
5955-70-0	Cyanide__	30.0			AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRMO

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO452 SAS No.: SDG No.: W0042
Matrix (soil/water): WATER Lab Sample ID: AA7777
Level (low/med): LOW Date Received: 04/29/94
% 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	
7440-70-2	Calcium	39800			P	
7439-89-6	Iron	22.0	~~B~~		P	U
7439-95-4	Magnesium	10300			P	
7439-96-5	Manganese	4.4	B		P	
7440-09-7	Potassium	5700			P	U
7782-49-2	Selenium	2.0	U		F	
7440-23-5	Sodium	20200			P	
	Bismuth	10.0	U		F	
7440-31-5	Silicon	14400			P	
5955-70-0	Cyanide				NR	

mw
8-6-94

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

Comments:
DISSOLVED.

FORM I - IN

ILM02.1
8 6/7/94

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBRK9	Preparation Date:	05/19/94
Lab Sample ID:	AA7719	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	0.40	U	0.40
nitrite	0.40	~~U~~ UR	0.40
phosphate	1.0	~~U~~ UR	1.0
sulfate	1.5	U	1.5

9-14-94
(abc)

WJC
8-5 94

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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNM9	Preparation Date:	05/19/94
Lab Sample ID:	AA7729	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.50	+	0.40
chloride	16.0	+	2.0
nitrite	0.40	~~U~~ UR	0.40
phosphate	1.0	~~U~~ UR	1.0
sulfate	64	+	7.5

9-14-94
WJC
8-5-94

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNN3	Preparation Date:	05/19/94
Lab Sample ID:	AA7737	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.50	+	0.40
chloride	16	+	2.0
nitrite	0.40	~~U~~ UR	0.40
phosphate	1.0	~~U~~ UR	1.0
sulfate	90	+	7.5

WJC 9-14-94 (UR)
8-5-94

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNN5	Preparation Date:	05/19/94
Lab Sample ID:	AA7745	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	14	+	2.0
nitrite	0.40	~~U~~ UR	0.40
phosphate	1.0	~~U~~ UR	1.0
sulfate	15	+	1.5

9-14-94
WJC
6-5-94
WJC

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBRL5	Preparation Date:	05/19/94
Lab Sample ID:	AA7754	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	0.40	U	0.40
nitrite	0.40	~~U~~ UR	0.40
phosphate	1.0	~~U~~ UR	1.0
sulfate	1.5	U	1.5

7-14-94 WJC

8-5-94 WJC

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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNK1	Preparation Date:	05/19/94
Lab Sample ID:	AA7762	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	9.8	+	2.0
nitrite	0.40	~~U~~ UR	0.40
phosphate	1.0	~~U~~ UR	1.0
sulfate	37	+	7.5

9-14-94 WJC

8-5-94 WJC

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNH7	Preparation Date:	05/23/94
Lab Sample ID:	AA7770	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	8.5	+	0.80
nitrite	0.40	~~U~~ UK	0.40
phosphate	1.0	~~U~~ UK	1.0
sulfate	48	+	3.0

9-14-94 (WJC)

8-5-94 WJC

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBRL9	Preparation Date:	05/23/94
Lab Sample ID:	AA7779	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.70	+	0.80
chloride	8.1	+	0.80
nitrite	0.40	~~U~~ UR	0.40
phosphate	1.0	U UR	1.0
sulfate	47	+	3.0

WJC 9-14-94 (UR)
8-5-94

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Client Sample ID:	BOBNL5	Preparation Date:	05/23/94
Lab Sample ID:	AA7788	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.80	+	0.80
chloride	10	+	0.80
nitrite	0.40	~~U~~ UR	0.40
phosphate	1.0	~~U~~ UR	1.0
sulfate	14	+	1.5

9-14-94 (ctsc)

WJC 8-5-94

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

BM 9-15-94

ANION ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	465
Client Sample ID:	BOBRM1	Preparation Date:	05/19/94
Lab Sample ID:	AA7929	Analysis Date:	05/19/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	9.2	+	0.80
nitrite	0.40	~~U~~ UK	0.40
phosphate	1.0	~~U~~ UK	1.0
sulfate	14	+	1.5

- WJC 9-14-94
6-5-94

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/18/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6212	0.02	U
BOBRK9	AA7720	0.03	+
BOBNM9	AA7730	2.2	+
BOBNN3	AA7738	10	+
BOBNN5	AA7747	0.26	+
BOBRL5	AA7755	0.02	U
BOBNK1	AA7763	7.3	+
BOBNN7 ~~BOBNK7~~ Rev 11/3/94	AA7771	24	+
BOBRL9	AA7780	19	+
BOBNL5	AA7789	0.33	+

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

WJC
8-5-94

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	465
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/19/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6219	0.02	U
BOBRM1	AA7930	0.25	+

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

WJC
8-5-94

9613496.2907

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/02/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6143	2	U
Method Blank	P6144	2	U
BOBRK9	AA7721	4	+
BOBNN3	AA7739	108	+
BOBNM9	AA7731	118	+
BOBRL5	AA7756	4	+
BOBNN7 ~~BOBNK7~~ Rev 6/13/94	AA7772	102	+
BOBRL9	AA7781	100	+
BOBNK1	AA7764	106	+
BOBNN5	AA7748	114	+
BOBNL5	AA7790	118	+

Method blank P6143 applies to sample: BOBRK9
Method blank P6144 applies to samples: BOBNN3, BOBNM9, BOBRL5, BOBNK7, BOBRL9, BOBNK1, BOBNN5 and BOBNL5

WJC 8-5-94

+ - 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:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	465
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/02/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6145	2	U
BOBRM1	AA7931	106	+

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

WJC
8-5-94

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/03/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6170	1.0	U
BOBRL5	AA7757	23	+
~~BOBNK7~~ BOBNN7 RW 6/13/94	AA7773	414	+
BOBRL9	AA7782	339	+
BOBNK1	AA7765	279	+
BOBNN5	AA7749	219	+
BOBNL5	AA7791	193	+
BOBRK9	AA7722	59	+
BOBNN3	AA7740	361	+
BOBNM9	AA7732	246	+

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

WJC 8-5-94

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	465
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/03/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6170	1.0	U
BOBRM1	AA7932	249	+

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

WJC 8-5-94

SULFATE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0042
Contract Name:	Westinghouse Hanford	Job Number:	452
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/16/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6207	5.0	U
BOBNM9	AA7733	58	+
BOBRK9	AA7723	5.2	+
BOBNN5	AA7750	17	+
BOBRL9	AA7783	48	+
BOBNH7 ~~BOBNK7~~ RW 6/13/94	AA7774	48	+
BOBNN3	AA7741	114	+
BOBNK1	AA7766	39	+
BOBNL5	AA7792	16	+
BOBRL5	AA7758	5	U

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

8-5-94
WJC

9613496.2912

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40449801	MATRIX:	WATER
WHC ID:	B0BRK9	DATE RECEIVED:	4/27/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.08E-02	2.15E-02	2.16E-02	2.58E-01	0.775	RD3209
PU-238	0.00E+00	0.00E+00	1.62E-01	1.46E-01	0.775	RD3209
CO-60	1.41E+00	3.59E+00	3.59E+00	6.95E+00	N/A	RD3219
FE-59	-1.07E+01	1.11E+01	1.12E+01	1.75E+01	N/A	RD3219
EU-152	2.52E+00	1.72E+01	1.72E+01	3.31E+01	N/A	RD3219
CO-58	7.90E-01	3.83E+00	3.83E+00	7.19E+00	N/A	RD3219
CS-137DA	-1.44E+00	2.80E+00	2.80E+00	4.65E+00	N/A	RD3219
RU-106DA	2.32E+01	2.40E+01	2.41E+01	4.69E+01	N/A	RD3219
CE-144	5.18E+00	1.25E+01	1.25E+01	2.10E+01	N/A	RD3219
EU-154	-5.17E+00	8.06E+00	8.08E+00	1.27E+01	N/A	RD3219
ALPHA	2.24E-01	3.00E-01	3.03E-01	5.86E-01	1	RD3222
BETA	-5.26E-01	1.15E+00	1.15E+00	2.69E+00	1	RD3222
TOTAL-SR	2.67E-01	2.89E-01	2.97E-01	7.45E-01	0.957	RD3204
TC-99	1.52E-01	9.26E-01	4.11E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	1.42E+02	1.04E+02	1.94E+02	2.34E+00	0.973	RD3205
URANIUM	0.00E+00	N/A	1.00E-02	3.54E-03	1	RD4200

234 pCi/L
MW 8-6-94

MW
8-6-94

JM 8/29/94
~~008~~

9613496.2913

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40449802	MATRIX:	WATER
WHC ID:	B0BNM9	DATE RECEIVED:	4/27/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-5.41E-02	5.41E-02	5.48E-02	4.64E-01	0.616	RD3209
PU-238	5.41E-02	1.38E-01	1.38E-01	3.24E-01	0.616	RD3209
CO-60	3.28E+00	4.22E+00	4.23E-00	9.94E+00	N/A	RD3219
FE-59	4.63E+00	1.27E+01	1.27E-01	2.67E+01	N/A	RD3219
EU-152	1.80E+01	1.47E+01	1.48E-01	4.23E+01	N/A	RD3219
CO-58	8.23E-01	4.72E+00	4.72E-00	9.61E+00	N/A	RD3219
CS-137DA	2.84E+00	3.75E+00	3.76E-00	7.79E+00	N/A	RD3219
RU-106DA	-1.66E+01	3.58E+01	3.59E-01	6.26E+01	N/A	RD3219
CE-144	-8.66E+00	2.02E+01	2.02E-01	3.34E+01	N/A	RD3219
EU-154	-7.24E+00	1.31E+01	1.31E-01	2.24E+01	N/A	RD3219
ALPHA	1.78E+00	9.64E-01	9.87E-01	1.22E+00	1	RD3222
BETA	1.07E+01	2.10E+00	2.24E-00	3.10E+00	1	RD3222
TOTAL-SR	1.14E-01	2.77E-01	2.79E-01	7.71E-01	0.958	RD3204
TC-99	3.95E+00	9.91E-01	4.41E-00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	1.55E+02	1.04E+02	1.95E-02	2.34E+00	0.973	RD3205
URANIUM	2.79E+00	N/A	4.18E-01	3.54E-03	1	RD4200

234 pCi/L MW 8-6-94

MW
8-6-94

JM 8/24
~~009~~

682A-6-93
000068

9613496.2914

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40449803	MATRIX:	WATER
WHC ID:	B0BNN3	DATE RECEIVED:	4/27/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.08E-02	2.15E-02	2.16E-02	2.57E-01	0.775	RD3209
PU-238	-2.15E-02	3.05E-02	3.06E-02	3.04E-01	0.775	RD3209
CO-60	1.11E+01	7.02E+00	7.11E+00	1.54E+01	N/A	RD3219
FE-59	5.59E+00	9.24E+00	9.25E+00	2.13E+01	N/A	RD3219
EU-152	1.76E+01	2.01E+01	2.02E+01	4.59E+01	N/A	RD3219
CO-58	-7.60E+00	6.01E+00	6.06E+00	8.73E+00	N/A	RD3219
CS-137DA	1.70E+00	3.54E+00	3.54E+00	7.12E+00	N/A	RD3219
RU-106DA	1.18E+01	3.38E+01	3.38E+01	6.63E+01	N/A	RD3219
CE-144	2.51E+00	1.87E+01	1.87E+01	3.24E+01	N/A	RD3219
EU-154	-7.88E+00	1.46E+01	1.46E+01	2.44E+01	N/A	RD3219
ALPHA	3.62E+00	1.43E+00	1.48E+00	1.14E+00	1	RD3222
BETA	7.75E+00	1.83E+00	1.91E+00	2.77E+00	1	RD3222
TOTAL-SR	-3.18E-01	6.63E-01	6.66E-01	2.05E+00	0.329	RD3204
TC-99	5.88E+02	4.49E+00	6.69E+01	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	3.29E+02	1.10E+02	2.04E+02	2.34E+00	0.973	RD3205
URANIUM	4.89E+00	N/A	7.34E-01	3.54E-03	1	RD4200

234 pCi/L mw 8-6-94

mw
8-6-94

~~010~~ 8/29

682A-6-93
000069

9613496.2915

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40449804	MATRIX:	WATER
WHC ID:	B0BNN5	DATE RECEIVED:	4/27/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-2.70E-02	3.81E-02	3.84E-02	3.81E-01	0.618	RD3209
PU-238	0.00E+00	0.00E+00	2.02E-01	1.83E-01	0.618	RD3209
CO-60	-2.68E+00	4.85E+00	4.85E+00	8.07E+00	N/A	RD3219
FE-59	-2.28E+00	1.34E+01	1.34E+01	2.41E+01	N/A	RD3219
EU-152	1.80E+01	1.47E+01	1.48E+01	4.23E+01	N/A	RD3219
CO-58	5.17E+00	5.60E+00	5.63E+00	1.22E+01	N/A	RD3219
CS-137DA	-6.95E-01	4.66E+00	4.66E+00	8.24E+00	N/A	RD3219
RU-106DA	1.61E+01	3.83E+01	3.83E+01	7.36E+01	N/A	RD3219
CE-144	2.42E+00	1.80E+01	1.81E+01	3.11E+01	N/A	RD3219
EU-154	1.69E+01	1.35E+01	1.36E+01	3.24E+01	N/A	RD3219
ALPHA	1.40E+00	8.41E-01	8.60E-01	1.21E+00	1	RD3222
BETA	7.48E+00	1.80E+00	1.87E+00	2.75E+00	1	RD3222
TOTAL-SR	-1.91E-01	2.88E-01	2.92E-01	9.16E-01	0.767	RD3204
TC-99	-5.12E-01	9.17E-01	4.07E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	-9.30E-01	9.86E+01	1.86E+02	2.34E+00	0.973	RD3205
URANIUM	2.86E+00	N/A	4.29E-01	3.54E-03	1	RD4200

234 pCi/L MW 8-6-94

MW
8-6-94

011

9613496.2916

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40449805	MATRIX:	WATER
WHC ID:	B0BRL5	DATE RECEIVED:	4/27/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.04E-02	2.08E-02	2.09E-02	2.49E-01	0.802	RD3209
PU-238	-2.08E-02	2.94E-02	2.96E-02	2.94E-01	0.802	RD3209
CO-60	-2.77E-01	5.02E+00	5.02E+00	9.49E+00	N/A	RD3219
FE-59	-1.06E+01	1.48E+01	1.49E+01	2.29E+01	N/A	RD3219
EU-152	1.39E+01	1.25E+01	1.25E+01	3.65E+01	N/A	RD3219
CO-58	1.67E-01	5.07E+00	5.07E+00	9.06E+00	N/A	RD3219
CS-137DA	-3.27E+00	4.44E+00	4.45E+00	7.29E+00	N/A	RD3219
RU-106DA	1.01E+00	2.06E+01	2.06E+01	4.02E+01	N/A	RD3219
CE-144	-3.50E+00	1.48E+01	1.48E+01	2.46E+01	N/A	RD3219
EU-154	6.72E+00	1.01E+01	1.02E+01	2.37E+01	N/A	RD3219
ALPHA	6.01E-02	1.84E-01	1.84E-01	4.48E-01	1	RD3222
BETA	7.12E-01	1.29E+00	1.29E+00	2.76E+00	1	RD3222
TOTAL-SR	-6.55E-02	2.65E-01	2.66E-01	7.99E-01	0.921	RD3204
TC-99	8.15E-01	9.44E-01	1.17E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	1.15E+02	1.03E+02	1.92E+02	2.34E+00	0.973	RD3205
URANIUM	0.00E+00	N/A	1.00E-02	3.54E-03	1	RD4200

234 pCi/L MW 8-6-94

MW
8-6-94

~~012~~ 8m 8/24

9613496.2917

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0042
LAB SAMPLE ID: 40449806
MATRIX: WATER
WHC ID: B0BNK1
DATE RECEIVED: 4/27/94
REPORTING UNITS: pCi/L & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.01E-02	2.03E-02	2.03E-02	2.43E-01	0.822	RD3209
PU-238	0.00E+00	0.00E+00	1.52E-01	1.37E-01	0.822	RD3209
CO-60	1.47E+01	7.61E+00	7.75E+00	1.73E+01	N/A	RD3219
FE-59	1.01E+01	1.64E+01	1.64E+01	3.41E+01	N/A	RD3219
EU-152	1.82E+01	1.48E+01	1.50E+01	4.27E+01	N/A	RD3219
CO-58	-3.78E+00	5.51E+00	5.52E+00	9.15E+00	N/A	RD3219
CS-137DA	-1.63E+00	5.11E+00	5.11E+00	8.64E+00	N/A	RD3219
RU-106DA	-2.10E+01	4.41E+01	4.42E+01	7.19E+01	N/A	RD3219
CE-144	1.56E+01	1.77E+01	1.77E+01	3.29E+01	N/A	RD3219
EU-154	2.61E+01	1.31E+01	1.33E+01	3.48E+01	N/A	RD3219
ALPHA	4.46E+00	1.32E+00	1.44E+00	9.41E-01	1	RD3222
BETA	1.15E+01	2.11E+00	2.26E+00	2.98E+00	1	RD3222
TOTAL-SR	1.37E-01	2.95E-01	2.97E-01	8.15E-01	0.961	RD3204
TC-99	7.67E+02	5.16E+00	8.64E+01	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	3.74E+03	1.93E+02	4.24E+02	2.34E+00	0.973	RD3205
URANIUM	7.01E+00	N/A	1.05E+00	3.54E-03	1	RD4200

234 pCi/L
MW 8-6-94

MW
8-6-94

8/29/
~~013~~

9613496.2918

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0042
LAB SAMPLE ID: 40453901
MATRIX: WATER
WHC ID: B0BNH7
DATE RECEIVED: 4/28/94
REPORTING UNITS: pCi/L & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-5.71E-02	5.71E-02	5.78E-02	4.90E-01	0.584	RD3209
PU-238	-1.43E-02	2.86E-02	2.87E-02	3.42E-01	0.584	RD3209
CO-60	1.42E+01	8.24E+00	8.36E+00	1.80E+01	N/A	RD3219
FE-59	-1.25E+01	1.40E+01	1.40E+01	2.14E+01	N/A	RD3219
EU-152	1.26E+01	2.08E+01	2.09E+01	4.60E+01	N/A	RD3219
CO-58	-5.53E+00	5.86E+00	5.88E+00	9.04E+00	N/A	RD3219
CS-137DA	1.13E+00	4.80E+00	4.80E+00	8.67E+00	N/A	RD3219
RU-106DA	-3.54E+01	4.81E+01	4.82E+01	7.30E+01	N/A	RD3219
CE-144	-1.18E+01	2.15E+01	2.15E+01	3.36E+01	N/A	RD3219
EU-154	1.14E+01	8.64E+00	8.72E+00	2.44E+01	N/A	RD3219
ALPHA	1.33E+00	8.91E-01	9.04E-01	1.31E+00	1	RD3222
BETA	1.16E+01	2.16E+00	2.31E+00	3.09E+00	1	RD3222
TOTAL-SR	3.52E-02	2.61E-01	2.61E-01	7.56E-01	0.886	RD3204
TC-99	6.46E+02	4.69E+00	7.32E+01	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	5.76E+03	2.29E+02	5.66E+02	2.34E+00	0.973	RD3205
URANIUM	2.76E+00	N/A	4.13E-01	3.54E-03	1	RD4200

234 pCi/L MW 8-6-94

MW 8-6-94

MW 8/2

~~014~~

9613496.2919

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG NO.:**	W0042
LAB SAMPLE ID:	40453902	**MATRIX:**	WATER
WHC ID:	B0BRL9	**DATE RECEIVED:**	4/28/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-2.71E-02	3.83E-02	3.86E-02	3.83E-01	0.615	RD3209
PU-238	-1.36E-02	2.71E-02	2.72E-02	3.25E-01	0.615	RD3209
CO-60	5.94E+00	8.38E+00	8.40E+00	1.62E+01	N/A	RD3219
FE-59	-9.40E+00	1.88E+01	1.88E+01	3.20E+01	N/A	RD3219
EU-152	-1.36E+01	2.61E+01	2.61E+01	4.62E+01	N/A	RD3219
CO-58	6.47E-01	6.35E+00	6.35E+00	1.21E+01	N/A	RD3219
CS-137DA	-3.94E+00	5.12E+00	5.13E+00	7.82E+00	N/A	RD3219
RU-106DA	-4.09E+01	4.11E+01	4.13E+01	5.55E+01	N/A	RD3219
CE-144	2.23E+00	1.89E+01	1.89E+01	3.13E+01	N/A	RD3219
EU-154	1.80E+01	1.08E+01	1.10E+01	2.95E+01	N/A	RD3219
ALPHA	2.80E+00	1.12E+00	1.16E+00	9.22E-01	1	RD3222
BETA	2.40E+02	7.66E+00	1.86E+01	2.92E+00	1	RD3222
TOTAL-SR	2.01E-01	4.33E-01	4.35E-01	1.20E+00	0.538	RD3204
TC-99	6.21E+02	4.64E+00	7.05E+01	2.14E+00		ITAS-IT-RS-0001
TRITIUM	5.80E+03	2.31E+02	5.69E+02	2.34E+00	0.973	RD3205
URANIUM	2.80E+00	N/A	4.20E-01	3.54E-03	1	RD4200

234 pCi/L MW 8-6-94

MW
8-6-94

8/29/94
~~015~~
000074

9613496.2920

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

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0042
LAB SAMPLE ID:	40453903	MATRIX:	WATER
WHC ID:	B0BNL5	DATE RECEIVED:	4/28/94
REPORTING UNITS:	pCi/L & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.96E-02	2.77E-02	2.79E-02	2.77E-01	0.85	RD3209
PU-238	0.00E+00	0.00E+00	1.47E-01	1.33E-01	0.85	RD3209
CO-60	1.29E-01	2.60E+00	2.60E+00	4.49E+00	N/A	RD3219
FE-59	-1.15E-01	8.54E+00	8.54E+00	1.57E+01	N/A	RD3219
EU-152	-3.65E+00	1.61E+01	1.61E+01	2.82E+01	N/A	RD3219
CO-58	2.66E+00	3.52E+00	3.53E+00	6.95E+00	N/A	RD3219
CS-137DA	2.05E+00	3.12E+00	3.12E+00	5.79E+00	N/A	RD3219
RU-106DA	2.08E+01	2.29E+01	2.30E+01	4.38E+01	N/A	RD3219
CE-144	-3.04E+00	1.33E+01	1.33E+01	2.15E+01	N/A	RD3219
EU-154	-1.62E+00	7.40E+00	7.40E+00	1.35E+01	N/A	RD3219
ALPHA	3.45E+00	1.17E+00	1.26E+00	1.06E+00	1	RD3222
BETA	7.31E+00	1.78E+00	1.85E+00	2.72E+00	1	RD3222
TOTAL-SR	2.96E-01	4.63E-01	4.68E-01	1.26E+00	0.562	RD3204
TC-99	-1.04E-01	9.19E-01	4.10E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	5.12E+01	1.01E+02	1.89E+02	2.34E+00	0.973	RD3205
URANIUM	3.12E+00	N/A	4.68E-01	3.54E-03	1	RD4200

234 pCi/L MW 8-6-94

MW
8-6-94

gm 8/29/9
~~016~~

9613496.2921

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0042
LAB SAMPLE ID: 40456901
MATRIX: WATER
WHC ID: B0BRM1
DATE RECEIVED: 4/29/94
REPORTING UNITS: pCi/L & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	0.00E+00	0.00E+00	1.32E-01	1.19E-01	0.947	RD3209
PU-238	-8.80E-03	1.76E-02	1.77E-02	2.11E-01	0.947	RD3209
CO-60	2.01E+00	5.22E+00	5.22E+00	1.01E+01	N/A	RD3219
FE-59	-2.32E+00	1.79E+01	1.79E+01	3.20E+01	N/A	RD3219
EU-152	6.56E+00	1.90E+01	1.90E+01	4.27E+01	N/A	RD3219
CO-58	-8.24E-01	4.59E+00	4.59E+00	8.71E+00	N/A	RD3219
CS-137DA	2.13E+00	3.21E+00	3.22E+00	7.00E+00	N/A	RD3219
RU-106DA	6.62E+00	4.19E+01	4.19E+01	7.63E+01	N/A	RD3219
CE-144	1.73E+01	1.55E+01	1.56E+01	3.05E+01	N/A	RD3219
EU-154	6.81E+00	1.12E+01	1.13E+01	2.58E+01	N/A	RD3219
ALPHA	3.08E+00	1.07E+00	1.15E+00	7.84E-01	1	RD3222
BETA	8.63E+00	1.90E+00	1.99E+00	2.83E+00	1	RD3222
TOTAL-SR	1.42E-01	2.88E-01	2.90E-01	7.94E-01	0.923	RD3204
TC-99	6.82E-01	9.38E-01	4.15E+00	2.14E+00	0.951	ITAS-IT-RS-0001
TRITIUM	5.95E+01	1.01E+02	1.89E+02	2.34E+00	0.973	RD3205
URANIUM	3.04E+00	N/A	4.56E-01	3.54E-03	1	RD4200

234 pCi/L mw 8-6-94

mw
8-6-94

gm 8/29/
~~017~~

9613496.2922

Checklists

9613496.2923

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 200-BP-5	SDG: W0042-ITC-048	
VALIDATOR: MWebb	LATA NO.: VW401.402.24	DATE: 8-5-94
SAF NO.: 94-130	LAB: ITC	CASE: W0542
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 BOBNK1, NK2, NH7, NL5, NL6, NN0, NN3, NN4
BOBNN5, NN6, RKG, RL0, RL5, RL6, RL9, RM0, NM9, NH8
BOBRM1, BOBRM2 (all water)

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)*

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.

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.

★

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? . . . . . Yes No N/A

Were preparation blanks analyzed? . . . . . Yes No N/A

Are preparation blank results acceptable? . . . . . Yes No N/A

Comments: See Validation Summary form

JM 8/29/94

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were spike samples analyzed? . . . . . Yes No N/A

Are all spike sample recoveries acceptable? . . . . . Yes No N/A

Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A

Are all LCS recoveries acceptable? . . . . . Yes No N/A

★

Spike Recovery

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Comments: See Validation Summary

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

★

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)

Comments:

JM 8/29/94

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

★

Percent Difference

$$\%D = \frac{|I - S|}{I} \times 100$$

where:
I = analyte concentration before dilution
S = analyte concentration after serial dilution

Comments: analyte < 10x IDL

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: BOB RM1, RM2 = duplicates
BOB RL9, BOB RM0 = duplicates

Fe (ICP) RPD > CRDL BOB RM1, RM2 BOB RL9, RM0 no qual. assigned to field QC.

comment section.

	RM1 / RM2	RL9 / RM0
Al	<5 ok	OK
Ca	RPD ok	RPD OK
Fe	RPD fail	RPD fail
Mg	ok	OK
Mn	ok	OK
K	OK	OK
Se	OK	OK
Na	OK	OK
Bi	OK	OK
Si	OK	OK
CN	—	—

JM 8/29/94

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: See Validation Summary Sheets

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:

BLANK AND SAMPLE DATA SUMMARY

SDG: W0042-1TC-048	VALIDATOR: MWebb	DATE: 8-6-94	PAGE 1 OF 1

COMMENTS: RADIOCHEMICAL ANALYSES

FIELD SAMPLE ID	CONSTITUENT	RESULT	MDA	RDL	UNITS	5X RESULT	SAMPLES AFFECTED	QUALIFIER
	CN	-14				2X <28=J	BOBNH7, BOB NW3	J
	K	1751.8				5X <8759=U	all except BOBRK9, BXBRLD	U
	Cu	45.34				<226.7=U	BOBRK5, RLD, RL5 RL6	U
	Fe	16.44				< 82.2=U	BOBNH8, NK1, NK2, NL6, NW0 NW3, NW4, NW6, RK9, RLD, RL5, RL6, RM0	U
	Si	55.51				<277.55=U	RK5, RLD, BOBRL5 BOBRL6	U

PNO-DVF-015, R1

96134962929

00084

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: GFAA Bi
SDG: W0042-ITC-048

Calibration Date: 20-May-94

Date: 5-Aug-94
Validator: MC Webb

Concentration	Absorbance
0.00	0.002
10.00	0.022
20.00	0.047
40.00	0.099
60.00	0.136
80.00	0.178

r 0.9986	r^2 0.9972
slope 447.5518	x intercept -1.1047
1/slope 0.0022	y intercept 0.0027

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: CN
SDG: W0042-ITC-048

Calibration Date: 10-May-94

Date: 5-Aug-94
Validator: MC Webb

Concentration	Absorbance
0.50	0.486
0.40	0.400
0.20	0.215
0.10	0.112
0.05	0.042
0.02	0.007
0.00	0.007

r 0.9982	r^2 0.9965
slope 1.0107	x intercept -0.0018
1/slope 0.9894	y intercept 0.0024

9613496.2930

000085

JM 8/29/94

9613496.2931

PERCENT RECOVERY (ICV/CCV)

Analysis: Inorganic (metals/CN)
SDG: W0042-ITC-048

Date: 5-Aug-94
Validator: MC Webb

Constituent	Observed Value	True Value	%R
	O	A	
ICP Al	20128.83	20000.00	100.6%
ICP Fe	19422.59	20000.00	97.1%
GFAA Se	26.23	25.00	104.9%
GFAA Bi	26.39	25.00	105.6%
CN	205.00	200.00	102.5%
			#DIV/0!

9613496.2932

MATRIX SPIKE RECOVERY (MS)

Analysis: Inorganic (metals/CN)
SDG: W0042-ITC-048
Sample ID:

Date: 5-Aug-94
Validator: MC Webb

Constituent	Spike Sample Result	Sample Result	Spike Added	%R
	SSR	SR	SA	
ICP Al	1885.40	0.00	2000.00	94.3%
ICP Mg	456.82	0.00	500.00	91.4%
GFAA Se	13.12	0.00	10.00	131.2%
GFAA Bi	19.30	0.00	20.00	96.5%
CN	213.00	0.00	200.00	106.5%
				#DIV/0!

PERCENT RECOVERY (LCS)

Analysis: Inorganic (metals/CN)
SDG: W0042-ITC-048

Date: 5-Aug-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
CN	205.00	200.00	102.5%
CN	192.00	200.00	96.0%
GFAA Se	9.29	10.00	92.9%
GFAA Bi	17.67	20.00	88.4%
ICP Al	1970.67	2000.00	98.5%
ICP Ca	2125.20	2000.00	106.3%
			#DIV/0!

9613496.2934

RELATIVE PERCENT DIFFERENCE

Analysis: Inorganic (metals/CN)
SDG: W0042-ITC-048
Sample ID:

Date: 5-Aug-94
Validator: MC Webb

Constituent	Original (Sample) concentration OS	Duplicate concentration D	RPD
CN	213.00	176.00	19.0%
GFAA Se	non-detect	non-detect	NC
GFAA Bi	non-detect	non-detect	NC
ICP Ca	140.55	134.74	4.2%
ICP Ca	106.69	102.74	3.8%
			#DIV/0!

gm 8/29/94

PERCENT DIFFERENCE (ICP SERIAL DILUTION)

Analysis: ICP
SDG: W0042-ITC-048
Sample ID:

Date: 5-Aug-94
Validator: MC Webb

Constituent	Analyte Concentration before Dilution	Analyte Concentration after Serial Dilution	%D
	I	S	
ICP Ca	140.55	179.7	27.9
ICP Na	445.21	674.85	40.3

INORGANICS RESULTS CALCULATION, WATER

Analysis: Inorganic (metals/CN)
SDG: W0042-ITC-048
Sample ID:

Date: 5-Aug-94
Validator: MC Webb

Constituent	Concentration from curve CONCW	Dilution Factor DFW	Concentration (µg/L)
Ca BOBNK2	32757.0000	1	32757.0000
K BOBNK2	5588.2000	1	5588.2000
Se BOBNM6	-0.0600	1	-0.0600
Bi BOBNM6	0.4000	1	0.4000
CN BOBNK1	0.0060	1	0.0060

9613496.2936

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOBRK9S

Lab Name: ITAS_KNOXVILLE_____ Contract:HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_
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	1885.4000		40.0000	U	2000.00	94.3		P
Calcium									NR
Iron	75-125	943.3700		21.8500	B	1000.00	92.2		P
Magnesium									NR
Manganese	75-125	456.8200		2.0000	U	500.00	91.4		P
Potassium									NR
Selenium	75-125	13.1200		2.0000	U	10.00	131.2	N	F
Sodium									NR
Bismuth	75-125	19.3000		10.0000	U	20.00	96.5		F
Silicon	75-125	1914.8200		55.5300	B	2000.00	93.0		P
Cyanide									NR

Comments:

FORM V (Part 1) - IN ILM02.1

Se > 125%
J all detects.

8 6/7/94

mo 8-5-94

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO452 SAS No.: _____ SDG No.: W0042_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

	Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	PBW0509 Prepa-ration Blank	C	M
	Aluminum			40.0	U	40.0	U					P
	Calcium			20.0	U	20.0	U					P
	Iron			10.0	U	10.0	U					P
	Magnesium			30.0	U	30.0	U					P
	Manganese			2.0	U	2.0	U					P
1000	Potassium			1751.8	B	1000.0	U					P
	Selenium			2.0	U	2.0	U	2.0	U			F
	Sodium			100.0	U	100.0	U					P
	Bismuth			10.0	U	10.0	U	10.0	U			F
	Silicon			30.0	U	30.0	U					P
IDL=10X	Cyanide	-13.0		-14.0						10.000	U	AS

[CN qual. result < ~~26~~ 28 as (J) ~~estimated~~ FORM III] - Inst chem not this report ILM02.1
K qual " < 8759 as undetected 8 6/7/94

CN < 28 = J
K < 8759 = U

mms 8-5-94

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0452 SAS No.: _____ SDG No.: W0042_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

	Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	PBW0513A (8730) APBW0513A (8732) Preparation Blank	C	M	
										CN (PBW0516)			
	Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	40.000	U	P	
	Calcium	20.0	U	20.0	U	20.0	U	20.0	U	45.340	B	P	5X
	Iron	10.0	U	10.0	U	10.0	U	10.0	U	16.440	B	P	5X
IDL 30	Magnesium	30.0	U	30.0	U	37.0	B	30.0	U	30.000	U	P	
	Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P	
	Potassium	1000.0	U	1000.0	U	1483.5	B	1000.0	U	1000.000	U	P	
	Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F	
	Sodium	100.0	U	100.0	U	100.0	U	100.0	U	100.000	U	P	
	Bismuth	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	F	
	Silicon	30.0	U	30.0	U	30.0	U	30.0	U	55.510	B	P	5X
X	Cyanide	10.0	U	10.0	U					-14.000		AS	2X

Mg (OCB) result < 185 = U no Q's
Ca (MB) < 226.7 = U ✓
Fe (MB) < ~~32.88~~ = U ✓ (92.2)
Si (MB < 277.6 = U ✓

FORM III - IN

(MB)

Cu < 28 = J
~~Fe < 32.88 = J~~
~~Ca < 90.68 = J~~

MW 8-5-94

ILM02.1
8
6/7/94

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO465 SAS No.: _____ SDG No.: W0042_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	(CN) PBW0510 APBW0517A (9165) PBW0517A (9160) Preparation Blank	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	40.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	48.070	B	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Magnesium	30.0	U	30.0	U	37.0	B	30.0	U	30.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Potassium	1000.0	U	1000.0	U	1483.5	B	1000.0	U	1137.820	B	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	100.000	U	P
Bismuth	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	F
Silicon	30.0	U	30.0	U	30.0	U	30.0	U	47.820	B	P
Cyanide	-13.0		-14.0		-14.0				-14.000		AS

K < 8759 = U
Cn < 28 = J
Si < 239 = U
Mg < 185 = U

FORM III - IN

8-5-94

ILM02.1
8/1/94

For Samples BUBAM1, RM2

9613496.2941

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0465 SAS No.: _____ SDG No.: W0042_

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			40.0	U	40.0	U					P
Calcium			20.0	U	20.0	U					P
Iron			10.0	U	10.0	U					P
Magnesium			30.0	U	30.0	U					P
Manganese			2.0	U	2.0	U					P
Potassium			1751.8	B	1000.0	U					P
Selenium			2.0	U							F
Sodium			100.0	U	100.0	U					P
Bismuth			10.0	U	10.0	U	10.0	U			F
Silicon			30.0	U	30.0	U					P
Cyanide											NR

FORM III - IN ILM02.1

8-5-94 6/7/94

Validator	Date	SDG
MC Webb	8-5-94	W0042-ITC-048

DATA VALIDATION SUMMARY

MAJOR DEFICIENCIES:

None

MINOR DEFICIENCIES:

1. Ca was qualified undetected(U)in samples BOBRK9 ,BOBRL0, BOBRL5, and BOBRL6 because of positive concentration of the prep blank.
2. Fe was qualified undetected (U) in samples BOBNH8, BOBNK1, BOBNK2, BOBNL6, BOBNN0, BOBNN3, BOBNN4, BOBNN6, BOBRK9, BOBRL0, BOBRL5, BOBRL6, and BOBRM0 because of positive concentration of the prep blank.
3. Si was qualified undetected (U) in samples BOBRK9, BOBRL0, BOBRL5, and BOBRL6 because of positive concentration of the prep blank.
4. K was qualified undetected (U) in all samples except BOBNN0 and BOBNN3 because of positive concentration in a calibration blank.
5. Se was qualified estimated (UJ) in samples BOBRM1, and BOBRM2 because the analytical spike recovery was < 85%.
6. Bi was qualified as estimated (UJ) in samples BOBNN6 and BOBRM1 because the analytical spike recovery was > 115%.
7. CN was qualified as estimated (J) in samples BOBNN3 and BOBNH7 because of negative concentration in the prep blank.
8. K was qualified undetected (U) in samples BOBRM1 AND BOBRM2 because of positive concentration in a calibration blank.
9. Se was qualified estimated (J) in samples BOBNN3 and BOBNN4 because the matrix spike recovery > 125%.

COMMENTS:

1. A matrix spike/matrix spike duplicate was not run for the Cn analysis due to insufficient sample. However a blank spike/ blank spike duplicate was done and the results were acceptable. No qualifier was assigned to the data.

9613496.2943

Validator	Date	SDG
MC Webb	8-5-94	W0042-ITC-048

DATA VALIDATION SUMMARY

Analyte	Qualifier	Sample	Reason
Ca	U	BOBRK9,BOBRL0,BOBRL5, BOBRL6	+ Concentration of prep blank
Fe	U	BOBNH8,BOBNK1,BOBNK2 BOBNL6,BOBNN0,BOBNN3 BOBNN4,BOBNN6,BOBRK9, BOBRL0,BOBRL5,BOBRL6, BOBRM0	+ Contamination of prep blank
Si	U	BOBRK9,BOBRL0,BOBRL5, BOBRL6	+ Contamination of prep blank
K	U	All except BOBNN0,BOBNN3	+ Contamination of cal blank
Se	UJ	BOBRM1, BOBRM2	Analytical Spike < 85%
Bi	UJ	BOBNN6, BOBRM1	Analytical Spike > 115%
CN	J	BOBNN3,BOBNH7	- Concentration in Prep blank
K	U	BOBRM1, BOBRM2	+ Concentration in Cal blank
Se	J	BOBNN3, BOBNN4	Matrix Spike Recovery >125%

9613496.2944

LATA GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200BP-5		SDG: W0042-ITC-048
VALIDATOR: Cowan	LATA NO: VW402.24	DATE: 8-5-94
SAF NO.: 94-130	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	☐	☐

SAMPLES/MATRIX

10 water samples: B0BNN3, BOBNN5, BOBRL5, BOBNK1, BOBNH7, BOBRL9, BOBNL5, BOBRM1, B0BRK9,B0BNM9

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: Hold times for NO3 & PO4 were exceeded by more than 2X for all samples. All data rejected UR.

JM 8/29/94

9-14-94

000099

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).

Correlation Coefficient (r)

$$r = \frac{N \sum x_i y_i - \sum x_i \sum y_i^{1/2}}{[N \sum x_i^2 - (\sum x_i)^2]^{1/2} \; [N \sum y_i^2 - (\sum y_i)^2]^{1/2}}$$

★ For methods requiring ICV/CCV or a calibration check standard, calculate recovery as follows:

Recovery

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments:

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? . . . . . Yes No N/A

★

Spike Recovery

$$\%R = \frac{SSR - SR}{SA} \times 100$$

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

★

Recovery

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments:

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

★

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)

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:

JM 8/29/94

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:_____

JM 8/29/94

HOLDING TIME SUMMARY

SDG: W0042-ITC-48	VALIDATOR: Cowan	DATE: 8-5-94	PAGE 2 OF 2

COMMENTS: GENERAL CHEMISTRY ANALYSES

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBNK1	NO2, PO4 Anions	4-26-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	
BOBRL5	NO2, PO4 Anions	4-26-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	
BOBNN5	NO2 PO4 Anions	4-26-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	
BOBNN3	NO2 PO4 Anions	4-25-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	
BOBRM1	NO2 PO4 Anions	4-27-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	

PNO-DVF-013, R1

9-14-94 WJC

000104

96134962949

HOLDING TIME SUMMARY

SDG: W0042-ITC-48	VALIDATOR: Cowan	DATE: 8-5-94	PAGE 1 OF 2

COMMENTS: GENERAL CHEMISTRY ANALYSES

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBRK9	NO2 PO4 Anions	4-25-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	
BOBNM9	NO2 PO4 Anions	4-25-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	
BOBNH7	NO2 PO4 Anions	4-26-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	
BOBKL9	NO2 PO4 Anions	4-26-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	
BOBNL9	NO2 PO4 Anions	4-26-94		5-19-94		2 28	UR
	NO2 + NO3			5-18-94		28	
	Alkalinity			5-2-94		7	
	TDS			5-3-94		7	
	Sulfate			5-16-94		28	

9-14-94 WOC

0562 9649 3 9 6

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: Sulfate 375.4
SDG: W0042-ITC-048

Calibration Date: 16-May-94

Date: 5-Aug-94
Validator: Cowan

Concentration	Absorbance
0.00	0.120
1.00	0.140
5.00	1.300
10.00	22.000
20.00	68.000
40.00	130.000
80.00	270.000

r	r^2
0.9982	0.9965

slope	x intercept
0.2887	2.0159

1/slope	y intercept
3.4644	-6.7129

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: Nitrite/Nitrate 353.3
SDG: W0042-ITC-048

Calibration Date: 5/18/94

Date: 5-Aug-94
Validator: Cowan

Concentration	Absorbance
2.00	0.059
1.00	0.027
0.40	0.009
0.10	0.001
0.04	0.000
0.02	0.000
0.00	0.000

r	r^2
0.9988	0.9976

slope	x intercept
33.6441	0.0520

1/slope	y intercept
0.0297	-0.0015

96134962951

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: IC Anions Fluoride
SDG: W0042-ITC-048

Calibration Date: 19-May-94

Concentration	Absorbance
0.00	-0.020
0.40	389333.000
2.00	1879567.000
4.00	5238185.000

r 0.9890	r^2 0.9782
slope 0.0000	x intercept 0.1835
1/slope 1324945.0681	y intercept -196820.8892

96134962952

9613496.2953

RELATIVE PERCENT DIFFERENCE

Analysis: General Chemistry
SDG: W0042-ITC-048
Sample ID: BOBRK9

Date: 5-Aug-94
Validator: Cowan

Constituent	Original (Sample) concentration	Duplicate concentration	RPD
	OS	D	
TDS	59.00	61.00	3.3%

gm 8/29/94

RELATIVE PERCENT DIFFERENCE

Analysis: General Chemistry
SDG: W0042-ITC-048
Sample ID: BOBRK9

Date: 5-Aug-94
Validator: Cowan

Constituent	Original (Sample) concentration OS	Duplicate concentration D	RPD
Alkalinity	4.00	4.00	0.0%
Fluoride	2.00	2.00	0.0%
Chloride	2.90	2.90	0.0%
Nitrite	2.40	2.40	0.0%
Phosphate	8.90	8.60	3.4%
Sulfate	14.00	13.00	7.4%

jm 8/29/94

MATRIX SPIKE RECOVERY (MS)

Analysis: General Chemistry
SDG: W0042-ITC-048
Sample ID: BOBRK9

Date: 5-Aug-94
Validator: Cowan

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
sulfate	2.00	0.00	2.00	100.0%
fluoride	2.00	0.00	2.00	100.0%
chloride	2.90	0.00	3.00	96.7%
nitrite	2.40	0.00	2.50	96.0%
phosphate	8.90	1.00	10.00	79.0%
nitrite+nitrate	1.13	0.00	1.00	112.7%

9613496.2956

MATRIX SPIKE RECOVERY (MS)

Analysis: General Chemistry
SDG: W0042-ITC-048
Sample ID: BOBRK9

Date: 5-Aug-94
Validator: Cowan

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
sulfate	44.50	5.20	40.00	98.3%

gm 8/29/94

PERCENT RECOVERY (ICV/CCV)

Analysis: General Chemistry
SDG: W0042-ITC-048

Date: 5-Aug-94
Validator: Cowan

Constituent	Observed Value O	True Value A	%R
fluoride	2.19	2.00	109.5%
chloride	3.08	3.00	102.7%
nitrite	2.67	2.50	106.9%
nitrate	2.39	2.50	95.4%
phosphate	10.10	10.00	101.0%
sulfate	15.81	15.00	105.4%

PERCENT RECOVERY (LCS)

Analysis: General Chemistry
SDG: W0042-ITC-048

Date: 5-Aug-94
Validator: Cowan

Constituent	Observed value	True value	%R
	OLCS	ALCS	
flouride	2.20	2.00	110.0%
chloride	3.00	3.00	100.0%
nitrite	2.60	2.50	104.0%
nitrate	2.40	2.50	96.0%
phosphate	9.90	10.00	99.0%
sulfate	15.00	15.00	100.0%

gm 8/29/94

9613496.2959

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 200 BP 5	SDG: W0042-1TC-048	
VALIDATOR: MWebb	LATA NO.: VW401.402.~~24~~	DATE: 8-4-94
SAF NO.: 94-130	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	☒ Pu Isotopic Anal. Alpha Spec.	☒ Gamma Spectroscopy	☐ Iodine-129
☒ Total Uranium (KPA)	☐ Radium-226 ☐ Radium-228	☒ (LSC) Liquid Scintillation H3	☒ Total Sr	☐	☐

SAMPLES/MATRIX BOB RK9, NM9, NN3, NN5, RL5, NK1, NH7, RL9
BOB NL5, RM1 (Water)

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:

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: There is no evidence that the pH was checked before ~~going to the~~ analysis.
MW 8-6-94

MM 8/29/94

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

★

Spike Recovery

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Comments:

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

★

Recovery

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments:

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)

Comments:

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)

MW 8-6-94

Comments: U TOTAL RPD > 20% ~~Results > 5 x CRDL~~ All U total results are qualified as estimated (J/UJ).

DM 8/29/94

The form's are incorrect for the U-total RPD calculation * See Comment on Val. Summary

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: BOBRM1 is a dup of BOBRM2 BOBRM2 is not in the SDG
BOBRLG is a dup of BOBRMO BOBRMO is not in the SDG

11. DETECTION LIMITS (LEVELS D & E)

MDA's meet required detection limits? . . . . . yes ~~Yes~~ No N/A

Transcription/calculation errors? . . . . . Yes No N/A

★

Minimum Detectable Activity (MDA)

$$\frac{4.66 \times \sqrt{(B.2)(T.2)}}{2.22(E.2)(I.2)(R.2)(D.2)(V.2)(Y.2)(T.2)}$$

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: ~~PU150~~
~~PU239/240~~ pm
~~PO 238~~ 8/6/94

Jm 8/29/94

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

JM 8/29/94

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION SUMMARY W0042-ITC-048

MAJOR DEFICIENCIES:

none

MINOR DEFICIENCIES:

See data Val. summary

COMMENTS:

Laboratory was unable to do a matrix spike for W ~~in the batch that~~ because of insufficient sample. ~~(batch that contained BOBCH1 & BOBCH2)~~ A blank spike & blank spike duplicate were analyzed.

gm 8/29/94

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION SUMMARY

MAJOR DEFICIENCIES:

(1) None

MINOR DEFICIENCIES:

(1) ~~Uranium RPD > 30 to results of SXORDT All Uranium dup results given qual [J]UJ]~~

None MWebb. 8-4-94

COMMENTS:

~~None~~

- The laboratory did not use the correct values on the form 1 for U total analysis of BOBNW3 dup (pg 20) RPD calculation.
- The laboratory did not enter the correct MDA for the tritium analysis (all samples) Form 1's are corrected

JM 8/29/94

9613496.2968

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

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0042

LAB SAMPLE ID: F0449803

WHC ID: B0BNN3

REPORTING UNITS: ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
URANIUM	4.97E+00	N/A	7.45E-01	3.54E-03	1	RD4200

RPD CALCULATIONS

LAB NAME: ITAS-RICHLAND SDG NO.: W0042

LAB SAMPLE ID: 40449803

WHC ID: B0BNN3

REPORTING UNITS: ug/g

RPD 1.6%

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
URANIUM	3.12E+00	4.97E+00	45.74

CRDL = 0.1

does not match input pg 10 on the raw data

~~All U total results are qualified as estimated~~ (J/UJ)

NO qualifier on U total = for RPD

MW 8-6-94

lab report incorrect

MW 8-6-94

B0BNN3 4.89

U-total result

pm 8/29/94

~~020~~

682A-5-93

MATRIX SPIKE RECOVERY (MS)

Analysis: Radiochemistry
SDG: WOO40-ITC-048

Date: 6-Aug-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
Tc99 BOBRK9	86.81	0.15	90.22	96.1%
KPA BOBRK9	0.77	0.00	0.90	85.2%
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!

000125

PERCENT RECOVERY (LCS)

Analysis: Radiochemistry
SDG: WOO42-ITC-048

Date: 6-Aug-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
Pu 239/240	5.70	4.57	124.7%
GEA Cs137DA	53.60	49.60	108.1%
GEA Co60	24.20	24.80	97.6%
Alpha	20.10	22.60	88.9%
Beta	21.20	22.60	93.8%
Total Sr	11.80	13.50	87.4%
Tritium	2630.00	2710.00	97.0%
U total	0.776	0.906	85.7%
Tc99	90.90	100.00	90.9%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

ALPHA SPEC TRACER RECOVERY

Analysis: Radiochemistry
SDG: WOO42-ITC-048

Date: 6-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	
Pu 242 BOBRK9	1.48	0	3.7	7.0695	0.774595
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!

000127

RELATIVE PERCENT DIFFERENCE

Analysis: Radiochemistry
SDG: WOO42-ITC-048

Date: 6-Aug-94
Validator: MC Webb

Constituent	Original (Sample) concentration OS	Duplicate concentration D	RPD
Tritium BOBRK9	undetected	undetected	NC
GEA Cs137DA BOBRK9	undetected	undetected	NC
GEA Co60 BOBRK9	undetected	undetected	NC
Alpha BOBRL5	undetected	undetected	NC
Beta BOBNK1	11.50	12.50	8.3%
Tc99 BOBRL9	646.00	580.00	10.8%
Pu 239/240	undetected	undetected	NC
Pu 238	undetected	undetected	NC
KPA BOBNN3	4.89	4.97	1.6%
Total Sr BOBNH7	undetected	undetected	NC
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

9613496.2972

MINIMUM DETECTABLE ACTIVITY (MDA)

Analysis: Radiochemistry
SDG: WOO42-ITC-048

Date: 6-Aug-94
Validator: MC Webb

Sample ID: BOBRK9

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	
Pu 239/240	0.001	200.000	3.700	1.000	0.775	1.000	1.000	0.200	0.258
Pu 238	0.000	200.000	3.700	1.000	0.775	1.000	1.000	0.200	0.146
Alpha	0.036	100.000	2.257	1.000	1.000	1.000	1.000	0.200	0.586
Beta	0.996	100.000	2.431	1.000	1.000	1.000	1.000	0.200	2.689
Sr-total	0.938	50.000	2.290	1.000	1.000	1.000	0.957	1.000	0.745
Tc99	26.070	125.000	1.053	1.000	1.000	1.000	0.951	0.500	2.140
Tritium	5.660	125.000	2.500	1.000	1.000	1.000	0.973	0.005	234.058
U total	instrument IDL	0.00354							
									#DIV/0!
									#DIV/0!
									#DIV/0!
									#DIV/0!
									#DIV/0!

9613496.2973

RESULTS CALCULATION GROSS ALPHA/BETA AND TRITIUM

Analysis: Radiochemistry
SDG: WOO42-TIC-048

Date: 6-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 BOBRK9	0.080	0.036	1.00	2.257	0.200	0.2237
Beta BOBRK9	0.900	0.996	1.00	2.431	0.200	-0.5256
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
TRITIUM	DPM sample	DPM blank	Yield	Decay	Volume	
Tritium BOBRK9	15.680	14.150	0.97	1.005	0.005	142.3710
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!

96134962974

RESULTS CALCULATION TOTAL STRONTIUM

Analysis: Radiochemistry
SDG: W0042-ITC-048

Date: 6-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	
BOBRK9	1.240	0.938	1.236	2.290	0.957	1.00	0.2635
							#DIV/0!
							#DIV/0!
							#DIV/0!
							#DIV/0!
							#DIV/0!
INGROWTH FACTOR	Sr D/C	Y D/C	delta T (hr)	= e**(-Lt)	L =1.083E-2		
BOBRK9	2.290	1.887	19.92	0.8060	X	X	1.2355
					X	X	#DIV/0!
					X	X	#DIV/0!
					X	X	#DIV/0!
					X	X	#DIV/0!
					X	X	#DIV/0!

96134962975

000131

RESULTS CALCULATION TECHNETIUM-99

Analysis: Radiochemistry
SDG: W0042-ITC-048

Date: 6-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	
BOBRK9	27.600	27.440	1.000	0.95	0.500	0.1516
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!

96134962976

RESULTS CALCULATION ALPHA SPEC ISOTOPES

Analysis: Radiochemistry
SDG: W0042-ITC-048

Date: 6-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	
Pu 239/240 BOBRK1	0.0000	0.0010	3.700	0.775	0.200	-0.0108
Pu 238 BOBRK9	0.0000	0.0000	3.700	0.775	0.200	0.0000
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!
						#DIV/0!

RESULTS CALCULATION TOTAL URANIUM BY LASER FLUOROMETRY

Analysis: Radiochemistry
SDG: W0042-ITC-048

Date: 8/6/94
Validator: MC Webb

Constituent	Sample reading	sample volume	aliquot	Dilution factor	Result
	W.9	I.9	R.9	D.9	
BOBNM9	2.787	100.00	100.00	1.00	2.787
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!

96134962978

000134

9613496.2979

Laboratory Case Narratives

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

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

June 9, 1994

Job Number: 452; 465

This is the Certificate of Analysis for the following samples:

SDG:	W0042
Client Project ID:	WHC SAF 94-130 200-BP-5 Groundwater Round 1
Date Received by Lab:	April 29; April 30, 1994
Number of Samples:	Twenty (20)
Sample Type:	Water

I. Introduction

On April 29 and April 30, 1994, twenty (20) water samples arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. Sample ~~BOBNK7~~ BOBNH7 had a pH of 10, sample BOBRL9 had a pH of 11, and sample BOBNL5 had a pH of 11. See attached CUR 1547. Sample BOBRM1 had a pH of 10 and anions were received past hold time. See attached CUR 1559. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results.

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.

Reviewed and Approved:

Sheree' A. Schneider

Sheree' A. Schneider
Project Manager

IT Corporation
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

II. Analytical Results/Methodology (Continued)

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

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

The samples were analyzed for sulfate based on EPA method 375.4.

The alkalinity of the samples was determined using EPA method 310.1.

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

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

III. Quality Control

The samples for work order #452 were digested on May 13, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 19 through May 23, 1994; the remaining metals were analyzed by ICP on June 2, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample numbers BOBRK9 and BOBRL0 (dissolved). Spike recovery (accuracy) results were within acceptance limits for all requested analytes for both samples. Duplicate RPD (precision) results were within acceptance limits for all analytes for both samples. There was insufficient sample volume for the cyanide analysis to prepare QC. Blank spike and blank spike duplicate analyses were performed.

The samples for work order #465 were digested on May 17, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed on May 23, 1994; the remaining metals were analyzed by ICP on June 2, 1994. All run QC was acceptable. Samples were batched with QC from work order #452.

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.

jm 8/29/94
2

IT Corporation
June 9, 1994
Job Number: 452; 465
Client Project ID: WHC SAF 94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

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 May 2, 1994. A duplicate was analyzed using sample number BOBRK9. All quality control results were acceptable.

The samples were analyzed for nitrate/nitrite on May 18 and May 19, 1994. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBRK9. All quality control results were acceptable.

The samples were analyzed for sulfate on May 16, 1994. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBRK9. All quality control results were acceptable. Sample BOBRM1 analysis for sulfate by 375.4 was cancelled by the client.

The samples were analyzed for total dissolved solids on May 3, 1994. A duplicate was analyzed using sample number BOBRK9. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, nitrite, phosphate and sulfate by EPA method 300.0 on May 19 and May 23, 1994. A matrix spike and matrix spike duplicate were analyzed using sample number BOBRK9. All quality control results were acceptable.

gm 8/29/94

9613496.2983

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

June 16, 1994

Attention: J.A.Lerch

SAF Number	:	94-130
Date SDG Closed	:	April 29, 1994
Number of Samples	:	Ten (10)
Sample Type	:	Water
SDG Number	:	W0042
Data Deliverable	:	Stand Alone

I. Introduction

On April 27, 28, and 29, 1994, ten 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
404498-01A	B0BRK9	Water	4/27/94
404498-02A	B0BNM9	Water	4/27/94
404498-03A	B0BNN3	Water	4/27/94
404498-04A	B0BNN5	Water	4/27/94
404498-05A	B0BRL5	Water	4/27/94
404498-06A	B0BNK1	Water	4/27/94
404539-01A	B0BNH7	Water	4/28/94
404539-02A	B0BRL9	Water	4/28/94
404539-03A	B0BNL5	Water	4/28/94
404569-01A	B0BRM1	Water	4/29/94

JM 8/29/

000139

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
Plutonium-238, -239/40 by method ITAS-RD-3209
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
Technetium-99 by method ITAS-IT-RS-0001
Tritium by method ITAS-RD-3205
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0042 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

Plutonium-238, -239/40 by method ITAS-RD-3209
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNN5) results are within contractual limits.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
The detection limit for Eu-152 was not met on the first count of sample B0BNL5. The detection limits were achieved for all analytes on the recount of that sample. The detection limit for Fe-59 was not met for samples B0BNK1 and B0BRL9. The sample data were accepted due to the elapsed time from sample collection to sample counting (35 days) vs. the half-life of Fe-59 (44.5 days). The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BRK9) results are within contractual limits.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNK1) results are within contractual limits.

Gross Beta by method ITAS-RD-3222
Sample B0BNN5 and B0BRL5 were recounted at the analyst's request due to a lack of significant counts recorded on the analytical work cards for the initial analysis of these samples. The recount results for these samples are accepted and reported. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNK1) results are within contractual limits.

Strontium-90 by method ITAS-RD-3204
Samples B0BNM9 and B0BNK1 were reanalyzed because their chemical yields were below 30%. The reanalysis LCS, blank, and sample data are within contractual requirements. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNH7) results are within contractual requirements.

Liquid Scintillation Counting

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

The matrix spikes, LCS, batch blank, sample and sample duplicate (duplicate of sample B0BRL9) results are within contractual requirements.

Tritium by method ITAS-RD-3205

The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BRK9) results are within contractual requirements.

Total Uranium

Total Uranium by method ITAS-RD-4200

The matrix spikes, LCS, batch blank, sample and sample duplicate (duplicate of B0BNN3) 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

Suzanne Gaines
Project Manager

96135496.2987

Chain-of-Custody Information

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#465

Page 1 of 1

Date Turnaround: [ ] Priorty [X] Normal

Collector: K. D Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-6	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0-0518-24	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 3C AJS 4/27/94 1312		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE
Type of Container	~~P~~ G	G	P	P	P	P	P	P	Gs	P	~~P~~ G	aGs
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 ~~1~~	1	1
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L ~~2L~~	1L	40mL
SAMPLE ANALYSIS 404568	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 404569	TRITIUM	Tc-99 01	*3 02 A	ACTIVI-TY SCAN

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	ACTIVITY SCAN
BOBRM1 01	W	04/27/94	1005	X	X	X	X	X	X	X	X	X	X		X
BOBRM2 02	W	04/27/94	1005											X	

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
K D Lee / Kelly D. Lee	4/27/94 1311	AJ Simpson / AJ Simpson	4/27/94 1312
AJ Simpson / AJ Simpson	4/27/94 1027	L Sweeney / L Sweeney	4-29-94 1030
L Sweeney / L Sweeney	4-29-94 1210	[illegible]	4-29-94 12:10

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

SDG-W0042

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)

9613496.2988

0000045

000144

WO #452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: GL-8	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W24-0-0518-13	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 3A AJ SIMPSON 4/27/94 1342		

SAMPLE ANALYSIS: 404497

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	4oz			
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL ACTIVITY			
	A	B	C	D	E	F	G	40449802			04 A				

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F	G				04 A				
BOBNM1 03	W	04/25/94	1430	X	X	X	X	X	X	X	X	X	X					
BOBNN0 04	W	04/25/94	1430											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	4/25/94 1528	AJ Simpson	4/25/94 1530
AJ Simpson	4/27/94 0918	L Sweeney	4/27/94 0915
L Sweeney	4/27/94 1210	[illegible]	4/27/94 1210

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2989

0000037

000145

WO#452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: K.D Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: E12.13	Field Logbook No.:	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W24-0-0518-13/14 ACS 4/27/94	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Bplus 2C AJS 4/26/94 1430		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	P G	G	P	P	P	P	P	P	Gs	P	P G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 X	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	40 mL			
SAMPLE ANALYSIS 404497	*1 A	IC ANIONS- F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 404498	TRITIUM 06	Tc-99	*3 12 A	TOTAL ALKALINITY			

Sample No.	Matrix*	Date Sampled	Time Sampled	*1 A	IC ANIONS B	NO2, NO3 C	ALKALINITY D	TDS E	SULFATE F	CYANIDE G	*2	TRITIUM	Tc-99	*3 A	TOTAL ALKALINITY			
BOBN K.1 11	W	04/26/94	10:45	X	X	X	X	X	X	X	X	X	X		X			
BOBN K.2 12	W	04/26/94	10:45											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D Lee K.D Lee	4/26/94 1425	AJ Simpson AJ Simpson	4/26/94 1430
AJ Simpson AJ Simpson	4/27/94 1026	L Sweeney L Sweeney	4/27/94 1026
L Sweeney L Sweeney	4/27/94 1210	J Herdelberg J Herdelberg	4/27 1210

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2990

0000041

000146

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#452

Page 1 of 1

Date Turnaround: ☐ Priorty ☒ Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-8	Field Logbook No.: RFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-ES+W94-0-0518-13 LCS 4/28/94	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Pe Jerry SB AJS 4/26/94 1435		

SAMPLE ANALYSIS: 404538

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	G	G	P	P	P	P	P	P	Gs	P	G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	40mL			
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL ACTIVITY			
	A	B	C	D	E	F	G	4045		3901	02A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
BOBN H7 01	W	04/26/94	0930	X	X	X	X	X	X	X	X	X	X		X			
BOBN H7 02	W	04/26/94	0930											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kelly A Lee	4/26/94 1829	AJSIMPSON	4/26/94 1435
AJSIMPSON	4/26/94 0956	L Sweeney	4/28/94 0956
L Sweeney	4-28-94 1155	C. Boyd	4/28/94 1155

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2991

0000038

000147

WO# 452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K. D. Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-9	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0-0518-20	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 3x AJS 4/27/94 1320		

SAMPLE ANALYSIS: 404538

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	G P	G	P	P	P	P	P	P	Gs	P	G P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	40mL			
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL ACTIVITY			
	A	B	C	D	E	F	G	404538	03		06A				

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F	G								
BOBNL5 05	W	04/27/94	1005	X	X	X	X	X	X	X	X	X	X		X			
BOBNL6 06	W	04/27/94	1005											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D. Lee	4/27/94 1311	AJ SIMPSON / A Simpson	4/27/94 1317
A Simpson	4/28/94 0953	L Sweeney	4/28/94 0953
L Sweeney / L Sweeney	4-28-94 1155	R. Boyd	4/28/94 1155
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2992

0000040

000148

WO#452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K.D. Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-10	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W74-0-00518-13	Bill of Lading/Air Bill No.: None
Possible Sample Hazards/Remarks: None		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	G	G	P	P	P	P	P	P	Gs	P	G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	2	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1 pt	4 oz.			
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKALINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	pH, Alkalinity			
SAMPLE ANALYSIS 404497	A	B	C	D	E	F	G	40449803			06 A				

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F	G	40449803	TRITIUM	Tc-99	06 A	pH, Alkalinity			
BOBNN3 05	W	04/25/94	1130	X	X	X	X	X	X	X	X	X	X		X			
BOBNN4 06	W	04/25/94	1130											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D. Lee K.D. Lee	4/25/94 1528	AJ Simpson AJ SIMPSON	4/25/94 1545
AJ Simpson AJ SIMPSON	4/27/94 0918	L Sweeney L Sweeney	4/27/94 0918
L Sweeney L Sweeney	4-27-94 1210	Alec Cheers	4/27/210
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2993

0000044

000149

WO#452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: INL 736	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-00518-16	Bill of Lading/Air Bill No.: NCNG
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 3A AJS 4/26/94 1442		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	P G	G	P	P	P	P	P	P	Gs	P	P G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	40 mL			
SAMPLE ANALYSIS	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total Uranium			
404497	A	B	C	D	E	F	G	404498	04		08 A				

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKALINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Total Uranium			
BOBNN5 07	W	04/26/94	1300	X	X	X	X	X	X	X	X	X	X		X			
BOBNN6 08	W	04/26/94	1300											X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By		4/26/94 1428
Received By	AJ Simpson	4/26/94 1442
Relinquished By	AJ SIMPSON	4/27/94 1015
Received By	L Sweeney	4/27/94 1015
Relinquished By	L Sweeney	4/27/94 1210
Received By		4/27 1210
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2994

0000043

000150

WO #452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priorty [X] Normal

Collector: K D. Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-8	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0-0518-13	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 3A ATS 4/26/94		

SAMPLE ANALYSIS: 404497

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE
Type of Container	~~P~~ G	G	P	P	P	P	P	P	Gs	P	~~P~~ G	aGs
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	40mL
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	ACTIVITY SCAN
	A	B	C	D	E	F	G	404498	01	02	02 A	

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	ACTIVITY SCAN
BOBRK9 01	W	04/25/94	1030	X	X	X	X	X	X	X	X	X	X		X
BOBRL0 02	W	04/25/94	1030											X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K D Lee K.D. Lee	4/27/94 0732	A Simpson	4/27/94 0732
A Simpson	4/27/94 0719	L Sweeney L Sweeney	4/27/94 0719
L Sweeney L Sweeney	4/27/94 1210	Heidi Hee	4/27 1210
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2995

0000036

000151

WO #452

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K.D Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: SMLC-494	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0-0518-14	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 2C AJS 4/26/94		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE
Type of Container	G P	G	P	P	P	P	P	P	Gs	P	G P	aGs
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	40mL
SAMPLE ANALYSIS 404497	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 40449805	TRITIUM	Tc-99	*3 10 A	ACTIVI-TY SCAN

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F	G						
BOBRL5 09	W	04/26/94	0755	X	X	X	X	X	X	X	X	X	X		X	
BOBRL6 10	W	04/26/94	0755											X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D Lee	4/26/94 1429	AJ Simpson	4/26/94 1430
AJ Simpson	4/27/94 1026	L Sweeney	4/27/94 1026
L Sweeney	4/27/94 1210	Heidelberg	4/27 1210

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2996

0000042

000152

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#452

Page 1 of 1

Date Turnaround: ☐ Priorty ☒ Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-11	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: LT	Offsite Property No.: LL94-0-0518-20	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Relinq 3B AJS 4/26/94 1433		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	aGs			
No. of Container(s)	1	1	1	1	1	1	1	2	2	1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	2L	1L	40mL			
SAMPLE ANALYSIS 404538	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 404539	TRITIUM 02	Tc-99	*3 04A	ACTIVI-TY SCAN			
Sample No. / Matrix* / Date Sampled / Time Sampled															
BOBRL9 03	W	04/26/94	0930	X	X	X	X	X	X	X	X		X		
BOBRM0 04	W	04/26/94	0930									X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
Kirby Lee K. Lee	4/26/94 1429	AJ Simpson (AJ SIMPSON)	4/26/94 1433
Relinquished By (AJ SIMPSON)	Date/Time	Received By	Date/Time
AJ Simpson	4/28/94 0955	L Sweeney	4/28/94 0955
Relinquished By	Date/Time	Received By	Date/Time
L Sweeney	4-28-94 1155	R Boyle Jr	4/28/94 1155
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

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)

9613496.2997

0000039

000153

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001548*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO#452 RL#562

Reference Document No. 453608
Page 1 of 3

Project Name/No. [1] SAF 94-130
Sample Team Members [2]
Profit Center No. [3] 4632
Project Manager [4] VAN PETTEY
Purchase Order No. [6]
Required Report Date [11]

Samples Shipment Date [7] 4-28-94
Lab Destination [8] Middlebrook
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13] 150 9385 473

Bill to: [5] IT Richland
Report to: [10] IT Richland

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

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]
40449701 A	BOBRK9 / water	4/25 1030	glass	1 L.	Cool 4°	Metals, GFAA	5°C BPB 4/29/94 <2	
B				500ml		Anions, SO_4, NO_2, PO_4		
C			poly	↓		NO_2, NO_3	<2	
D				250ml		alka.		
E						TDS		
F				↓		Sulfate		
G				1 L.		Cyanide	>12	
40449702A	BOBRL0 / water	↓	glass	1 L.	↓	Metals, GFAA	<2	

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions: [23] As per WHC Contract

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: [25]
Return to Client ☒ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: [26]
Normal ☒ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0042

1. Relinquished by [28] (Signature/Affiliation) Heidelberg IT	Date: 4-28-94 Time: 16:00	1. Received by [28] (Signature/Affiliation) Bryan Blanquist ITASKW	Date: 4/29/94 Time: 8:45
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

9613496.2998

0000051

000154

INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#452
RL#562

Reference Document No.[30] 453608

Project Name SAF 94-130

Project No. SDL-W0042

Samples Shipment Date 4-28-94

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.
40449703 A	BOBNM9 / water	4/25 1430	glass	1 L.	Cool 4°	Metals, G-FAA	5°C BPS 1/24/94 <2	
B			↓	500ml		ANIONS, SO_4, NO_2, PO_4		
C			poly	↓		NO_2 NO_3	<2	
D				250ml		alka.		
E						TDS		
F				↓		Sulfate		
G				1 L.		Cyanide	>12	
40449704 A	BOBNN0 / water		glass	↓		Metals, G-FAA	<2	
40449705 A	BOBNN3 / water	4/25 1130		1 L.		Metals, G-FAA	<2	
B			↓	500ml		ANIONS, SO_4, NO_2, PO_4		
C			poly	↓		NO_2, NO_3	<2	
D				250ml		alka.		
E						TDS		
F				↓		Sulfate		
G				1 L		Cyanide	>12	
40449706 A	BOBNN4 / water		glass	↓		Metals, G-FAA	<2	
40449707 A	BOBNN5 / water	4/26 1300		1 L.		Metals, G-FAA	<2	
B			↓	500ml		ANIONS, SO_4, NO_2, PO_4		
C			poly	↓		NO_2, NO_3	<2	
D			↓	250ml		alka.		

White: To accompany samples
Yellow: Field copy

*See back of form for special instructions

MCA 3/15/91

9613496.2999

0000052

000155

INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#45~~2~~ RL#562

Reference Document No.[30] 453608

Page 3 of 3

Project Name SAF 94-130

Project No. SDG W0042

Samples Shipment Date 4-28-94

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.
40449707 E	BOBNN5/Water	4/26 1300	poly	250ml	Cool 4°	TDS	5°C BPB 4/29/94	
F						Sulfate		
G				1L		Cyanide	>12	
40449708 A	BOBNN6/water		glass			Metals, GFAA	<2	
40449709 A	BOBRL5/Water	4/26 0755		1L		Metals, GFAA	<2	
B				500ml		ANIONS, SO4, NO2, PO4		
C			poly			NO2, NO3	<2	
D				250ml		alka.		
E						TDS		
F				1L		~~Sulfate~~ TH 4/26/94		
G				1L		Cyanide	>12	
40449710 A	BOBRL6/water		glass			Metals, GFAA	<2	
40449711 A	BOBNK1/water	4/26 1045		1L		Metals, GFAA	<2	
B				500ml		ANIONS, SO4, NO2, PO4		
C			poly			NO2, NO3	<2	
D				250ml		alka		
E						TDS		
F						Sulfate		
G				1L		Cyanide	>12	
40449712 A	BOBNK2/water		glass			Metals, GFAA	<2	

OK TH 4/26/94

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

MCA 3/15/91

96134963000
0000053
0001156

WO#452

RL#563

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001547*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 453621

Page 1 of 2

Project Name/No. 1: 94-130

Sample Team Members 2:

Profit Center No. 3: 4632

Project Manager 4: Vanpetley

Purchase Order No. 6:

Required Report Date 11:

Samples Shipment Date 7: 4/28/94

Lab Destination 8: Middle brook

Lab Contact 9:

Project Contact/Phone 12:

Carrier/Waybill No. 13: FedEx ~~1509313924~~ KMK 4-29-94 → 150 9407 794

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
40453801A	BOBNH7 /H2O	4/26/94 0930	Glass	1000ml	HNO3 4°C	Metals ICP GFAA	5°C KAK 4-29-94 pH=<2	
B				500ml		Anions F Cl SO4 NO2 PO4		
C			Poly		H2SO4	NO2/NO3	pH=<2	
D				250ml		Alka		
E						TDS		
F						Sulfate		
G				1000ml	NaOH	CN	pH=10	
40453802A 4/28/94	BOBNH8 /H2O		Glass		HNO3	Metals ICP GFAA	pH=<2	

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: 26
Normal ☐ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0042

1. Relinquished by 28 (Signature/Affiliation) Tom [signature] ITAS	Date: 4/28/94 Time: 1600	1. Received by 28 (Signature/Affiliation) Kenny A Klemm ITAS-KN	Date: 4-29-94 Time: 12:25
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

Wipes #54 = cooler
#55 - samples

MCA 3/15/91

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

9613496.3001

0000054

000157

WO#452

INTERNATIONAL TECHNOLOGY CORPORATION

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

Reference Document No.[30] 453621

Page 2 of 2

Project Name

Project No. 94-130

Samples Shipment Date 4/28/94

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.
→ 40453803A	BOBRL9 /H_2O	4/26/94 0930	G	1000 ml	HNO_3 4°C	Metals ICP GFAA	5°C pH<2 KMK 4/29/94	
B				500 ml		Anions F Cl SO4 NO2 PO4		
C			P		H_2SO_4	NO2/NO3	pH<2	
D				250 ml		Alka		
E						TDS		
F						Sulfate		
G				1000 ml	NaOH	CN	pH=11	
→ 40453804A	BOBRM0 /H_2O		G		HNO_3	Metals ICP GFAA	pH<2	
→ 40453805A	BOBNL5 /H_2O	4/27/94 1005					pH<2	
B				500 ml		Anions F Cl SO4 NO2 PO4		
C			P		H_2SO_4	NO2/NO3	pH<2	
D				250 ml		Alka		
E						TDS		
F						Sulfate		
G				1000 ml	NaOH	CN	pH=11	
→ 40453806A	BOBNL6 /H_2O		G		HNO_3	Metals ICP GFAA		
4/28/94								

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

9613496.3002

0000055

000158

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001559*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO# 465
RL# 588

Reference Document No. 453617
Page 1 of 1

Project Name/No. 1: SAF 94-130
Sample Team Members 2:
Profit Center No. 3: 4632
Project Manager 4: Van Pettey
Purchase Order No. 6:
Required Report Date 11:

Samples Shipment Date 7: 4-29-94
Lab Destination 8: Middlebrook
Lab Contact 9:
Project Contact/Phone 12:
Carrier/Waybill No. 13: 150 9933 747

Bill to: 5 IT Richland
Report to: 10 IT 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
40456801 A	BOBRM1 / Water	4/27 1005	G	1 L.	Cool 4°	Metals, GFAA	4°C BPD 4/30/94 <2	
B			G	500ml		ANIONS, SO4, NO2, PO4		
C			P	↓		NO2, NO3	<2	
D			P	250ml		alka.		
E			P			TDS		
F			P	↓		Sulfate		
G			P	1 L.		Cyanide	10	
40456802 A	BOBRM2 / Water		G	1 L.		Metals, GFAA	<2	

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions: 23 As per WHC Contract

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25
Return to Client ☒ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: 26
Normal ☒ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDL W0042

1. Relinquished by 31 (Signature/Affiliation) Heidelberg IT	Date: 4-29-94 Time: 16:00	1. Received by 28 (Signature/Affiliation) Bryan Blanquart ITASKM	Date: 4/30/94 Time: 9:35
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

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

MCA 3/15/91

9613496.3003

0000056

000159

9613496.3004

000002D

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0107
Record of Disposition No.

DATE: May 2, 1994	LABORATORY: IT/TMA
PROJECT TITLE/NO.: 200-BP-5/94-130	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

All samples which were not analyzed prior to this notification.

MAY 10 1994

DESCRIPTION OF EVENT:

The analysis for sulfate by methods EPA 300.0 and EPA 375.4 was requested on the Sampling Authorization Form (SAF). This redundancy in analysis is not necessary.

DISPOSITION OF SAMPLES:

Discontinue analysis for sulfate by EPA 375.4.

APPROVAL SIGNATURES:

R. C. Smith/ R Clayt Smith — 5/2/94
OSM Project Coordinator (Print/Sign Name) — Date

D. B. Erb/ David B. Erb — 5/3/94
Technical Representative (Print/Sign Name) — Date

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

9613496.3005

000002C

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0108
Record of Disposition No.

DATE: May 2, 1994	LABORATORY: TMA
PROJECT TITLE/NO.: 200-BP-5/94-130	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

B0BRM7

DESCRIPTION OF EVENT:

The sample bottle for anions analysis was broken at the lab.

DISPOSITION OF SAMPLES:

Use the sulfate aliquot (analysis canceled by ROD-94-0107) to run anions analysis.

APPROVAL SIGNATURES:

R. C. Smith/ R Clayt Smith — 5/2/94
OSM Project Coordinator (Print/Sign Name) — Date

D. B. Erb/ David B Erb — 5/3/94
Technical Representative (Print/Sign Name) — Date

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

9613496.3006

CUR #1547

Work Order No.: 452

Condition Upon Receipt Variance Report

ITAS - -KNOXVILLE Laboratory

Client: ITAS - Richland Date: 4-29-94

Project No: Westinghouse Hanford ISAF94-130 Initiated by: KAK

Analysis Requested: Metals, Anions, NO2/NO3, Alk, TDS, SO4, CN⁻ RFA/COC Numbers: 453621

Client Sample Numbers Affected: 404538-01 ; -03 ; -05

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 -01 = 10 ; -03 = 11 ; -05 = 11
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
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): _____

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: _____ Date: _____

Project Management Review: Sherie Schreich Date: 4/30/94

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

9613496.3007

CUR #1559

Work Order No.: 465

Condition Upon Receipt Variance Report

ITAS - KNOXVILLE Laboratory

Client: WHC

Date: 5/02/94

Project No: 94-130

Initiated by: [illegible]

Analysis Requested: Cl^-, Anions

RFA/COC Numbers: 453617

Client Sample Numbers Affected: 404568-01G, 404568-01B

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 10
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
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): Anions rec'd past H.T.

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: K.A. Klemm Date: 5-3-94

Project Management Review: Sherie Schwich Date: 5-3-94

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

9613496.3008

VEDD Printout

VALIDATION ELECTRONIC DELIVERABLE SDG W0042-ITC-048

Wednesday, September 14, 1994

HEIS-SN	Form	FormNr	LabCode	ConstID	Media	Value	ConcFlag	Qual	CountErr	Units
B0BRK9	NCLP	NA	ITASKN	7440-70-2	SW			U		
B0BRL0	NCLP	NA	ITASKN	7440-70-2	SW			U		
B0BRL5	NCLP	NA	ITASKN	7440-70-2	SW			U		
B0BRL6	NCLP	NA	ITASKN	7440-70-2	SW			U		
B0BNH8	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BNK1	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BNK2	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BNL6	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BNN0	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BNN3	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BNN4	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BNN6	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BRK9	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BRL0	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BRL5	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BRL6	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BRM0	NCLP	NA	ITASKN	7439-89-6	SW			U		
B0BRM1	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BRM2	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BRM9	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BNH8	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BNK1	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BNK2	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BNH7	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BNL5	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BNL6	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BNN4	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BNN5	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BNN6	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BRL6	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BRL9	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BRM0	NCLP	NA	ITASKN	7440-09-7	SW			U		
B0BRM1	NCLP	NA	ITASKN	7782-49-2	SW			UJ		

Entered by: Jm 9/15/94

Checked by: BM 9-15-94

96134961.3009

000165

HEIS-SN	Form	FormNr	LabCode	ConstID	Media	Value	ConcFlag	Qual	CountErr	Units
B0BRM2	NCLP	NA	ITASKN	7782-49-2	SW			UJ		
B0BNN3	NCLP	NA	ITASKN	7782-49-2	SW			J		
B0BNN4	NCLP	NA	ITASKN	7782-49-2	SW			J		
B0BRM1	NCLP	NA	ITASKN	7440-69-9	SW			UJ		
B0BNN6	NCLP	NA	ITASKN	7440-69-9	SW			UJ		
B0BRK9	NCLP	NA	ITASKN	7440-31-5	SW			U		
B0BRL0	NCLP	NA	ITASKN	7440-31-5	SW			U		
B0BRL5	NCLP	NA	ITASKN	7440-31-5	SW			U		
B0BRL6	NCLP	NA	ITASKN	7440-31-5	SW			U		
B0BNH7	NCLP	NA	ITASKN	5955-70-0	SW			J		
B0BNN3	NCLP	NA	ITASKN	5955-70-0	SW			J		
B0BRM1	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BNM9	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BNK1	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BNH7	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BNL5	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BNN3	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BNN5	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BRK9	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BRL5	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BRL9	NCLP	NA	ITASKN	14797-65-0	SW			UR		
B0BRM1	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BNM9	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BNK1	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BNH7	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BNL5	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BNN3	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BNN5	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BRK9	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BRL5	NCLP	NA	ITASKN	14265-44-2	SW			UR		
B0BRL9	NCLP	NA	ITASKN	14265-44-2	SW			UR		

Entered by: Jon 9/15/94

Checked by: BM 9-15-94

9613496.3010

000169

END OF PACKAGE

96134964.3011