W0267-QES

0045486

Quanterra
Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
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CERTIFICATE OF ANALYSIS

Bechtel Hanford Incorporated
P.O. Box 1970
Richland, Washington 99352

December 10, 1994

Attention: Joan Kessner

OCT 1996 RECEIVED EDMC

DEC 1994 RECEIVED

Project number	:	550.23
Date Received	:	October 22,24,25 and 27, 1994
Number of Samples	:	Twenty (20)
Sample Type	:	Water
SDG Number	:	W0267
Data Deliverable	:	Standalone

RECORD COPY

I. Introduction

Between October 22 and 27, 1994, twenty (20) water samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the samples were given the following laboratory ID numbers to correspond with their specific client ID's:

St Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
6584-001	B0D4H4	41045001	Water	10/22/94
6584-002	B0D4P4	41045003	Water	10/22/94
6584-003	B0D4L6	41045005	Water	10/22/94
6584-004	B0D4H5	41045002	Water	10/22/94
6584-005	B0D4P5	41045004	Water	10/22/94
6584-006	B0D4L7	41045006	Water	10/22/94
6603-001	B0D4H0	41048201	Water	10/24/94
6603-002	B0D4K6	41048203	Water	10/24/94
6603-003	B0D4N8	41048205	Water	10/24/94
6603-004	B0D4H1	41048202	Water	10/24/94
6603-005	B0D4K7	41048204	Water	10/24/94
6603-006	B0D4N9	41048206	Water	10/24/94
6616-001	B0D4L8	41050101	Water	10/25/94
6616-002	B0D4M2	41050103	Water	10/25/94

Bechtel Hanford Incorporated
December 10, 1994
Project Number: 550.23
SDG: W0267

St Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
6616-003	B0D4P2	41050105	Water	10/25/94
6616-004	B0D4L9	41050102	Water	10/25/94
6616-005	B0D4M3	41050104	Water	10/25/94
6616-006	B0D4P3	41050106	Water	10/25/94
6631-001	B0D4M0	41053901	Water	10/27/94
6631-002	B0D4M1	41053902	Water	10/27/94

II. Analytical Results/ Methodology

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

Analyses requested: Total and dissolved TAL Metals using EPA CLP methodology. Cyanide and Selenium using EPA CLP methodology. Anions including Chloride, Fluoride, Nitrite, Phosphate, and Sulfate by EPA method 300.0. Total Dissolved Solids by EPA method 160.1. Alkalinity by EPA method 310.1

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Sample Duplicate analyses were performed per the protocol for this SDG.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike

V. Comments

Samples 6603-001,-002,-003, 6616-001,-002,-003, and 6631-001 were received with pH < 12. Protocol states that proper preservation of the sample for this analysis should have pH > 12.

All samples requiring NO2, NO3, and PO4 analyses by EPA 300.0 were received out of holding time for this analysis.

Matrix Spike recoveries for selenium on samples 6584-001 and 6584-004 were outside of the suggested control limits of 75-125%.

Cyanide results for Peak # 72 and Peak # 78 had to be hand calculated using peak height do to incorrect instrument integration.

The Relative Percent Difference (RPD) could not be calculated for the Cyanide analysis of sample 6584-001 due to values below the detection limit.

The Fluoride analyses of samples 6584-002 and 6616-0003 showed hits, yet the peak areas were less than the lowest calibration standard, so the results are reported as nondetected.

The RPD could not be calculated for PO4 and NO2 for sample 6584-001 due to both sample and duplicate results both being below the detection limit.

Quanterra
Environmental Services

I certify that this data package 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:

Wade H. Price
Project Manager
e:\\sqtlmo01\price$\abbydave\hanford\hanw0267.nar

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EPA SAMPLE NO.

B0D4H0

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-001

Level (low/med): LOW__ Date Received: 10/24/94

% 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_	24.9	U		P
7440-70-2	Calcium__	30200			P
7439-89-6	Iron____	307		*	P
7439-95-4	Magnesium	10300		E	P
7439-96-5	Manganese	15.0			P
7440-09-7	Potassium	1940	U		P
7782-49-2	Selenium_	6.5	U	N	F
7440-23-5	Sodium___	20900			P
	Cyanide__	4.0	B		AS
7440-21-3	Silicon__	15800			P
7440-69-9	Bismuth__	38.0	U		P

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EPA SAMPLE NO.

B0D4H1

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-004

Level (low/med): LOW__ Date Received: 10/24/94

% 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_	24.9	U		P
7440-70-2	Calcium__	38800			P
7439-89-6	Iron____	60.6	B	*	P
7439-95-4	Magnesium	12100		E	P
7439-96-5	Manganese	9.5	B		P
7440-09-7	Potassium	4850	B		P
7782-49-2	Selenium_	6.5	U	N	F
7440-23-5	Sodium___	20900			P
	Cyanide__				NR
7440-21-3	Silicon__	18000			P
7440-69-9	Bismuth__	100			P

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EPA SAMPLE NO.

B0D4H4

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-001

Level (low/med): LOW__ Date Received: 10/22/94

% 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_	38.2	B		P
7440-70-2	Calcium__	42600			P
7439-89-6	Iron_____	556		*	P
7439-95-4	Magnesium	12500		E	P
7439-96-5	Manganese	9.5	B		P
7440-09-7	Potassium	6880			P
7782-49-2	Selenium_	6.5	U	WN	F
7440-23-5	Sodium___	23400			P
	Cyanide__	1.2	U		AS
7440-21-3	Silicon__	20000			P
7440-69-9	Bismuth__	38.0	U		P

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EPA SAMPLE NO.

B0D4H5

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-004

Level (low/med): LOW__ Date Received: 10/22/94

% 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_	24.9	U		P_
7440-70-2	Calcium__	44000			P_
7439-89-6	Iron___	226		*	P_
7439-95-4	Magnesium	12500		E	P_
7439-96-5	Manganese	7.7	B		P_
7440-09-7	Potassium	6490			P_
7782-49-2	Selenium_	1.3	U	WN	F_
7440-23-5	Sodium___	23500			P_
	Cyanide__				NR
7440-21-3	Silicon__	20000			P_
7440-69-9	Bismuth__	38.0	U		P_

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EPA SAMPLE NO.

B0D4K6

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-002

Level (low/med): LOW__ Date Received: 10/24/94

% 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_	24.9	U		P_
7440-70-2	Calcium__	97100			P_
7439-89-6	Iron____	352		*	P_
7439-95-4	Magnesium	30300		E	P_
7439-96-5	Manganese	10.8	B		P_
7440-09-7	Potassium	1940	U		P_
7782-49-2	Selenium_	12.3	B	N	F_
7440-23-5	Sodium___	46100			P_
	Cyanide__	160			AS
7440-21-3	Silicon__	18000			P_
7440-69-9	Bismuth__	46.3	B		P_

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EPA SAMPLE NO.

B0D4K7

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-005

Level (low/med): LOW__ Date Received: 10/24/94

% 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_	24.9	U		P_
7440-70-2	Calcium__	101000			P_
7439-89-6	Iron____	133		*	P_
7439-95-4	Magnesium	30400		E	P_
7439-96-5	Manganese	6.6	B		P_
7440-09-7	Potassium	10100			P_
7782-49-2	Selenium_	10.8	B	N	F_
7440-23-5	Sodium___	45100			P_
	Cyanide__				NR
7440-21-3	Silicon__	18200			P_
7440-69-9	Bismuth__	135			P_

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EPA SAMPLE NO.

B0D4L6

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-003

Level (low/med): LOW__ Date Received: 10/22/94

% 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_	25.6	B		P
7440-70-2	Calcium__	33700			P
7439-89-6	Iron____	320		*	P
7439-95-4	Magnesium	11200		E	P
7439-96-5	Manganese	9.4	B		P
7440-09-7	Potassium	5390			P
7782-49-2	Selenium_	1.3	U	WN	F
7440-23-5	Sodium___	14100			P
	Cyanide__	1.2	U		AS
7440-21-3	Silicon__	32900			P
7440-69-9	Bismuth__	38.0	U		P

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EPA SAMPLE NO.

B0D4L7

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-006

Level (low/med): LOW__ Date Received: 10/22/94

% 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	25.5	B		P
7440-70-2	Calcium	32100			P
7439-89-6	Iron	156		*	P
7439-95-4	Magnesium	11500		E	P
7439-96-5	Manganese	8.1	B		P
7440-09-7	Potassium	8520			P
7782-49-2	Selenium	6.5	U	WN	F
7440-23-5	Sodium	14500			P
	Cyanide				NR
7440-21-3	Silicon	33800			P
7440-69-9	Bismuth	41.0	B		P

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EPA SAMPLE NO.

B0D4L8

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-001

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P_
7440-70-2	Calcium__	27300			P_
7439-89-6	Iron____	141		*	P_
7439-95-4	Magnesium	10300		E	P_
7439-96-5	Manganese	5.0	B		P_
7440-09-7	Potassium	3910	B		P_
7782-49-2	Selenium_	6.5	U	N	F_
7440-23-5	Sodium___	25800			P_
	Cyanide__	5.4			AS
7440-21-3	Silicon__	17000			P_
7440-69-9	Bismuth__	98.5	B		P_

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EPA SAMPLE NO.

B0D4L9

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-004

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P
7440-70-2	Calcium__	27600			P
7439-89-6	Iron____	58.9	B	*	P
7439-95-4	Magnesium	10400		E	P
7439-96-5	Manganese	3.4	B		P
7440-09-7	Potassium	4190	B		P
7782-49-2	Selenium_	6.5	U	N	F
7440-23-5	Sodium___	25800			P
	Cyanide__				NR
7440-21-3	Silicon__	17000			P
7440-69-9	Bismuth__	102			P

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EPA SAMPLE NO.

B0D4M0

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6631-001

Level (low/med): LOW__ Date Received: 10/27/94

% 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_	24.9	U		P_
7440-70-2	Calcium__	79500			P_
7439-89-6	Iron_____	384		*	P_
7439-95-4	Magnesium	22600		E	P_
7439-96-5	Manganese	27.2			P_
7440-09-7	Potassium	6910			P_
7782-49-2	Selenium_	11.6	B	WN	F_
7440-23-5	Sodium___	29600			P_
	Cyanide__	78.9			AS
7440-21-3	Silicon__	15300			P_
7440-69-9	Bismuth__	118			P_

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EPA SAMPLE NO.

B0D4M1

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6631-002

Level (low/med): LOW__ Date Received: 10/27/94

% 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	24.9	U		P
7440-70-2	Calcium	79200			P
7439-89-6	Iron	94.2	B	*	P
7439-95-4	Magnesium	22400		E	P
7439-96-5	Manganese	24.2			P
7440-09-7	Potassium	5080			P
7782-49-2	Selenium	8.6	B	N	F
7440-23-5	Sodium	29900			P
	Cyanide				NR
7440-21-3	Silicon	15400			P
7440-69-9	Bismuth	123			P

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EPA SAMPLE NO.

B0D4M2

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-002

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P
7440-70-2	Calcium__	31100			P
7439-89-6	Iron____	70.5	B	*	P
7439-95-4	Magnesium	9650		E	P
7439-96-5	Manganese	5.1	B		P
7440-09-7	Potassium	4700	B		P
7782-49-2	Selenium_	6.5	U	N	F
7440-23-5	Sodium___	26600			P
	Cyanide__	3.1	B		AS
7440-21-3	Silicon__	19200			P
7440-69-9	Bismuth__	96.8	B		P

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EPA SAMPLE NO.

B0D4M3

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-005

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P
7440-70-2	Calcium__	31000			P
7439-89-6	Iron_____	114		*	P
7439-95-4	Magnesium	9630		E	P
7439-96-5	Manganese	5.7	B		P
7440-09-7	Potassium	4140	B		P
7782-49-2	Selenium_	6.5	U	N	F
7440-23-5	Sodium___	26600			P
	Cyanide__				NR
7440-21-3	Silicon__	19100			P
7440-69-9	Bismuth__	91.0	B		P

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EPA SAMPLE NO.

B0D4N8

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-003

Level (low/med): LOW__ Date Received: 10/24/94

% 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_	32.4	B		P
7440-70-2	Calcium__	102000			P
7439-89-6	Iron____	308		*	P
7439-95-4	Magnesium	31000		E	P
7439-96-5	Manganese	9.9	B		P
7440-09-7	Potassium	8150			P
7782-49-2	Selenium_	8.6	B	N	F
7440-23-5	Sodium___	46100			P
	Cyanide__	143			AS
7440-21-3	Silicon__	18600			P
7440-69-9	Bismuth__	106			P

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EPA SAMPLE NO.

B0D4N9

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-006

Level (low/med): LOW__ Date Received: 10/24/94

% 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_	24.9	U		P
7440-70-2	Calcium__	101000			P
7439-89-6	Iron____	122		*	P
7439-95-4	Magnesium	30500		E	P
7439-96-5	Manganese	6.1	B		P
7440-09-7	Potassium	8300			P
7782-49-2	Selenium_	8.8	B	N	F
7440-23-5	Sodium___	45400			P
	Cyanide__				NR
7440-21-3	Silicon__	18200			P
7440-69-9	Bismuth__	129			P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4P2

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-003

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P_
7440-70-2	Calcium__	14900			P_
7439-89-6	Iron____	244		*	P_
7439-95-4	Magnesium	3510	B	E	P_
7439-96-5	Manganese	7.2	B		P_
7440-09-7	Potassium	1940	U		P_
7782-49-2	Selenium_	1.3	U	WN	F_
7440-23-5	Sodium___	1850	B		P_
	Cyanide__	2.1	B		AS
7440-21-3	Silicon__	1330			P_
7440-69-9	Bismuth__	90.8	B		P_

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4P3

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-006

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P_
7440-70-2	Calcium__	11600			P_
7439-89-6	Iron____	409		*	P_
7439-95-4	Magnesium	2730	B	E	P_
7439-96-5	Manganese	5.4	B		P_
7440-09-7	Potassium	1940	U		P_
7782-49-2	Selenium_	1.3	U	N	F_
7440-23-5	Sodium___	1470	B		P_
	Cyanide__				NR
7440-21-3	Silicon__	1070			P_
7440-69-9	Bismuth__	63.8	B		P_

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4P4

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-002

Level (low/med): LOW__ Date Received: 10/22/94

% 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	24.9	U		P
7440-70-2	Calcium	2360	B		P
7439-89-6	Iron	45.1	B	*	P
7439-95-4	Magnesium	1000	B	E	P
7439-96-5	Manganese	5.1	B		P
7440-09-7	Potassium	1940	U		P
7782-49-2	Selenium	1.3	U	N	F
7440-23-5	Sodium	643	B		P
	Cyanide	1.2	U		AS
7440-21-3	Silicon	224			P
7440-69-9	Bismuth	38.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4P5

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-005

Level (low/med): LOW__ Date Received: 10/22/94

% 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_	24.9	U		P_
7440-70-2	Calcium__	2190	B		P_
7439-89-6	Iron____	45.3	B	*	P_
7439-95-4	Magnesium	1000	B	E	P_
7439-96-5	Manganese	5.2	B		P_
7440-09-7	Potassium	1940	U		P_
7782-49-2	Selenium_	1.3	U	N	F_
7440-23-5	Sodium___	678	B		P_
	Cyanide__				NR
7440-21-3	Silicon__	270			P_
7440-69-9	Bismuth__	38.0	U		P_

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: Alkalinity
Method: EPA 310.1
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0D4H4	6584-001	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	106	MG/L		10.0	1
B0D4H4	6584-001DUP	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	107	MG/L		10.0	1
B0D4P4	6584-002	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	42.0	MG/L		10.0	1
B0D4L6	6584-003	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	122	MG/L		10.0	1
B0D4H0	6603-001	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	102	MG/L		10.0	1
B0D4K6	6603-002	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	95.0	MG/L		10.0	1
B0D4N8	6603-003	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	110	MG/L		10.0	1
B0D4L8	6616-001	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	114	MG/L		10.0	1
B0D4M2	6616-002	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	108	MG/L		10.0	1
B0D4P2	6616-003	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	46.0	MG/L		10.0	1
B0D4M0	6631-001	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	114	MG/L		10.0	1
NA	QCBLK50195-1	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	5.00	MG/L	U	5.00	1
NA	QCBLK50217-1	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	5.00	MG/L	U	5.00	1
NA	QCLCS50195-1	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	94	%REC			1
NA	QCLCS50217-1	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	95	%REC			1

ITAS - ST. LOUIS
ALKALINITY

PREP DATE: 11-02-94
ANALYSIS DATE: 11-02-94
ANALYST: S. Rappe
BATCH NO.: 50195

REVIEWED BY: R. Pattison / 11-17-94
REVIEWED BY: R. Pattison / 11-17-94
METHOD: 310.1
PROJECT: 362.93 550.23

LAB ID	VOL/WT (ml/g)	Titrated VOL(ml)	SAMPLE pH	Solid Fraction	STD ACID BURET READING (ml) FINAL 4.5pH	FINAL 4.2pH	FINAL 8.3pH	INITIAL 4.5pH	INITIAL 4.2pH	INITIAL 8.3pH	NET 4.5pH	NET 4.2pH	NET 8.3pH	ALKALINITY (mg/L OR µg/g) as CaCO3 Total at 4.5pH	Low at 4.2pH	Phenol 8.3pH	ALKALINITY Carb mg/L µg/g	Bicarb mg/L µg/g
I2040-94 CAL BUFFER 4.0	—	—	4.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
I2037-93 CAL BUFFER 12.0	—	—	12.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
I2002-94 CHK BUFFER 7.0	—	—	7.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
QC BLK 50195-1	100	100	6.02	N/A	0.22	0.39	—	0	0	—	0.22	0.39	—	—	<5	—	—	—
I2038-94 QC LCS 50195-1	20	20	11.08		18.70	—	—	0	—	—	18.70	—	—	935	—	—	—	—
6615-001	50	50	7.34		3.71	—	—	0	—	—	3.71	—	—	74.2	—	0	—	—
-001 DUP	50	↓	7.35		3.68	—	—	0	—	—	3.68	—	—	73.6	—	0	—	—
-002	100	100	5.95		0.41	0.68	—	0	0	—	0.41	0.68	—	—	<5	0	—	—
6560-001	50	50	8.46		5.12	—	0.31	0	—	0	5.12	—	0.31	102	—	—	—	—
-002	50		8.62		5.18	—	0.30	0	—	0	5.18	—	0.30	104	—	—	—	—
-003	50		8.49		5.59	—	0.10	0	—	0	5.59	—	0.10	112 ~~130~~ 11-7-94	—	—	—	—
-004	50		8.60		5.46	—	0.17	0	—	0	5.46	—	0.17	109 ~~132~~ 11-7-94	—	—	—	—
-005	50		8.60		5.40 ~~5.30~~ 11-2-94	—	0.18	0	—	0	5.40	—	0.18	108	—	—	—	—
6584-001	50		8.83		5.30	—	0.31	0	—	0	5.30	—	0.31	106	—	—	—	—
-001 DUP	50		8.80		5.37	—	0.30	0	—	0	5.37	—	0.30	107	—	—	—	—
-002	50		7.82		2.08	—	—	0	—	—	2.08	—	—	42	—	—	—	—
-003	50		9.22		6.08	—	0.58	0	—	0	6.08	—	0.58	122	—	—	—	—
6603-001	50		8.83		5.11	—	0.12	0	—	0	5.11	—	0.12	102	—	—	—	—
-002	50		8.66		4.74	—	0.10	0	—	0	4.74	—	0.10	95	—	—	—	—
-003	50	↓	8.70	↓	5.51	—	0.11	0	—	0	5.51	—	0.11	110	—	—	—	—

LCS True Value = 1000 mg/L
Percent Recovery = 94
DUP RPD = <1, <1

Alkalinity mg/L or µg/g = ml Std Acid x Nstd Acid x 50,000 / ml or g of Titrated Sample x Solid Fraction

N Titrant = 0.02

Low Alkalinity mg/L or µg/g = (2B - C) x N x 50,000 / ml of Titrated Sample

where: B = ml of titrant to reach pH 4.5
C = ml of titrant from initial to pH 4.2
N = Normality of titrant

SL-91 INORG-0052 Rev. 1

0047

ITAS - ST. LOUIS
ALKALINITY

PREP DATE: 11-02-94
ANALYSIS DATE: 11-02-94
ANALYST: S. Pepper
BATCH NO.: 50217

REVIEWED BY: R. Patterson / 11-23-94
REVIEWED BY: R. Patterson / 11-23-94
METHOD: 310.1
PROJECT: 340.05 550 23

LAB ID	VOL/WT (ml/g)	Titrated VOL(ml)	SAMPLE pH	Solid Fraction	STD ACID BURET READING (ml) FINAL 4.5pH	FINAL 4.2pH	FINAL 8.3pH	INITIAL 4.5pH	INITIAL 4.2pH	INITIAL 8.3pH	NET 4.5pH	NET 4.2pH	NET 8.3pH	ALKALINITY as (mg/L) OR µg/g CaCO3 Total at 4.5pH	Low at 4.2pH	Pheno 8.3pH	ALKALINITY Carb mg/L µg/g	Bicar mg/L µg/g
I#0140-94 CAL BUFFER 4.0	—	—	4.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
I#0307-93 CAL BUFFER 12.0	—	—	12.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
I#0002-94 CHK BUFFER 7.0	—	—	7.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
QC BLK 50217-1	100	100	5.90	N/A	0.15	0.22	—	0	0	—	0.15	0.22	—	—	<5.00	—	✓	—
I#0390-94 QC LCS 50217-1	20	20	11.07		18.99	—	—	0	—	—	18.99	—	—	950	—	—	✓	—
6602-001	SP 11-02-94 50 25	25	8.24		8.61	—	—	0	—	—	8.61	—	—	344	—	—	✓	—
-004	25	↓	8.90		6.83	—	0.30	0	—	0	6.83	—	0.30	273	—	—	✓	—
-005	25	↓	8.29		9.02	—	—	0	—	—	9.02	—	—	361	—	—	✓	—
-006	25	↓	8.29		8.71	—	—	0	—	—	8.71	—	—	348	—	—	✓	—
6616-001	50	50	9.15		5.70	—	0.54	0	—	0	5.70	—	0.54	114	—	—	✓	—
-002	50	↓	9.07		5.41	—	0.42	0	—	0	5.41	—	0.42	108	—	—	✓	—
-003	50	↓	8.07		2.30	—	—	0	—	—	2.30	—	—	46.0	—	—	✓	—
6630-001	50	↓	9.17		6.91	—	0.39	0	—	0	6.91	—	0.39	138	—	—	✓	—
-002	100	100	6.60		1.39	2.12	—	0	0	—	1.39	2.12	—	—	6.60	—	✓	—
-003	100 SP 11-02-94	↓	7.41		1.42	2.18	—	0	0	—	1.42	2.18	—	—	6.60	—	✓	—
6631-001	50	50	8.77		5.70	—	0.30	0	—	0	5.70	—	0.30	114	—	—	✓	—
6646-001	50	↓	8.94		5.91	—	0.34	0	—	0	5.91	—	0.34	118	—	—	✓	—
6666-001	50	↓	8.93		5.75	—	0.33	0	—	0	5.75	—	0.33	115	—	—	✓	—
-001 DUP	50	↓	8.93		5.87	—	0.31	0	—	0	5.87	—	0.31	117	—	—	✓	—
6687-001	50	↓	8.91	✓	5.00	—	0.31	0	—	0	5.00	—	0.31	100	—	—	✓	—

LCS True Value = 100mg/L ✓
Percent Recovery = 95 ✓
DUP RPD = 2 ✓

Alkalinity mg/L or µg/g = $\frac{\text{ml Std Acid x Nstd Acid x 50,000}}{\text{ml or g of Titrated Sample x Solid Fraction}}$ N Titrant = 0.02

Low Alkalinity mg/L or µg/g = $\frac{(2B - C) \times N \times 50{,}000}{\text{ml of Titrated Sample}}$ where: B = ml of titrant to reach pH 4.5
C = ml of titrant from initial to pH 4.2
N = Normality of titrant

SL-91-INORG-0052, Rev. 1

0048

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: Chloride
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil
B0D4H4	6584-001	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	9.54	MG/L		2.50	10
B0D4H4	6584-001DUP	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	9.56	MG/L		2.50	10
B0D4H4	6584-001MS	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	96	%REC			10
B0D4P4	6584-002	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	2.78	MG/L		0.25	1
B0D4L6	6584-003	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	11.3	MG/L		2.50	10
B0D4N8	6603-003	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	20.0	MG/L		1.25	5
B0D4L8	6616-001	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	8.23	MG/L		1.25	5
B0D4M2	6616-002	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	14.8	MG/L		1.25	5
B0D4P2	6616-003	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	3.03	MG/L		0.25	1
B0D4M0	6631-001	Chloride	16887-00-6	QCBLK52046-1	11/18/94	11/18/94	19.3	MG/L		1.25	5
NA	QCBLK51661-1	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	0.25	MG/L	U	0.25	1
NA	QCBLK51910-2	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	0.25	MG/L	U	0.25	1
NA	QCBLK52046-1	Chloride	16887-00-6	QCBLK52046-1	11/18/94	11/18/94	0.25	MG/L	U	0.25	1
NA	QCLCS51661-1	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	92	%REC			1
NA	QCLCS51910-2	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	93	%REC			1
NA	QCLCS52046-1	Chloride	16887-00-6	QCBLK52046-1	11/18/94	11/18/94	93	%REC			1

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: FLUORIDE
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil
B0D4H4	6584-001	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.49	MG/L		0.10	1
B0D4H4	6584-001DUP	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.46	MG/L		0.10	1
B0D4H4	6584-001MS	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	101	%REC			1
B0D4P4	6584-002	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.10	MG/L	U	0.10	1
B0D4L6	6584-003	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.28	MG/L		0.10	1
B0D4H0	6603-001	Fluoride	16984-48-8	QCBLK52043-2	11/17/94	11/17/94	0.34	MG/L		0.10	1
B0D4K6	6603-002	Fluoride	16984-48-8	QCBLK52043-2	11/17/94	11/17/94	0.32	MG/L		0.10	1
B0D4N8	6603-003	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.31	MG/L		0.10	1
B0D4L8	6616-001	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.67	MG/L		0.10	1
B0D4M2	6616-002	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.59	MG/L		0.10	1
B0D4P2	6616-003	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.10	MG/L	U	0.10	1
B0D4M0	6631-001	Fluoride	16984-48-8	QCBLK52046-1	11/18/94	11/18/94	0.39	MG/L		0.10	1
NA	QCBLK51661-1	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.10	MG/L	U	0.10	1
NA	QCBLK51910-2	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.10	MG/L	U	0.10	1
NA	QCBLK52043-2	Fluoride	16984-48-8	QCBLK52043-2	11/17/94	11/17/94	0.10	MG/L	U	0.10	1
NA	QCBLK52046-1	Fluoride	16984-48-8	QCBLK52046-1	11/18/94	11/18/94	0.10	MG/L	U	0.10	1
NA	QCLCS51661-1	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	88	%REC			1
NA	QCLCS51910-2	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	93	%REC			1
NA	QCLCS52043-3	Fluoride	16984-48-8	QCBLK52043-2	11/17/94	11/17/94	88	%REC			1
NA	QCLCS52046-1	Fluoride	16984-48-8	QCBLK52046-1	11/18/94	11/18/94	91	%REC			1

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: Nitrite
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0D4H4	6584-001	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	U	0.020	1
B0D4H4	6584-001DUP	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	U	0.020	1
B0D4H4	6584-001MS	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	103	%REC			5
B0D4P4	6584-002	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	U	0.020	1
B0D4L6	6584-003	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	U	0.020	1
B0D4H0	6603-001	Nitrite	7632-00-0	QCBLK52043-2	11/17/94	11/17/94	0.020	MG/L	U	0.020	1
B0D4K6	6603-002	Nitrite	7632-00-0	QCBLK52043-2	11/17/94	11/17/94	0.020	MG/L	U	0.020	1
B0D4N8	6603-003	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	U	0.020	1
B0D4L8	6616-001	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	U	0.020	1
B0D4M2	6616-002	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	U	0.020	1
B0D4P2	6616-003	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	U	0.020	1
B0D4M0	6631-001	Nitrite	7632-00-0	QCBLK52046-1	11/18/94	11/18/94	0.020	MG/L	U	0.020	1
NA	QCBLK51661-1	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	U	0.020	1
NA	QCBLK51910-2	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	U	0.020	1
NA	QCBLK52043-2	Nitrite	7632-00-0	QCBLK52043-2	11/17/94	11/17/94	0.020	MG/L	U	0.020	1
NA	QCBLK52046-1	Nitrite	7632-00-0	QCBLK52046-1	11/18/94	11/18/94	0.020	MG/L	U	0.020	1
NA	QCLCS51661-1	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	108	%REC			1
NA	QCLCS51910-2	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	100	%REC			1
NA	QCLCS52043-3	Nitrite	7632-00-0	QCBLK52043-2	11/17/94	11/17/94	100	%REC			1
NA	QCLCS52046-1	Nitrite	7632-00-0	QCBLK52046-1	11/18/94	11/18/94	98	%REC			1

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: ORTHOPHOSPHATE
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil
B0D4H4	6584-001	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	U	1.00	1
B0D4H4	6584-001DUP	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	U	1.00	1
B0D4H4	6584-001MS	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	96	%REC			1
B0D4P4	6584-002	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	U	1.00	1
B0D4L6	6584-003	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	U	1.00	1
B0D4H0	6603-001	Ortho-Phosphate	7778-77-0	QCBLK52043-2	11/17/94	11/17/94	1.00	MG/L	U	1.00	1
B0D4K6	6603-002	Ortho-Phosphate	7778-77-0	QCBLK52043-2	11/17/94	11/17/94	1.00	MG/L	U	1.00	1
B0D4N8	6603-003	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	U	1.00	1
B0D4L8	6616-001	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	U	1.00	1
B0D4M2	6616-002	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	U	1.00	1
B0D4P2	6616-003	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	U	1.00	1
B0D4M0	6631-001	Ortho-Phosphate	7778-77-0	QCBLK52046-1	11/18/94	11/18/94	1.00	MG/L	U	1.00	1
NA	QCBLK51661-1	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	U	1.00	1
NA	QCBLK51910-2	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	U	1.00	1
NA	QCBLK52043-2	Ortho-Phosphate	7778-77-0	QCBLK52043-2	11/17/94	11/17/94	1.00	MG/L	U	1.00	1
NA	QCBLK52046-1	Ortho-Phosphate	7778-77-0	QCBLK52046-1	11/18/94	11/18/94	1.00	MG/L	U	1.00	1
NA	QCLCS51661-1	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	94	%REC			1
NA	QCLCS51910-2	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	96	%REC			1
NA	QCLCS52043-3	Ortho-Phosphate	7778-77-0	QCBLK52043-2	11/17/94	11/17/94	96	%REC			1
NA	QCLCS52046-1	Ortho-Phosphate	7778-77-0	QCBLK52046-1	11/18/94	11/18/94	96	%REC			1

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: Sulfate
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0D4H4	6584-001	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	63.6	MG/L		10.0	10
B0D4H4	6584-001DUP	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	63.8	MG/L		10.0	10
B0D4H4	6584-001MS	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	84	%REC			10
B0D4P4	6584-002	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	13.8	MG/L		1.00	1
B0D4L6	6584-003	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	16.2	MG/L		1.00	1
B0D4H0	6603-001	Sulfate	14808-79-8	QCBLK52043-2	11/17/94	11/17/94	34.2	MG/L		5.00	5
B0D4K6	6603-002	Sulfate	14808-79-8	QCBLK52046-1	11/18/94	11/18/94	170	MG/L		20.0	20
B0D4N8	6603-003	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	182	MG/L		10.0	10
B0D4L8	6616-001	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	28.4	MG/L		5.00	5
B0D4M2	6616-002	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	36.2	MG/L		5.00	5
B0D4P2	6616-003	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	14.1	MG/L		1.00	1
B0D4M0	6631-001	Sulfate	14808-79-8	QCBLK52046-1	11/18/94	11/18/94	135	MG/L		10.0	10
NA	QCBLK51661-1	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	U	1.00	1
NA	QCBLK51910-2	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	U	1.00	1
NA	QCBLK52043-2	Sulfate	14808-79-8	QCBLK52043-2	11/17/94	11/17/94	1.00	MG/L	U	1.00	1
NA	QCBLK52046-1	Sulfate	14808-79-8	QCBLK52046-1	11/18/94	11/18/94	1.00	MG/L	U	1.00	1
NA	QCLCS51661-1	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	95	%REC			1
NA	QCLCS51910-2	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	95	%REC			1
NA	QCLCS52043-3	Sulfate	14808-79-8	QCBLK52043-2	11/17/94	11/17/94	93	%REC			1
NA	QCLCS52046-1	Sulfate	14808-79-8	QCBLK52046-1	11/18/94	11/18/94	94	%REC			1

Project #: 340.05, 262.01, 550.23, 519.118
Analyst: J. Flandreau
Reviewed By: R. Patterson / 11-28-94
Reviewed By: R. Patterson / 11-28-94
Page 1 of 2

QUANTERRA ST. LOUIS

ANIONS BY I.C.

ug/g ug/L (mg/L) (circle one)

Prep Date: 11-18-94
Analysis Date: 11-18-94
Loop Used: Soul
Batch #: 52046
Method #: 300.0

	Standard Value	Sample ID	Standard ID	Solid Fract.	Dil.	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
1		QCBLK52046				<0.100	<0.250	<1.00	<0.020	<1.00	<0.020	<0.250
2	Fl 1 Cl 1 SO4 4 NO3 2 NO2 .05 OP 4 Br 1	QCLCS52046	AL5977-94			0.914	0.932	3.78	0.194	3.86 JMF 11-21-94	0.078	0.994
3	↓	QCLCS52046	AL5978-94			~~0.911~~ JMF 11-21-94	~~0.938~~	3.78	~~0.195~~	~~3.84~~	~~0.078~~	~~0.990~~
4		6751-003			10	–	–	125	–	–	–	–
5		↓ 004			10	–	–	134	–	–	–	–
6		6603-002			20	–	–	170	–	–	–	–
7		6722-001			25	–	–	356	–	–	–	–
8		003			20	–	–	253	–	–	–	–
9		↓ 004			20	–	–	177	–	–	–	–
10		6631-001			Fl 1 Cl 5 SO4 10 NO2 1 OP 1	0.393	19.3	135	–	<1.00	<0.020	–
11		6652-001			1	<0.100	<0.250	<1.00	–	–	–	–
12		DUP 001			1	<0.100	<0.250	<1.00	–	–	–	–
13	Fl 2 SO4 20 Cl 20	MS 001	AL5979-94		Fl 1 SO4 5 Cl 5	2.07	20.1	19.8	–	–	–	–
14		6696-001			Cl 1 SO4 1 NO3 1 NO2 1 OP 1 Br 1	–	~~0.359~~ <0.250 JMF 11-23-94	<1.00	<0.020	<1.00	<0.020	<0.250
15		DUP 001			↓	–	<0.250	<1.00	<0.020	<1.00	<0.020	<0.250
16	Cl 20 NO3 .752 SO4 20 NO2 .609 OP 2 Br 2	MS 001	AL5980-94		Cl 5 SO4 5 NO3 1 NO2 5 OP 1 Br 1	–	20.2	19.6	0.460	2.00	0.635	1.98

% Recovery

	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
LCS-1	91	93	94	97	96	98	99
LCS-2	~~91~~	~~94~~	94	~~96~~	~~96~~	~~98~~	~~99~~
6652 MS	104	100	99				
6696 MS	–	101 ~~98~~ JMF 11-10-94	98	102	100	104	99
6666 MS	100	94	90	–	94	105	~~–~~ ~~100~~ JMF 11-21-94

RPD

	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
6652 DUP	*	*	*	–	–	–	–
6696 DUP	–	*	*	*	*	*	*
6666 DUP	4	1	1	–	*	*	* JMF 11-21-94

* can't calculate

0054

QUANTERRA ST. LOUIS

ANIONS BY I.C.

ug/g ug/L mg/L (circle one)

Project #: 340.05, 262.01, 550.23, 519.118
Analyst: J. Flandreau
Reviewed By: R. Patterson 11-28-94
Reviewed By: R. Patterson 11-28-94
Page 2 of 2

Prep Date: 11-18-94
Analysis Date: 11-18-94
Loop Used: 50uL
Batch #: 52046
Method #: 300.0

	Standard Value	Sample ID	Standard ID	Solid Fract.	Dil.	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
17		6646-001			Fl 1, Cl 10, SO4 10, NO2 1, OP 1	0.615	7.09	41.4	—	<1.00	<0.020	— ~~<0.250~~ JMF 11-21-94
18		6666-001			Fl 1, Cl 10, SO4 10, NO2 1, OP 1	0.326	5.45	26.2	—	<1.00	<0.020	— ~~<0.250~~
19		DUP 001			↓	0.339	5.38	26.5	—	<1.00	<0.020	— ~~<0.250~~
20	Fl 2 10 NO2 .609, Cl 20 OP 2, SO4 10	MS 001	AL5981-94		Fl 1, Cl 10, SO4 5, NO2 5, OP 1	2.33	24.3	44.2	—	1.89	0.640	— ~~2.00~~ JMF 11-21-94

J. Flandreau 11-20-94

0055

Project #: 340.05, 519.71, 550.23
Analyst: J.F. Landreau
Reviewed By: R. Patterson / 11-23-94
Reviewed By: R. Patterson / 11-23-94
Page 1 of 2

QUANTERRA ST. LOUIS

ANIONS BY I.C.

(ug/g) ug/L mg/L
(circle one)

Prep Date: 11-17-94
Analysis Date: 11-17-94
Loop Used: Stmd
Batch #: 52043
Method #: 300.0

	Standard Value	Sample ID	Standard ID	Solid Fract.	Dil.	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
1		QCBLK52043				<1.00 ug/g	<2.50 ug/g	<10.0 ug/g	<0.200 ug/g	JMF 11-21-94 ~~<10.0 ug/g~~	<0.200 ug/g	<2.50 ug/g
2	Fl 10 NO_3 2 Cl 12 NO_2 2 SO_4 10 Br 10	QCLCS52043	AL5925-94			8.90	9.52	38.1	1.92	—	0.800	9.59
3	↓	QCLCS52043	AL5926-94			8.87	9.47	38.1	JMF 11-21-94 ~~1.94~~	—	JMF 11-21-94 ~~0.760~~	9.96
4		6623-001		0.6638	1	4.59	25.3	77.4	—	—	—	—
5		002		0.7064	Fl 1 Cl 1 SO_4 5	3.40	18.4	639	—	—	—	—
6		003		0.6196	1	4.55	24.0	66.0	—	—	—	—
7		6625-001		0.8581	1	3.04	11.2	47.3	—	—	—	<2.84 ug/g
8		003		0.7690	1	4.92	26.0	75.8	—	—	—	<2.91
9		004		0.7886	1	5.22	28.3	70.3	—	—	—	<3.10
10		005		0.7915	1	3.43	21.1	60.8	—	—	—	<2.89
11		006		0.7659	1	<1.28	<3.19	22.7	—	—	—	<3.19
12		6688-001		0.9634	Cl 1 SO_4 1 NO_3 5 NO_2 1	—	7.40	24.7	16.4 ug/g	—	<0.198 ug/g	—
13		002		0.9670	Cl 1 SO_4 1 NO_3 5 NO_2 1	—	11.7	29.0	25.2	—	<0.203	—
14		003		0.9684	Cl 1 SO_4 1 NO_3 10 NO_2 1	—	17.5	35.3	38.4	—	<0.199	—
15		6795-001		0.9564	1	—	<2.50	10.0	6.93	—	<0.200	—
16		002		0.9456	Cl 1 SO_4 1 NO_3 5 NO_2 1	—	11.7	60.0	28.4	—	<0.204	—

% Recovery

	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
LCS-1 SOIL	89	95	95	96	—	100	96
LCS-2 SOIL	89	94	95	97	—	99	100
____ MS							
____ MS							
____ MS							
LCS-5 H2O	88	94	93	—	96	100	100 ✓
LCS-4 H2O	90	92	95	—	~~96~~	~~99~~	98 ✓

RP 11-23-94

RPD

	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
____ DUP							
____ DUP							
____ DUP							

0056

QUANTERRA ST. LOUIS

ANIONS BY I.C.

(ug/g) ug/L (mg/L) (circle one)

Project #: 340.05, 519.71, 550.23
Analyst: J. Flandrean
Reviewed By: R. Patterson / 11-23-94
Reviewed By: R. Patterson / 11-23-94
Page 2 of 2

Prep Date: 11-17-94
Analysis Date: 11-17-94
Loop Used: 50 ml
Batch #: 52043
Method #: 300.0

	Standard Value	Sample ID	Standard ID	Solid Fract.	Dil.	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
17		6795-003		0.9329	Cl 1 NO3 SO4 1 NO2 1	—	12.7 ug/g	60.9 ug/g	21.4 ug/g	—	<0.213 ug/g	—
18		004		0.9369	Fl 1 NO3 SO4 1 NO2 1	—	10.9	48.7	22.0	—	<0.240	—
19		6816-005				ug/g			—	—	—	
20		006							—	—	—	
21		007							—	—	—	
22		QCBLK52043			1	<0.100 mg/L	<0.250 mg/L	<1.00 mg/L	—	<1.00 mg/L	<0.020 mg/L	<0.250 mg/L
23	Fl 1 Cl 1 SO4 4 PO4 4 NO2 2.08 Br 1	QCLCS52043	AL5927-94		1	0.885	0.945	3.73	—	3.86	0.080	1.00
24	Fl 1 Cl 1 SO4 4 Br 1	QCLCS52043	AL5928-94		1	0.895	0.920	3.80	—	~~3.85~~ 3.85	~~0.079~~ 0.079	0.976
25		6602-001			Fl 1 SO4 10 Cl 10 Br 1	0.273	8.35	52.5	—	—	—	<0.250
26		004			Fl SO4 10 Cl 10 Br 10	—	7.08	22.3	—	—	—	<2.50
27		005			Fl SO4 1 Cl 1 Br 10	—	2.62	7.80	—	—	—	<2.50
28		006			Fl SO4 1 Cl 10 1 Br 10	—	2.65	7.87	—	—	—	<2.50
29		6694-002			Cl 1 Br 1 SO4 10	—	3.00	25.4	—	—	—	<0.250
30		6751-001			Fl 1 SO4 10 Cl 10 Br 1	0.262 mg/L	48.0	81.2	—	—	—	<0.250
31		6603-001			Fl 1 OP 1 SO4 5 NO2 1	0.340	—	34.2	—	<1.00 mg/L	<0.020 mg/L	—
32		002			Fl 1 OP 1 SO4 — NO2 1	0.317	—	—	—	<1.00	<0.020	—
33		6722-002			5	—	—	37.9	—	—	—	—

J. Flandrean 11-21-94

0057

SL-94-INORG-0055

QUANTERRA ST. LOUIS

ANIONS BY I.C.

ug/g ug/L mg/L (circle one)

Project #: 340.05, 550.23, 550.10
Analyst: J. Blandieau
Reviewed By: R. Patterson / 11-17-94
Reviewed By: R. Patterson / 11-17-94
Page 1 of 2

Prep Date: 11-14-94
Analysis Date: 11-14-94
Loop Used: 50 µl
Batch #: S1661
Method #: 300.0

	Standard Value	Sample ID	Standard ID	Solid Frct.	Dil.	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
1	NO3 0.2 NO2 0.08	QCBLKS1661				<0.100	<0.250	<1.00	<0.020	<1.00	<0.020	–
2	Fl 1 Cl 1 SO4 4 OP 4	QCLCS1661	AL5746-94			0.884	0.916	3.80	0.198	3.78	0.086	–
3	Cl 1 SO4 4	QCLCS1661	AL5747-94			–	0.922	3.82	–	–	–	–
4		6514-001			20	–	32.5	131	–	–	–	–
5		002			10	–	33.5	98.5	–	–	–	–
6		003			5	–	10.7	74.0	–	–	–	–
7		004			5	–	10.7	74.6	–	–	–	–
8		6550-001			Fl 1 Cl 5 SO4 5 NO3 1 NO2 1 OP 1	0.249	3.30	30.9	0.038	<1.00	<0.020	–
9		002			Fl 1 Cl 5 SO4 5 NO3 1 NO2 1 OP 1	0.557	7.60	12.7	0.267	<1.00	<0.020	–
10		003			Fl 1 Cl 10 SO4 10 NO3 1 NO2 1 OP 1	0.683	16.0	132	0.032	<1.00	0.049	–
11		6584-001			Fl 1 Cl 10 SO4 10 NO2 1 OP 1	0.492	9.54	63.6	–	<1.00	<0.020	–
12		002				0.464	9.56	63.8	–	<1.00	<0.020	–
13	Fl 2 Cl 20 SO4 20 NO2 40 OP 2	MS001	AL5748-94		Fl 1 Cl 10 SO4 10 OP 1 NO2 5	2.52	28.8	80.4	–	1.93	0.625	–
14		002			Fl 1 Cl 1 SO4 1 OP 1 NO2 1	<0.100	2.78	13.8	–	<1.00	<0.020	–
15		003			Fl 1 Cl 10 SO4 1 OP 1 NO2 1	0.282	11.3	16.2	–	<1.00	<0.020	–
16		6566-001			Fl 1 Cl 10 SO4 10 NO3 1 NO2 1 OP 1	0.456	9.02	31.1	–	<1.00	<0.020	–

% Recovery

	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
LCS-1	88	92	95	99	94	108	–
LCS-2	–	92	96	–	–	–	–
6584 MS	101	96	84	–	96	103	–
6566 MS	98	97	88	–	96	95	–
6560 MS	93	94	80	–	97	103	–

RPD

	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
6584 DUP	6	<1	<1	–	*	*	–
6566 DUP	<1	<1	<1	–	~~96*~~	~~95*~~	–
6560 DUP	4	<1	<1	–	*	*	–

* can't calculate

SL-94-INORG

QUANTERRA ST. LOUIS

ANIONS BY I.C.

ug/g ug/L (mg/L) (circle one)

Project #: 340.05, 550.23, 550.10
Analyst: J. Flandreau
Reviewed By: R. Patterson / 11-17-94
Reviewed By: R. Patterson / 11-17-94
Page 2 of 2

Prep Date: 11-14-94
Analysis Date: 11-14-94
Loop Used: 50 uL
Batch #: 51661
Method #: 300.0

	Standard Value	Sample ID	Standard ID	Solid Fract.	Dil.	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
17		DUP 6566-001			Fl 1 Cl 10 SO4 10 NO2 1 NO3 1 OP 1	0.453	9.03	31.3	—	<1.00	<0.020	—
18	Fl 2 Cl 20 SO4 20 NO2 .009 OP 2	MS 001	AL5749-94		Fl 1 Cl 10 SO4 10 NO2 5 NO3 5 OP 1	2.41	28.4	48.8	—	1.93	0.579	—
19		002			Fl 1 Cl 10 SO4 10 NO2 1 NO3 1 OP 1	0.458	8.88	30.7	—	<1.00	<0.020	—
20		003			Fl 1 Cl 10 SO4 10 NO2 1 NO3 1 OP 1	0.456	8.82	30.7	—	<1.00	0.064	—
21		004			Fl 1 Cl 10 SO4 10 NO2 1 NO3 1 OP 1	0.463	8.85	30.2	—	<1.00	<0.020	—
22		6560-001			Fl 1 Cl 10 SO4 10 NO2 1 OP 1	0.332	8.32	48.8	—	<1.00	<0.020	—
23		DUP 001				0.344	8.35	49.0	—	<1.00	<0.020	—
24	Fl 2 Cl 20 SO4 20 NO2 .009 OP 2	MS 001	AL5750-94		Fl 1 Cl 10 SO4 10 NO2 5 OP 1	2.20	27.2	64.7	—	1.94	0.629	—
25		002			Fl 1 Cl 10 SO4 10 NO2 1 OP 1	0.439	15.9	60.6	—	<1.00	<0.020	—
26		003			Fl 1 Cl 10 SO4 10 NO2 1 OP 1	0.423	17.4	110	—	<1.00	<0.020	—
27		004			Fl 1 Cl 10 SO4 10 NO2 1 OP 1	0.413	18.0	110	—	<1.00	<0.020	—
28		005			Fl 1 Cl 10 SO4 10 NO2 1 OP 1	0.433	17.5	108	—	<1.00	<0.020	—

J. Flandreau 11-15-94

0059

QUANTERRA ST. LOUIS

ANIONS BY I.C.

ug/g ug/L (mg/L) (circle one)

Project #: 525.02, 388.01, 550.23
Analyst: J. Flandreau
Reviewed By: R. Patterson / 11-18-94
Reviewed By: R. Patterson / 11-18-94
Page 1 of 2

Prep Date: 11-16-94
Analysis Date: 11-16-94
Loop Used: 50 ml
Batch #: 51910
Method #: 300.0

	Standard Value	Sample ID	Standard ID	Solid Fract.	Dil.	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
1		QCBLK51910				<0.100	<0.250	<1.00	—	<1.00	—	<0.250
2	Fl 1 Cl 1 SO_4 4 Br 1	QCLCS51910	AL5828-94			0.878	0.910	3.80	—	3.89	—	0.997
3		6553-001			Fl 1 Cl 1 SO_4 5 Br 1	0.211	1.04	50.1	—	—	—	<0.250
4		002			Fl 1 Cl 1 SO_4 5 Br 1	0.196	1.10	33.8	—	—	—	<0.250
5		003			Fl 1 Cl 5 SO_4 1 Br 1	0.149	4.54	<1.00	—	—	—	<0.250
6		6579-001			Fl 1 Cl 20 SO_4 20 Br 1	<0.100	29.0	179	—	—	—	<0.250
7		002			Fl 1 Cl 20 SO_4 1 Br 1	0.810	43.8	11.4	—	—	—	0.915
10 8		003			Fl 1 Cl 2 SO_4 1 Br 1	1.53	4.90	13.7	—	—	—	<0.250
11 9		004			Fl 1 Cl 5 SO_4 1 Br 1	<0.100	8.83	8.20	—	—	—	<0.250
12		005			Fl 1 Cl 5 SO_4 1 Br 1	<0.100	8.57	8.21	—	—	—	<0.250
13		006			Fl 1 Cl 5 SO_4 1 Br 1	0.282	7.59	8.65	—	—	—	<0.250
7 14		DUP 001			Fl 1 Cl 20 SO_4 20 Br 1	<0.100	29.3	180	—	—	—	<0.250
8 15	Fl 2 Cl 20 Br 2 SO_4 20	MS 001	AL5830-94		Fl 1 Cl 20 SO_4 20 Br 1	1.89	49.2	190	—	—	—	2.05
14		6862-010			10	—	—	<10.0	—	<10.0	—	—
15		011			1000	—	<250	—	—	—	—	—
16		6586-001			Fl 1 Cl 1 SO_4 2 Br 1	1.88	1.26	28.1	—	—	—	<0.250

% Recovery

	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
LCS-1	88	91	95	—	97	—	100
LCS-2	93	93	95	—	96	100	—
6579 MS	94	101	55	—	—	—	102
MS							
MS							

RPD

	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
6579 DUP	*	1	<1	—	—	—	*
DUP							
DUP							

0060

SL-94-INORG-0055

QUANTERRA ST. LOUIS

ANIONS BY I.C.

ug/g ug/L mg/L (circle one)

Project #: 525.02, 388.01, 550.23
Analyst: J. Flanders
Reviewed By: R. Patterson / 11-18-94
Reviewed By: R. Patterson / 11-18-94
Page 2 of 2

Prep Date: 11-16-94
Analysis Date: 11-16-94
Loop Used: 50 µl
Batch #: 51910
Method #: 300.0

	Standard Value	Sample ID	Standard ID	Solid Fract.	Dil.	Fl	Cl	SO_4	NO_3-N	OPO_4	NO_2-N	Br
17		6586-002			Fl 1 SO4 2 Cl 1 Br 1	1.87	1.26	28.1	—	—	—	<0.250
18		6607-001			Fl 1 SO4 10 Cl 10 Br 1	0.375	8.12	36.7	—	—	—	<0.250
19		↓ 002			Fl 1 SO4 1 Cl 1 Br 1	<0.100	<0.250	<1.00	—	—	—	<0.250
20		6628-001			Fl 1 SO4 10 Cl 10 Br 1	0.756	38.5	26.6	—	—	—	<0.250
21		↓ 002			Fl 1 SO4 10 Cl 10 Br 1	0.241	12.1	29.0	—	—	—	<0.250
22		6645-001			Fl 1 SO4 1 Cl 1 Br 1	<0.100	0.839	<1.00	—			<0.250
23		QCBLK51910				<0.100	<0.250	<1.00	—	<1.00	<0.020	—
24	Fl 1 OP 4 Cl 1 NO2 .08 SO4 4	QCLCS51910	AL5829-94			0.927	0.928	3.80	—	3.86	0.080	—
25		6661-001			Fl 1 SO4 1 Cl 10 Br 1	<0.100	12.0	8.77	—	—	—	<0.250
26		6680-001			Fl 1 SO4 10 Cl 10 Br 1	<0.100	7.30	21.0	—	—	—	<0.250
27		6603-003			Fl 1 NO2 1 Cl 5 OP 1 SO4 10	0.306	20.0	182	—	<1.00	<0.020	—
28		6616-001			Fl 1 NO2 1 Cl 5 OP 1 SO4 5	0.674	8.23	28.4	—	<1.00	<0.020	— JMF 11-18-94 ~~<0.250~~
29		002			Fl 1 SO4 5 NO2 5 Cl 5 OP 1	0.587	14.8	36.2	—	<1.00	<0.020	—
30		↓ 003			1	<0.100	3.03	14.1	—	<1.00	<0.020	—
31		6630-001			Fl 1 NO2 1 Cl 5 OP 1 SO4 1	1.75	6.10	14.1	—	<1.00	<0.020	—
32		002			1	<0.100	<0.250	<1.00	—	<1.00	<0.020	—
33		↓ 003			1	<0.100	<0.250	<1.00	—	<1.00	<0.020	

J. Flanders 11-18-94

0061

SL-94-INORG-0055

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: TDS
Method: EPA 160.1
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0D4H4	6584-001	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	288	MG/L		5.00	1
B0D4H4	6584-001DUP	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	282	MG/L		5.00	1
B0D4P4	6584-002	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	71.0	MG/L		5.00	1
B0D4L6	6584-003	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	241	MG/L		5.00	1
B0D4H0	6603-001	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	254	MG/L		5.00	1
B0D4K6	6603-002	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	660	MG/L		5.00	1
B0D4N8	6603-003	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	618	MG/L		5.00	1
B0D4L8	6616-001	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	159	MG/L		5.00	1
B0D4M2	6616-002	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	346	MG/L		5.00	1
B0D4P2	6616-003	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	273	MG/L		5.00	1
B0D4M0	6631-001	Total Dissolved	10-33-3	QCBLK50055-1	11/01/94	11/01/94	448	MG/L		5.00	1
NA	QCBLK49619-1	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	5.00	MG/L	U	5.00	1
NA	QCBLK49923-1	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	5.00	MG/L	U	5.00	1
NA	QCBLK50055-1	Total Dissolved	10-33-3	QCBLK50055-1	11/01/94	11/01/94	5.00	MG/L	U	5.00	1
NA	QCLCS49619-1	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	99	%REC			1
NA	QCLCS49923-1	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	101	%REC			1
NA	QCLCS50055-1	Total Dissolved	10-33-3	QCBLK50055-1	11/01/94	11/01/94	95	%REC			1

ITAS-ST. LOUIS

Total Dissolved Solids

Analyst: S. Bope
Checked by: R. Patterson
Method No.: 160.2
Batch No.: 50055

Date: 11-01-94
Date: 11-23-94
Oven No.: 1
Oven No.: 2

Project No.: 362 03
Balance No.: AE160
Drying Temp.: 105°C
Drying Temp.: 180°C

LAB ID	Crucible Number	Initial Wt. (gm)	Volume (ml)	Dried Wt. (gm)	Dissolved Solids mg/L
QC BLK 50055-1	19	107.7492	100	107.7493	<5
QC LCS 50055-1 I00577-94	66	109.4116		109.4452	336
6630-001	32	94.5740		94.5919	179
-002	15	109.9186		109.9374	188
-003	30	106.1676		106.1697	21.0
6631-001	6	111.5860		111.6308	448
6652-001	4	111.7320		111.7336	16.
-001 Dup	69	106.6649		106.6665	16
6645-001	24	106.5300		106.5380	80
6646-001	3	109.1111		109.1434	323
6661-001	13	109.1623		109.1866	243
6666-001	25	106.2093		106.2341	248
-001 Dup	47	107.7166		107.7408	242
6615-001	57	106.5631	50	106.5760	22 ~~129~~ 258
-001 Dup	64	105.5981		105.6099	SP ~~118~~ 236
-002	40	108.4081	100	108.4124	43
				LCS True Value =	352 mg/L
				% Recovery =	95
				DUP RPD 1 =	0
				DUP RPD 2 =	2
				DUP RPD 3 =	9

Karen Rea 11-22-94

$$\text{mg/L TOTAL DISSOLVED SOLIDS} = \frac{(\text{DRIED WT} - \text{INITIAL WT}) \times 10^6}{\text{mL SAMPLE}}$$

SL-91-INORG-0007

0063

ITAS-ST. LOUIS

Total Dissolved Solids

Analyst: S. Pope
Checked by: R. Patterson
Method No.: 160.1
Batch No.: 46 49619 SP 10-27-94

Date: 10-27-94
Date: 11-23-94
Oven No.: 1
Oven No.: 2

Project No.: 550.23 525.02
Balance No.: AE160
Drying Temp.: 105°C
Drying Temp.: 180°C

LAB ID	Crucible Number	Initial Wt. (gm)	Volume (ml)	Dried Wt. (gm)	Dissolved Solids mg/L
QC BLK 49619-1	100	95.4390	100	95.4392	2
QC LCS 49619-1 IP0577-94	68	107.5451		107.5800	349
6553-001	37	106.3134		106.3429	295
-002	34	106.0116	20	106.0209	465
-003	17	107.9367	100	107.9852	485
6579-001	52	104.9494		105.0057	563
-001 DUP	35	113.7856		113.8443	587
-002	60	106.5315		106.5526	211
-003	7	106.2420		106.2753	333
-004	0	105.3509		105.3608	99
-005	16	107.0896		107.1008	112
-006	51	103.8279		103.8478	199
6584-001	46	105.0906		105.1194	288
-001 DUP	74	106.8451		106.8733	282
-002	54	105.6657		105.6728	71
-003	21	109.6900		109.7141	241
6586-001	61	110.1095		110.1488	393
-002	63	106.4137		106.4512	375
6603-001	70	111.1261		111.1515	254
-002	64	105.7035		105.7695	660
-003	19	107.6825		107.7493	618
				LCS True Value =	352 mg/L
		Steve Pope 11-22-94		% Recovery =	99

DUP RPD1 = 4
DUP RPD2 = 2

$$\text{mg/L TOTAL DISSOLVED SOLIDS} = \frac{(\text{DRIED WT} - \text{INITIAL WT}) \times 10^6}{\text{mL SAMPLE}}$$

SL-91-INORG-0007

0064

ITAS-ST. LOUIS

Total Dissolved Solids

Analyst: S. Rogue
Checked by: R. Patterson
Method No.: ~~19~~ 160.1
Batch No.: 49923

Date: 10-28-94
Date: 11-23-94
Oven No.: 1
Oven No.: 2

Project No.: 525.02 (550.03)
Balance No.: AE160
Drying Temp.: 105°C
Drying Temp.: 180°C

LAB ID	Crucible Number	Initial Wt. (gm)	Volume (ml)	Dried Wt. (gm)	Dissolved Solids mg/L
QC BLK 49923-1	2	99.5445	100	99.5448	45
QC LCS 49923-1 IP0577-94	50	110.4748		110.5104	356
66116-002	56	112.7995		112.8341	346
66007-001	33	108.4662		108.5073	411
↓ -002	83	107.4658		107.4759	101
66116-001	3028 10-28-94	~~101.8111~~	113.2127	113.2286	159
↓ -003	34	108.1291		108.1564	273
66128-001	2820	~~113.2127~~	101.8111 ↓	101.8545	434
↓ -002	29	100.3675	20	100.3791	116
				LCS True Value =	352 mg/L
				% Recovery =	101

Stan Rogue 10-28-94

$$\text{mg/L TOTAL DISSOLVED SOLIDS} = \frac{(\text{DRIED WT} - \text{INITIAL WT}) \times 10^6}{\text{mL SAMPLE}}$$

SL-91-INORG-0007

0065

Analytical Data Package Prepared For

Bechtel Hanford

Chemical Analysis By

Quanterra Environmental Services
St. Louis Laboratory

DEC 1994
RECEIVED
Data
Log In

Sample Delivery Group Number: W0267

BHI IDENTIFICATION NUMBER	QUANTERRA ID NUMBER
B0D4H4	6584-001
B0D4P4	6584-002
B0D4L6	6584-003
B0D4H5	6584-004
B0D4P5	6584-005
B0D4L7	6584-006
B0D4H0	6603-001
B0D4K6	6603-002
B0D4N8	6603-003
B0D4H1	6603-004
B0D4K7	6603-005
B0D4N9	6603-006
B0D4L8	6616-001
B0D4M2	6616-002
B0D4P2	6616-003
B0D4L9	6616-004
B0D4M3	6616-005
B0D4P3	6616-006
B0D4M0	6631-001
B0D4M1	6631-002

RECORD COPY

Quanterra November 03, 1994 08:44 am
Account: 10722 Project: 550.23 Quanterra-Richland QAS No. 751 Rev. 0
Master Sample Login: 6584

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: PM Review:

Sample Header Template:

Sample No. / Comments / #	Client ID / Container Type	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6584-001	B004H4	Water	20-OCT-94 10:15	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045001								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAP/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110956:100)
1		SE/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110956:100)
1	AN - Amber Glass-500ml	CL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110957:100)
1		FL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110957:100)
1		NO2/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110957:100)
1		OPHOS/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110957:100)
1		SO4/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110957:100)
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	16-NOV-94	03-NOV-94	S5H	(110960:100)
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	16-NOV-94	03-NOV-94	S5H	(110958:100)
1		TDS/160.1/Q4	S	COLD	16-NOV-94	27-OCT-94	S5H	(110959:99)

6584-001DUP	B004H4	Water	20-OCT-94 10:15	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045001								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAP/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110956:100)
1		SE/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110956:100)
1	AN - Amber Glass-500ml	CL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110957:100)
1		FL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110957:100)
1		NO2/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110957:100)
1		OPHOS/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110957:100)
1		SO4/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110957:100)
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	16-NOV-94	03-NOV-94	S5H	(110960:100)
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	16-NOV-94	03-NOV-94	S5H	(110958:100)
1		TDS/160.1/Q4	S	COLD	16-NOV-94	27-OCT-94	S5H	(110959:99)

6584-001MS	B004H4	Water	20-OCT-94 10:15	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045001								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAP/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110956:100)
1		SE/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110956:100)
1	AN - Amber Glass-500ml	CL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110957:100)
1		FL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110957:100)
1		NO2/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110957:100)
1		OPHOS/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110957:100)
1		SO4/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110957:100)
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	16-NOV-94	03-NOV-94	S5H	(110960:100)

6584-002	B004P4	Water	20-OCT-94 09:40	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045003								

3*=Sample has not been rad screened.

00010

Quanterra November 03, 1994 08:44 am
Account: 10722 Project: 550.23 Quanterra-Richland QAS No. 751 Rev. 0
Master Sample Login: 6584

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: _____ PM Review: _____

Sample Header Template: _____

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6584-003	B004L6	Water	20-OCT-94 14:15	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045005								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAP/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110961:100)
1		SE/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110961:100)
1	AN - Amber Glass-500ml	CL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110962:100)
1		FL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110962:100)
1		NO2/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110962:100)
1		OPHOS/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110962:100)
1		SO4/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110962:100)
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	16-NOV-94	03-NOV-94	S5H	(110965:100)
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	16-NOV-94	03-NOV-94	S5H	(110963:100)
1		TDS/160.1/Q4	S	COLD	16-NOV-94	27-OCT-94	S5H	(110964:99)

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6584-003	B004L6	Water	20-OCT-94 14:15	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045005								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAP/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110966:100)
1		SE/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110966:100)
1	AN - Amber Glass-500ml	CL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110967:100)
1		FL/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110967:100)
1		NO2/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110967:100)
1		OPHOS/300.0/Q4	S	COLD	16-NOV-94	22-OCT-94	S5H	(110967:100)
1		SO4/300.0/Q4	S	COLD	16-NOV-94	17-NOV-94	S5H	(110967:100)
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	16-NOV-94	03-NOV-94	S5H	(110970:100)
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	16-NOV-94	03-NOV-94	S5H	(110968:100)
1		TDS/160.1/Q4	S	COLD	16-NOV-94	27-OCT-94	S5H	(110969:99)

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6584-004	B004H5	Water	20-OCT-94 10:15	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045002								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAPD/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110971:100)
1		SED/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110971:100)

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6584-004DUP	B004H5	Water	20-OCT-94 10:15	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045002								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAPD/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110971:100)
1		SED/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110971:100)

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6584-004MS	B004H5	Water	20-OCT-94 10:15	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045002								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAPD/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110971:100)
1		SED/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110971:100)

3*=Sample has not been rad screened.

Quanterra November 03, 1994 08:44 am
Account: 10722 Project: 550.23 Quanterra-Richland QAS No. 751 Rev. 0
Master Sample Login: 6584

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: _____ PM Review: _____

Sample Header Template: _____

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6584-005	B0049P5	Water	20-OCT-94 09:40	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045004								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAPD/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110976:100)
1		SED/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110976:100)

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6584-006	B0041L7	Water	20-OCT-94 14:15	22-OCT-94 09:45	23-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41045006								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAPD/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110977:100)
1		SED/CLP90/Q4	S	HNO3	16-NOV-94	20-APR-95	S5H	(110977:100)

3*=Sample has not been rad screened.

Temp 3°C Cur # 2143

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 481998
Page 1 of 2

Project Name/No. 1 SAF B94-036
Sample Team Members 2
Profit Center No. 3
Project Manager 4 VAN PETTEY
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 10-21-94
Lab Destination 8 ST Louis
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5 Quanterra Richland
Report to: 10 Quanterra Richland

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Preservative 19	Requested Testing Program 20	% Condition on Receipt 21	pH	Disposal Record No. 22
41045001A	BOD4H4 /H2O	10-20-94 10:15 SEE COC	Gls AmB HC COC	1 Liter	Cool Hno3 4°	SEE metals COC	100	1	
B		10-20-94 10:15	Gls AmB	500 ml	4°C	Anions	100		
C			Poly	250 ml	4°	ALK	100	—	
D			Poly	250 ml	4	TDS	100	—	
E			Poly	1 Liter	Na OH	CYAN	100	12	
02A	BOD4H5		Gls AmB	1 Liter	HNO3	metals	100		
03A	BOD4P4	10-20-94 0940	Gls AmB	1 Liter	HNO3	metals	100	1	
B				500 ml	4°	Anions	100	—	

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 W0267

1. Relinquished by 28 (Signature/Affiliation) Heidelberg Quanterra Date: 10-21-94 Time: 16:00
1. Received by 28 (Signature/Affiliation) [illegible] Date: 10-22-94 Time: 0945

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

00013

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

INTERNATIONAL TECHNOLOGY CORPORATION

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

Reference Document No.[30] 481998
Page 2 of 2

Project Name SAF B94-036

Project No. SDL W02267

Samples Shipment Date 10-21-94

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 %	PH	Disposal[22] Record No.
41045003C	BOD4P4 / H2O	SEE WHICH COC	Poly	250 ml	Cool 4°	SEE ABOVE	100	—	
D			Poly	250 ml	4°	TDS	100	—	
E		10-20-94 09:20	Poly	1 Liter	NaOH	CYAN	100	12	
04A	BOD4P5	10-20-94 09:40	1 Liter	AMB 0.45	HNO3	metals	100	1	
05A	BOD4L6	10-20-94 14:25	GLS AMB	1 Liter	HNO3	metals	100	1	
B				500 ml	4°	Anions	100	—	
C			Poly	250 ml	4°	Alk	100	—	
D				250 ml	4°	TDS	100	—	
E				1 Liter	NaOH	CYAN	100	12	
06A	BOD4L7		GLS AMB	1 Liter	HNO3	metals	100	1	

10/21/94

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

00014

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: A. J. Simpson	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-26	Field Logbook No.: RFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-29	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks: pump producing lots of gas in sample.		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

SAMPLE ANALYSIS: 410450

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) 410450	TRITIUM	Tc-99 101	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
BD D4H4 01	W	10/20/94	1015	X	X	X	X	X	X	X	X	X					
BD D4H5 02	W	10/20/94	1015										X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kimberley K. O'Ceu	10/20/94 1114	[signature] Quanterra	10-20-94 1114
[signature] B. Walton	10-21-94 1015	Quanterra [signature]	10-21-94 10:15

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
Turnaround CPM
NOTE: DATA DELIVERABLE-STANDALONE

SDL W0267

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)

00015

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: L Seltzer	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: POKEY	Field Logbook No.: SFC-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-28	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks:

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

SAMPLE ANALYSIS: 410450

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 410451	TRITIUM 02	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1		1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
BO D4P4 03	W	10 20 94	0940	X	X	X	X	X	X	X	X	X						
BO D4P5 04	W	10 20 94	0940											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: G.F. Offe, AG Rees	Date/Time: 10/21/94 0725	Received By: Kim Whitt, B Whitten	Date/Time: 0725 10-21-94
Relinquished By: Kim Whitt, B Whitten	Date/Time: 1015 10-21-94	Received By: Quantera, Karen Ackerling	Date/Time: 10:15 10-21-94
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
Less than 100 cpm
NOTE: 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)

00016

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: A. Ciraso	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: 1637 A&B	Field Logbook No.: EFL 1520	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-828	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) H	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A			
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCL <2			HNO3<2			
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G			
No. of Container(s)				1	1	1	1	1	8	2	2	1		1			
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml			
SAMPLE ANALYSIS 410450										410451	03						
BO D4L6 05	W	10-20-94	1415	X	X	X	X	X	X	X	X	X					
BO D4L7 06	W	10-20-94	1415											X			

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	A. Ciraso	10-21-94 0725
Received By	Lee Whitter B.Wh.Hon	10-21-94 0725
Relinquished By	Lee Whitter B.Wh.Hon	10-21-94 1015
Received By	quanterra Karen Fitterling	10-21-94 10:15
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

Further than 100 cm

NOTE: 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)

00017

SAMPLE STATUS REPORT FOR N 3082. RAD SCREEN 299E3339 TIME: 10/20/94 19:39
DISPATCHED: 9/28/94 16:29 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/20/94 14:14

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

BOD4H4
BOD4H5
BW
10-21-94

SAMPLE STATUS REPORT FOR N 3463. RAD SCREEN FIELDBLK TIME: 10/20/94 19:39
DISPATCHED: 10/20/94 13:28 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/20/94 13:55

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	PL531

END OF REPORT

BOD4P4
BOD4P5
BW
10-21-94

SAMPLE STATUS REPORT FOR N 3100. RAD SCREEN 6995457 TIME: 10/20/94 19:39
DISPATCHED: 9/28/94 16:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/20/94 14:55

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

B0D4L6
B0D4L7
BW
10-21-94

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI		W95-0-0001-28

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 ☐ Prepaid ☐ Collect

Shipped to
Company: Quanterra (IT)
Address: 2800 George Washington Way
City: Richland, WA 99352
State
Zip Code
Country

Off-site Custodian

On-site Custodian

Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1 lbs.		Sample #: BOD4L6 BOD4L7 Cooler ID; RUSTY DUSTY Polycooler with grouddwater samples packed in wet ice and vermiculite	N/A
1 lbs.		Sample #: BOD1F4 BOD1F5 Cooler ID: FOKEY 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

☐ Required for Project Work. List Project No. 200-BP-5

☐ Business Trip

☐ Off-site Assignment

Bill of lading # N/A

☐ Shipment to Subcontractor. List Subcontract No. N/A

☐ Other (Please specify) Sampling supports RI/FS work in the 200 AREA

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
J. [illegible]	OFF CHART	[illegible]

Location of and Contact for Property (Name/Phone No./Bldg./Area)
P. H. Butcher/(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
10-21-94	ITE2072/ FL531	

Originated By	Date	Authorized By	Date
K.T. WHITER	10-21-94	[signature]	10-21-94
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
		[signature]	11/21/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

*U.S. GPO: 1994-592-170/00029

54-3000-479 (01/94)

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10/2/94 10:15 Client Name WHC

Project/Client # B94-036 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) Rusty Dusty

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☒
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 19
8. Samples have: ✓ tape ____ hazard labels
   ✓ custody seals ____ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☐ No ☐

Sample temperature 4°C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) n/a
    Request for analysis #(s) n/a
    Airbill # n/a Carrier n/a
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature BBRUMFIELD B Brumfield Date/Time 10/2/94 10:15

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

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10/21/94 10:15 Client Name WHC

Project/Client # B94-036 Batch or Case # _____

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

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☒
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: BAB 10/21/94 ~~4~~ °C 19
8. Samples have: X tape ____ hazard labels
   X custody seals ____ appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 4°C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) n/A
    Request for analysis #(s) n/A
    Airbill # n/A Carrier n/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature BBRUMFIELD BBrumfield Date/Time 10/21/94 10:15

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

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10/21/94 10:15 Client Name WHC

Project/Client # B94-036 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER-26

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☒
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: BAD 10/21/94 ~~18~~ 19
8. Samples have: X tape ____ hazard labels
   X custody seals ____ appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 3 °C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature B BRUMFIELD B Brumfield Date/Time 10/21/94 10:15

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

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All are Cat. I.
JRM 21 Oct. 94

Customer Code	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	10-21-94		10-21		10-2	10	3	220	240

Customer ID	Sample Matrix	Residue Wght	Vol. Anal.	Sample Size	SMPLE CNT DATA Hldr	Total Counts		Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		pCi / Gm or L		1-sigma error pCi/ Gm or L		Category 1	Aliquot to Cat 1 Gm or L	
WHC	Solid/Liquid	mg	mg ml	Gm L	Num	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta
BOD4L6	LIQUID	1.4	10.0	1.0	41	4	30	0.39	2.08	1.31E+00	4.23E+00	5.9E-05	1.9E-04	5.9E+01	1.9E+02	47.65	51.84	Yes	1.7E+02	5.3E+02
BOD4P4	LIQUID	0.1	10.0	1.0	42	0	15	-0.01	0.58	-6.0E-02	1.25E+00	0.0E+00	5.6E-05	-2.7E+00	5.6E+01	38.24	37.48	Yes	-3.7E+03	1.8E+03
BOD328	LIQUID	18.0	10.0	1.0	43	46	890	4.59	86.08	1.67E+01	1.91E+02	7.5E-04	8.6E-03	7.5E+02	8.6E+03	116.38	292.46	Yes	1.3E+01	1.2E+01
BOD329	LIQUID	17.9	10.0	1.0	44	3	17	0.29	0.78	1.19E+00	1.55E+00	5.4E-05	7.0E-05	5.4E+01	7.0E+01	54.75	40.27	Yes	1.9E+02	1.4E+03
BOD4H4	LIQUID	2.7	10.0	1.0	45	3	17	0.29	0.78	1.01E+00	1.51E+00	4.6E-05	6.8E-05	4.6E+01	6.8E+01	46.62	39.12	Yes	2.2E+02	1.5E+03
TOTAL	uCi											9.1E-04	9.0E-03							

00026

Quanterra
Environmental Services

C.U.R. and C.O.C.
COPIED TO: DK & WP
DATE: 10-22-94
TIME: 1230
BY: JM

Work Order No.: 6584

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: QES, Richland
Date: 10-22-94 09:45
Project No: 550.23
Initiated by: [illegible]
Analysis Requested: Refer to RFA/COC
RFA/COC Numbers: 481998
Client Sample Numbers Affected: Entire Login

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

1. NA 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: Temp 3°C
   - ☐ pH Temp Vol 5°C
   - ☐ 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. NA Sample splits performed by lab.
10. NA 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): Shipping containers not rad surveyed.

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: (or designate) _____ Date: _____

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

Quanterra October 28, 1994 09:33 am
Account: 10722 Project: 550.23 Quanterra-Richland QAS No. 751 Rev. 0
Master Sample Login: 6603

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: PM Review:

Sample Header Template:

Sample No. / #	Client ID / Container Type	C-Matrix / Analysis	Date: Collected / Class	Received / Preservative	Due / Anal. Due Date	Shipper / Hold Date	Site	Rad Category / (Container Numbers:% Filled)	Rad Sample No.
Comments / Data:									
6603-001	B004H0	Water	21-OCT-94 09:00	24-OCT-94 13:30	28-NOV-94	FED-EX	1	Screening not Required	
QUANTERRA RICHLAND I.D. 41048201; See ICAP list.									
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	21-NOV-94	04-NOV-94	S11D	(111384:100)	
1	GN - Glass Jar-1L	ICAP/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111380:100)	
1		SE/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111380:100)	
1	GN - Glass Jar-500ML	FL/300.0/Q4	S	COLD	21-NOV-94	18-NOV-94	S11D	(111385:100)	
1		NO2/300.0/Q4	S	COLD	21-NOV-94	23-OCT-94	S11D	(111385:100)	
1		OPHOS/300.0/Q4	S	COLD	21-NOV-94	23-OCT-94	S11D	(111385:100)	
1		SO4/300.0/Q4	S	COLD	21-NOV-94	18-NOV-94	S11D	(111385:100)	
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	21-NOV-94	04-NOV-94	S11D	(111382:100)	
1		TDS/160.1/Q4	S	COLD	21-NOV-94	28-OCT-94	S11D	(111383:99)	
6603-002	B004K6	Water	21-OCT-94 09:20	24-OCT-94 13:30	28-NOV-94	FED-EX	1	Screening not Required	
QUANTERRA RICHLAND I.D. 41048203; See ICAP list.									
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	21-NOV-94	04-NOV-94	S11D	(111389:100)	
1	GN - Glass Jar-1L	ICAP/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111386:100)	
1		SE/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111386:100)	
1	GN - Glass Jar-500ML	FL/300.0/Q4	S	COLD	21-NOV-94	18-NOV-94	S11D	(111390:100)	
1		NO2/300.0/Q4	S	COLD	21-NOV-94	23-OCT-94	S11D	(111390:100)	
1		OPHOS/300.0/Q4	S	COLD	21-NOV-94	23-OCT-94	S11D	(111390:100)	
1		SO4/300.0/Q4	S	COLD	21-NOV-94	18-NOV-94	S11D	(111390:100)	
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	21-NOV-94	04-NOV-94	S11D	(111387:100)	
1		TDS/160.1/Q4	S	COLD	21-NOV-94	28-OCT-94	S11D	(111388:99)	
6603-003	B004N8	Water	21-OCT-94 09:20	24-OCT-94 13:30	28-NOV-94	FED-EX	1	Screening not Required	
QUANTERRA RICHLAND I.D. 41048205; See ICAP list.									
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	21-NOV-94	04-NOV-94	S11D	(111394:100)	
1	GN - Glass Jar-1L	ICAP/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111391:100)	
1		SE/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111391:100)	
1	GN - Glass Jar-500ML	CL/300.0/Q4	S	COLD	21-NOV-94	18-NOV-94	S11D	(111395:100)	
1		FL/300.0/Q4	S	COLD	21-NOV-94	18-NOV-94	S11D	(111395:100)	
1		NO2/300.0/Q4	S	COLD	21-NOV-94	23-OCT-94	S11D	(111395:100)	
1		OPHOS/300.0/Q4	S	COLD	21-NOV-94	23-OCT-94	S11D	(111395:100)	
1		SO4/300.0/Q4	S	COLD	21-NOV-94	18-NOV-94	S11D	(111395:100)	
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	21-NOV-94	04-NOV-94	S11D	(111392:100)	
1		TDS/160.1/Q4	S	COLD	21-NOV-94	28-OCT-94	S11D	(111393:99)	
6603-004	B004H1	Water	21-OCT-94 09:00	24-OCT-94 13:30	28-NOV-94	FED-EX	1	Screening not Required	
QUANTERRA RICHLAND I.D. 41048202.									

3*=Sample has not been rad screened.

Quanterra October 28, 1994 09:33 am
Account: 10722 Project: 550.23 Quanterra-Richland QAS No. 751 Rev. 0
Master Sample Login: 6603

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: _____ PM Review: _____

Sample Header Template: _____

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6603-005	B004K7	Water	21-OCT-94 09:20	24-OCT-94 13:30	28-NOV-94	FED-EX	1	Screening not Required
QUANTERRA RICHLAND I.D. 41048204.								

# Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
Data:							
1 PN - Plastic-1L	ICAPD/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111396:100)
1	SED/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111396:100)
1 PN - Plastic-1L	ICAPD/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111397:100)
1	SED/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111397:100)

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6603-006	B004N9	Water	21-OCT-94 09:20	24-OCT-94 13:30	28-NOV-94	FED-EX	1	Screening not Required
QUANTERRA RICHLAND I.D. 41048206.								

# Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1 PN - Plastic-1L	ICAPD/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111398:100)
1	SED/CLP90/Q4	S	HNO3	21-NOV-94	22-APR-95	S11D	(111398:100)

3*=Sample has not been rad screened.

Temp. 3° 4° 3° Cur 2192

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 481967
Page 1 of 2

Project Name/No. 1 B94-036
Sample Team Members 2
Profit Center No. 3 4632
Project Manager 4 V Pettay
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 10/24/94
Lab Destination 8 St Louis
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5 Quanterra Richland
Report to: 10

ONE CONTAINER PER LINE

	Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Preservative 19	Requested Testing Program 20	% Fill	Condition on Receipt 21	Disposal 22 PM Record No.
1	41048201A	BOD4H0 H2O	10/21/94 0900 See WHC	Amber Glass Loc/SAR	1 Liter	H2O3 4°C	Metals See WHC Loc/SAR	100%		2
	B		10/21/94 0900	Amber	500mL	Cold	Anions	100%	FOR LAB USE ONLY	
	C		10/21/94 0900	Poly	250mL	cold	Alkalinity	100%		
	D		10/21/94 0900	Poly	250mL	Cold	TDS	100%		
	E		10/21/94 0900	Poly	1 Liter	Neat	Cyanide	100%		9
4	2A	BOD4H1	10/21/94 0900	Amber	1 Liter	HNO3	Metals	100%	FOR LAB USE ONLY	
2	3A	BOD4K6	10/21/94 0900	Amber	1 Liter	HNO3	Metals	100%		2
	B		10/21/94 0920	Amber	500mL	Cold	Anions	100%		

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 W0267

1. Relinquished by 28 (Signature/Affiliation) [signature] Date: 10/24/94 Time: 1600	1. Received by 28 (Signature/Affiliation) [signature] Date: 10/25/94 Time: 08:55
2. Relinquished by (Signature/Affiliation) Date: Time:	2. Received by (Signature/Affiliation) Date: Time:
3. Relinquished by (Signature/Affiliation) Date: Time:	3. Received by (Signature/Affiliation) Date: Time:

Comments: 29

00030

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

INTERNATIONAL TECHNOLOGY CORPORATION

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

Reference Document No.[30] 481967

Project Name W0267 Project No. B94-036 Samples Shipment Date 10/24/94

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	pH	Disposal[22] Record No.
410482036	BOD4K6 / H_2O	10/21/94 0920 See WHC	POLY COC/SAR	250 ML	4° C cold	Alkalinity See WHC COC/SAR	100%		
D		10/21/94 0920	POLY	250 ML	Cold	TDS	100%		
E		10/21/94 0920	POLY	1 Liter	NaOH	Cyanide	100%	9	
4A	BOD4K7	10/21/94 0920	Amber	1 Liter	HNO_3	Metals	100%	2	
5A	BOD4N8	10/21/94 0920	Amber	1 Liter	HNO_3	Metals	100%	2	
B		10/21/94 0920	Amber	500 mL	Cold	Anions	100%		
C		10/21/94 0920	POLY	250 mL	Cold	Alkalinity	100%		
D		10/21/94 0920	POLY	250 mL	Cold	TDS	100%		
E		10/21/94 0920	POLY	1 Liter	NaOH	Cyanide	100%	8	
6A	BOD4N9	10/21/94 0920	Amber	1 Liter	HNO_3	Metals	100%	2	

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

00031

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: KD	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: 972	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: 1W95-0-0001-37A	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 4104830	TRITIUM	Tc-99	ACTIVITY SCAN	METALS (see S.I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2		HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P	P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1	1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml	1000ml				
SAMPLE ANALYSIS 410482																	
BD D4H0 01	W	10/21/94	0900	X	X	X	X	X	X	X	X	X					
BD D4H1 2	W	10/21/94	0900										X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: CH ZAMPILL / AJ SIMPSON	Date/Time: 10/21/94 1050	Received By: B. Whitten	Date/Time: 1050 10-21-94
Relinquished By: B. Whitten	Date/Time: 1350 10-24-94	Received By:	Date/Time: 2100 CPM 10/24/94 1350
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG-W0267

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

00032

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: A Rizza	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: SML-73	Field Logbook No.: EFL-1026	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-31	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410482	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 410483	TRITIUM 02	Tc-99 —	ACTIVITY SCAN —		METALS (see S.I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
BO D4K6 03	W	102194	0980	X	X	X	X	X	X	X	X	X						
BO D4K7 4	W	10·21·94	0980											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: A G Rizza	Date/Time: 1025 10 21 94	Received By: Butcher	Date/Time: 1015 10-21-94
Relinquished By: Butcher	Date/Time: 1350 10-24-94	Received By: Quantera	Date/Time: 10/24/94 1350
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDGW0267

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)

00033

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: A Rizzo	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: GWS-013	Field Logbook No.: EFL-7020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-000131	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS	METALS (see S. I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S. I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED				
410482	A	B	C	D	E	41048303	—				A				
Sample No. / Matrix* / Date Sampled / Time Sampled															
B0 D4N8 05 / W / 10-21-94 / 0920	X	X	X	X	X	X	X	X	X						
B0 D4N9 6 / W / 10-21-94 / 0920											X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: A G Rizzo		10-21-94 1045
Received By: Kit Whitten Bwhitten		10-21-94 1045
Relinquished By: Kit Whitten Bwhitten		10-24-94 1350
Received By: 2100gm		10/24/94 1350
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

00034

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10-24-94 13:30 Client Name WHC

Project/Client # B94-036, B94-037 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) 972

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☐ No ☒
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☒
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☐ No ☒
7. Number of sample containers in cooler: 29
8. Samples have: X tape ____ hazard labels
   X custody seals X appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 4°C

11. The following paperwork should be accounted for (N/A if not applicable): N/A
    Chain of Custody #'(s) _____
    Request for analysis #(s) _____
    Airbill # _____ Carrier _____
12. Have any anomalies been identified above? Yes ☐ No ☑
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore [signature] Date/Time 10/24/94 1350

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

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10-24-94 13:30 Client Name WHC

Project/Client # B94-036 Batch or Case #

Cooler ID (if noted on the outside of cooler) GWS 013

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☐ No ☒
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☒
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 19
8. Samples have: X tape ___ hazard labels
   X custody seals X appropriate sample labels
9. Samples are: X in good condition ___ leaking
   ___ broken ___ have air bubbles
   ___ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 6 °C

11. The following paperwork should be accounted for (N/A if not applicable): N/A
    Chain of Custody #'(s)
    Request for analysis #(s)
    Airbill # Carrier
12. Have any anomalies been identified above? Yes ☐ No ☑
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore [signature] Date/Time 10/24/94 1350

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

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10-24-94 WHC 13:30 Client Name WHC

Project/Client # B94-036 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) SMC-73

1. Condition of shipping container? O/C
2. Custody Seals on cooler intact? Yes ☐ No ☒
3. Custody Seals dated and signed? Yes ☒ No ☒ KRH 10-24-94
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☒
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 19
8. Samples have: X tape ____ hazard labels
   X custody seals X appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐
    Sample temperature 4°C
11. The following paperwork should be accounted for (N/A if not applicable): N/A
    Chain of Custody #'(s) _____
    Request for analysis #(s) _____
    Airbill # _____ Carrier _____
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore [signature] Date/Time 10/24/94 1350

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

SAMPLE STATUS REPORT FOR N 3075. RAD SCREEN 299E3326 TIME: 10/21/94 20: 1
DISPATCHED: 9/28/94 16:29 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/21/94 19:53

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

BOD4H0
BOD4H1
BW
10-24-94

SAMPLE STATUS REPORT FOR N 3095. RAD SCREEN 6995254 TIME: 10/21/94 20: 1
DISPATCHED: 9/28/94 16:30 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/21/94 19:53

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

BOD4N8
BOD4N9
BW
10-24-94

SAMPLE STATUS REPORT FOR N 3095. RAD SCREEN 6995254 TIME: 10/21/94 20: 1
DISPATCHED: 9/28/94 16:30 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/21/94 19:53

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

B0D4K6
B0D4K7
BW
10-24-94

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI		W95-0-0001-32

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 [X] Contractor [ ] Vendor

Routing [ ] Prepaid [ ] Collect

Shipped to
Company: Quanterra (IT)
Address: 2800 George Washington Way
City: Richland, WA 99352
State / Zip Code
Country

Off-site Custodian

On-site Custodian / Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1 lbs		Sample #: B0D4H0 B0D4H1 B0D4R1 B0D4Q5 Cooler ID: 972 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 [X] Unclassified [ ] Shipped Under DOE Contract [ ] Shipped Under Contractor's Use Permit Contract

RECEIVED OCT 24 1994 PROPERTY RECORDS

Necessity for the off-site use of this property

[ ] Required for Project Work. List Project No. 300-BP-5

[ ] Business Trip

[ ] Off-site Assignment

Bill of lading # N/A

[ ] Shipment to Subcontractor. List Subcontract No. N/A

[ ] Other (Please specify) Sampling supports RI/FS work in the 300 AREA

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
S. Sikes	OFF-0153	10-24-94

Location of and Contact for Property (Name/Phone No./Bldg./Area)
P. H. Butcher/(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
10-24-94	ITE2072/ PL531	

Originated By	Date	Authorized By	Date
B.T. WHITTEN	10-24-94	[signature]	10-24-94

Property Representative Signature	Date	Property Management Approval	Date
		[signature]	10/24/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

*U.S. GPO: 1994-592-170/00029

Received [signature] 10/24/94 1350

00041

54-3000-479 (01/94)

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI		W95-0-0001-31

PART I - TO BE COMPLETED BY ORIGINATOR

Department: ER Eng Support | Division: Field & Analytical Supp | Unit: ER Field Sampling

The following items are being shipped from: [X] Contractor [ ] Vendor

Routing: [ ] Prepaid [ ] Collect

Shipped to / Company / Address / City / Country: Quanterra (II), 2800 George Washington Way, Richland, WA 99352 — State — Zip Code

Off-site Custodian:

On-site Custodian: — Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1 lbs		Sample #: B0D4K6 B0D4K7 Cooler ID: SMI-72 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs		Sample #: B0D4N8 B0D4N9 Cooler ID: GW5-013 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

[ ] Classified [X] Unclassified [ ] Shipped Under DOE Contract [ ] Shipped Under Contractor's Use

Necessity for the off-site use of this property

[X] Required for Project Work. List Project No. 200-KP-5

[ ] Business Trip

[ ] Off-site Assignment

Bill of lading # N/A

[ ] Shipment to Subcontractor. List Subcontract No. N/A

[ ] Other (Please specify) Sampling supports RI/FS work in the 200 AREA

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]	[illegible]	10-24-94

Location of and Contact for Property (Phone No./Bldg./Area): P. H. Butcher/(509) [illegible]

Date Ready for Shipment	Cost Code to be Charged	Approximate Date Property will be Returned
10-24-94	ITE2072/ PL531	

Originated By	Date	Authorized By	Date
B.T. WHITTEN	10-24-94	[signature]	10-24-94

Property Representative Signature	Date	Property Management Approval	Date
		[signature]	10/24/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

*U.S. GPO: 1994-592-170/00029

[illegible]

102494B.WQ1

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All are Cat. I.
JRM 24 Oct. 94

Customer Code	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	10-24-94		10-24		10-2	10	17	214	240

Customer ID WHC	Sample Matrix Solid/Liquid	Residue Wght mg	Vol. Anal. mg ml	Sample Size Gm L	SMPLE CNT DATA Hfdr Num.	Total Counts Alpha	Total Counts Beta	Net Sample Counts/Minute Alpha	Net Sample Counts/Minute Beta	DPM / Aliquot Alpha	DPM / Aliquot Beta	uCi per Sample Alpha	uCi per Sample Beta	pCi / Gm or L Alpha	pCi / Gm or L Beta	1-sigma error pCi/ Gm or L Alpha	1-sigma error pCi/ Gm or L Beta	Category 1 Yes/No	Aliquot to Cat 1 Gm or L Alpha	Aliquot to Cat 1 Gm or L Beta
BOD4R1	LIQUID	2.6	10.0	1.0	46	1	29	0.03	2.01	4.75E-02	4.26E+00	2.1E-06	1.9E-04	2.1E+00	1.9E+02	40.86	52.43	Yes	4.7E+03	5.2E+02
BOD4H0	LIQUID	4.5	10.0	1.0	36	7	76	0.63	6.91	2.11E+00	1.45E+01	9.5E-05	6.5E-04	9.5E+01	6.5E+02	54.39	84.60	Yes	1.1E+02	1.5E+02
BOD4Q5	LIQUID	4.1	10.0	1.0	26	12	55	1.13	4.61	4.00E+00	9.24E+00	1.8E-04	4.2E-04	1.8E+02	4.2E+02	63.59	70.00	Yes	5.6E+01	2.4E+02
BOD4N6	LIQUID	8.0	10.0	1.0	10	11	304	1.03	29.51	3.07E+00	6.32E+01	1.4E-04	2.8E-03	1.4E+02	2.8E+03	61.05	166.36	Yes	7.2E+01	3.5E+01
BOD4K6	LIQUID	6.7	10.0	1.0	36	13	330	1.23	32.11	3.69E+00	6.85E+01	1.7E-04	3.1E-03	1.7E+02	3.1E+03	63.47	174.88	Yes	6.0E+01	3.2E+01

00043

Quanterra Environmental

C.U.R. and S.O.C.
COPIED TO: DK-WP
DATE: 10/25/94
TIME: 1040
BY: Larry Phillips

Work Order No.: 6603

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Quanterra Richland

Date: 10/25/94

Project No: 550.23

Initiated by: Larry Phillips

Analysis Requested: Refer to RFA/COC

RFA/COC Numbers: B94-036

Client Sample Numbers Affected: Entire Login

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

1	NA	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: 3° 4° 3°
	☐	pH _____
	☐	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	NA	Sample splits performed by lab.
10	NA	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): Shipping containers not rad surveyed.

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: (or designate) _____ Date: _____

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

Quanterra October 28, 1994 09:09 am
Account: 10722 Project: 550.23 Quanterra-Richland QAS No. 751 Rev. 0
Master Sample Login: 6616

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: M Jackson PM Review: Libby Walker

Sample Header Template:

Sample No. / Client ID / Comments	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6616-001 / B004L8 / QES, RICHLAND ID=41050101	Water	24-OCT-94 10:00	25-OCT-94 11:00	29-NOV-94	FED-EX	1	Screening not Required

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAP/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111538:100)
1		SE/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111538:100)
1	AN - Amber Glass-500ml	CL/300.0/Q4	S	COLD	22-NOV-94	21-NOV-94	R17B	(111539:100)
1		FL/300.0/Q4	S	COLD	22-NOV-94	21-NOV-94	R17B	(111539:100)
1		NO2/300.0/Q4	S	COLD	22-NOV-94	26-OCT-94	R17B	(111539:100)
1		OPHOS/300.0/Q4	S	COLD	22-NOV-94	26-OCT-94	R17B	(111539:100)
1		SO4/300.0/Q4	S	COLD	22-NOV-94	21-NOV-94	R17B	(111539:100)
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	22-NOV-94	07-NOV-94	R17B	(111542:100)
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	22-NOV-94	07-NOV-94	R17B	(111540:100)
1		TDS/160.1/Q4	S	COLD	22-NOV-94	31-OCT-94	R17B	(111541:99)

Sample No. / Client ID / Comments	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6616-002 / B004M2 / QES, RICHLAND ID=41050103	Water	23-OCT-94 10:30	25-OCT-94 11:00	29-NOV-94	FED-EX	1	Screening not Required

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAP/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111543:100)
1		SE/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111543:100)
1	AN - Amber Glass-500ml	CL/300.0/Q4	S	COLD	22-NOV-94	20-NOV-94	R17B	(111544:100)
1		FL/300.0/Q4	S	COLD	22-NOV-94	20-NOV-94	R17B	(111544:100)
1		NO2/300.0/Q4	S	COLD	22-NOV-94	25-OCT-94	R17B	(111544:100)
1		OPHOS/300.0/Q4	S	COLD	22-NOV-94	25-OCT-94	R17B	(111544:100)
1		SO4/300.0/Q4	S	COLD	22-NOV-94	20-NOV-94	R17B	(111544:100)
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	22-NOV-94	06-NOV-94	R17B	(111547:100)
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	22-NOV-94	06-NOV-94	R17B	(111545:100)
1		TDS/160.1/Q4	S	COLD	22-NOV-94	30-OCT-94	R17B	(111546:99)

Sample No. / Client ID / Comments	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6616-003 / B004P2 / QES, RICHLAND ID=41050105	Water	24-OCT-94 10:00	25-OCT-94 11:00	29-NOV-94	FED-EX	1	Screening not Required

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAP/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111548:100)
1		SE/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111548:100)
1	AN - Amber Glass-500ml	CL/300.0/Q4	S	COLD	22-NOV-94	21-NOV-94	R17B	(111549:100)
1		FL/300.0/Q4	S	COLD	22-NOV-94	21-NOV-94	R17B	(111549:100)
1		NO2/300.0/Q4	S	COLD	22-NOV-94	26-OCT-94	R17B	(111549:100)
1		OPHOS/300.0/Q4	S	COLD	22-NOV-94	26-OCT-94	R17B	(111549:100)
1		SO4/300.0/Q4	S	COLD	22-NOV-94	21-NOV-94	R17B	(111549:100)
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	22-NOV-94	07-NOV-94	R17B	(111552:100)
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	22-NOV-94	07-NOV-94	R17B	(111550:100)
1		TDS/160.1/Q4	S	COLD	22-NOV-94	31-OCT-94	R17B	(111551:99)

3**Sample has not been rad screened.

00045

Quanterra October 28, 1994 09:09 am
Account: 10722 Project: 550.23 Quanterra-Richland QAS No. 751 Rev. 0
Master Sample Login: 6616

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: _____ PM Review: _____

Sample Header Template: _____

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6616-004	B004L9	Water	24-OCT-94 10:26	25-OCT-94 11:00	29-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41050102								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAPD/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111553:100)
1		SED/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111553:100)

6616-005	B004M3	Water	23-OCT-94 10:30	25-OCT-94 11:00	29-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41050104								

1	AN - Amber Glass-1L	ICAPD/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111554:100)
1		SED/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111554:100)

6616-006	B004P3	Water	24-OCT-94 10:00	25-OCT-94 11:00	29-NOV-94	FED-EX	1	Screening not Required
QES, RICHLAND ID=41050106								

1	AN - Amber Glass-1L	ICAPD/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111555:100)
1		SED/CLP90/Q4	S	HNO3	22-NOV-94	23-APR-95	R17B	(111555:100)

3*=Sample has not been rad screened.

00046

Temp. 2° Cur. 2453

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 481968
Page 1 of 2

Project Name/No. 1 B94-036
Sample Team Members 2
Profit Center No. 3 4632
Project Manager 4 V Pettey
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 10/25/94
Lab Destination 8 St Louis
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5 Quanterra Richland
Report to: 10

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Preservative 19	Requested Testing Program 20	% Fill	Condition on Receipt 21	Disposal Record No. 22
41050101 A	80D4L8 H_2O	10/24/94 1026 See WHC	Amber LOCSAR	1 Liter	4°C HNO3	See WHC LOCSAR METALS	100		2
B		10/24/94 1026	Amber	500mL	Cold	Anions		FOR LAB USE ONLY	
C		10/24/94 1000	Poly	250mL	Cold	Alkalinity 1X2	1/2		
D		10/24/94 1000	Poly	250mL	Cold	TDS 1X2			
E		10/24/94 1000	Poly	1 Liter	NaOH	Cyanide 1X2			9
2A	80D4L9	10/24/94 1026	Amber	1 Liter	HNO3	Metals		FOR LAB USE ONLY	
3A	80D4M2	10/24/94 1030	Amber	1 Liter	HNO3	Metals			2
B		10/24/94 1030	Amber	500mL	Cold	Anions			

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 W0267

1. Relinquished by 28 (Signature/Affiliation) Tom Lt Quanterra	Date: 10/25/94 Time: 1600
1. Received by 29 (Signature/Affiliation) Larry Phillips	Date: 10/26/94 Time: 09:15
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

00047

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

INTERNATIONAL TECHNOLOGY CORPORATION

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

Reference Document No.[30] 481968

Project Name W0267 Project No. B94-036 Samples Shipment Date 10/25/94

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	% Fill	Condition on[21] Receipt	pH	Disposal[22] Record No.
41050103C	BOD4MZ H2O	10/24/94 1030 See WHC	Poly COC/SAR	250 mL	4°C Cold	Alkalinity See WHC COC/SAR	100			
D		10/24/94 1030	Poly	250 mL	Cold	TDS				
E		10/24/94 1030	Poly	1 Liter	NaOH	Cyanide			9	
4A	BOD4M3	10/24/94 1030	Amber	1 Liter	HNO3	Metals			2	
5A	BOD4PZ	10/24/94 1000	Amber	1 Liter	HNO3	Metals	90%		2	
B		10/24/94 1000	Amber	500 mL	Cold	Anions	90%			
C										
D										
E										
6A	BOD4P3	10/24/94 1000	Amber	1 Liter	HNO3	Metals	90%		2	
10/25/94										

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

00048

102594A.WQ1

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All are Cat. I.
JRM 25 Oct 94

Customer Code	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	10/25/94		10/25		10/2	10	21	247	240

Customer ID WHC	Sample Matrix Solid/Liquid	Residue Wght mg	Vol. Anal. mg ml	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Counts Alpha	Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliquot Alpha	Beta	uCi per Sample Alpha	Beta	pCi / Gm or L Alpha	Beta	1-sigma error pCi/ Gm or L Alpha	Beta	Category 1 Yes/No	Aliquot to Cat 1 Gm or L Alpha	Beta
BOD4L8	LIQUID	1.3	10.0	1.0	90	8	36	0.71	2.57	2.45E+00	5.08E+00	1.1E-04	2.3E-04	1.1E+02	2.3E+02	56.92	56.84	Yes	9.1E+01	4.4E+02
BOD4Q4	LIQUID	2.2	10.0	1.0	93	10	97	0.91	8.67	3.02E+00	1.80E+01	1.4E-04	8.1E-04	1.4E+02	8.1E+02	60.16	93.74	Yes	7.4E+01	1.2E+02
BOD4M2	LIQUID	2.6	10.0	1.0	94	12	34	1.11	2.37	3.93E+00	4.44E+00	1.8E-04	2.0E-04	1.8E+02	2.0E+02	64.59	54.47	Yes	5.6E+01	5.0E+02
BOD4P2	LIQUID	1.0	10.0	1.0	97	0	18	-0.09	0.77	-3.3E-01	1.69E+00	0.0E+00	7.6E-05	-1.5E+01	7.6E+01	40.61	42.14	Yes	-6.7E+02	1.3E+03

00049

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: K.D. LEE	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: 894-036
Ice Chest No.: ER-26	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: IN95-0-0001-34	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410501	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 41050201	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
BO D4C8 01	W	10/24/94	1026	X	X	X	X	X	X	X	X	X					
BO D4C9 2	W	10/24/94	1026											X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature]	10/25/94 0730	[signature] B Whitten	10-25-94
[signature] B Whitten	10-25-94 1100	[signature]	10/25/94 1100

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

00050

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: W. Setzer	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-1B	Field Logbook No.: EFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-33	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS	METALS (see S. I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALI-NITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S. I. #2)	TRITIUM	Tc-99	ACTIVI-TY SCAN		METALS (see S. I. #3) FILTERED				
410501	A	B	C	D	E	41050202					A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
B0 D4M2 3	W	10-23-94	1030	X	X	X	X	X	X	X	X	X					
B0 D4M3 4	W	10-23-94	1030										X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: AG Rizzo	Date/Time: 1230 10-23-94	Received By: B. Whitten	Date/Time: 10-24-94
Relinquished By: B. Whitten	Date/Time: 1100 10-25-94	Received By: [illegible]	Date/Time: 10/25/94 1100
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG-W0267

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)

00051

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K.D. LEE	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: 894-036
Ice Chest No.: CR-8	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-33	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCL <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410501	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) 410502 03	TRITIUM —	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
BO D4P2 5	W	10/25/94	1000	X	X	X	X	X	X	X	X	X					
BO D4P3 6	W	10/25/94	1000											X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
[signature]	10/25/94 0730	[signature] B.Whitten	10-25-94
Relinquished By	Date/Time	Received By	Date/Time
[signature] B.Whitten	10-25-94 1100	[signature]	10/25/94 1100
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Hg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Hg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

00052

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10/5/94 1100 Client Name BHI

Project/Client # 394-036 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER8

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☑
5. Vermiculite/packing material is: Wet ☐ Dry ☑
6. Each sample is in a plastic bag? Yes ☑ No ☐
7. Number of sample containers in cooler: 19
8. Samples have: ____ tape ____ hazard labels
   ✓ custody seals ✓ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature _____

11. The following paperwork should be accounted for (N/A if not applicable): N/A
    Chain of Custody #'(s) _____
    Request for analysis #(s) _____
    Airbill # _____ Carrier _____
12. Have any anomalies been identified above? Yes ☐ No ☐
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore [signature] Date/Time 10/5/94 1100

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

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10/25/94 1100 Client Name BHF

Project/Client # B94-036 Batch or Case # _____

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

1. Condition of shipping container? ok
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☑
5. Vermiculite/packing material is: Wet ☐ Dry ☑
6. Each sample is in a plastic bag? Yes ☑ No ☐
7. Number of sample containers in cooler: 19
8. Samples have: _____ tape _____ hazard labels
   1 custody seals 1 appropriate sample labels
9. Samples are: ✓ in good condition _____ leaking
   _____ broken _____ have air bubbles
   _____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature 4°C

11. The following paperwork should be accounted for (N/A if not applicable): N/A
    Chain of Custody #'(s) _____
    Request for analysis #(s) _____
    Airbill # _____ Carrier _____
12. Have any anomalies been identified above? Yes ☐ No ☐
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore [signature] Date/Time 10/25/94 1100

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

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10/25/94 1100 Client Name BHF

Project/Client # B94-036 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER-26

1. Condition of shipping container? ok
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☑
5. Vermiculite/packing material is: Wet ☐ Dry ☑
6. Each sample is in a plastic bag? Yes ☑ No ☐
7. Number of sample containers in cooler: 19
8. Samples have: ____ tape ____ hazard labels
   ✓ custody seals ✓ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature 4°C

11. The following paperwork should be accounted for (N/A if not applicable): N/A
    Chain of Custody #'(s) _____
    Request for analysis #(s) _____
    Airbill # _____ Carrier _____
12. Have any anomalies been identified above? Yes ☐ No ☐
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore [signature] Date/Time 10/25/94 1100

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

Contractor BHI	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W95-0-0001-34

PART I - TO BE COMPLETED BY ORIGINATOR

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

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

Routing ☐ Prepaid ☐ Collect

Shipped to
Company Quanterra (IT)
Address 2800 George Washington Way
City Richland, WA 99352 State Zip Code
Country

Off-site Custodian

On-site Custodian Payroll No.

Qty.	Property No.	Description (Include Manufacture Name, Model, Serial No.)	Acquisition Cost
1 lbs		Sample #: BOD4L8 BOD4L9 Cooler ID: ER-26 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs		Sample #: BOD4Q4 Cooler ID: EMS 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

☐ Required for Project Work. List Project No. 200-BD-5

☐ Business Trip

Bill of lading # N/A

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. N/A

☐ Other (Please specify) Sampling supports RI/FS work in the 200 AREA

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]	[illegible]	[illegible]

Location of and Contact for Property (Name/Phone No./Bldg./Area)
P. H. Butcher/ (509)376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
10-25-94	ITE 2072 PL531	

Originated By	Date	Authorized By	Date
B.T. WHITTEN	10-25-94	Bill Whitten	10-25-94
Property Representative Signature	Date	Property Management Approval	Date
		[illegible]	10/25/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

*U.S. GPO: 1994-592-170/00029

Received [illegible] 10/25/94 1100

54-3000-479 (01/94)

00056

Contractor BHI	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W95-0-0001-33

PART I - TO BE COMPLETED BY ORIGINATOR

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

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

Routing ☐ Prepaid ☐ Collect

Shipped to Quanterra (IT)
Company 2800 George Washington Way
Address Richland, WA 99352
City State Zip Code
Country

Off-site Custodian

On-site Custodian Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1 lbs		Sample #: B0D4M2 B0D4M3 Cooler ID; ER-16 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs		Sample #: B0D4F2 B0D4F3 Cooler ID; ER-8 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

☐ Required for Project Work. List Project No. 200-BP-5

☐ Business Trip Bill of lading # NA

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. N/A

☐ Other (Please specify) Sampling supports RI/FS work in the 200 AREA

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

RM Clearance for Public Release	RM Survey No.	Date

Location of and Contact for Property (Name/Phone No./Bldg./Area)
P. H. Butcher/(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
10-25-94	ITE 2072 FL 531	

Originated By	Date	Authorized By	Date
B.T. WHITTEN	10-25-94	[signature]	10-25-94
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
		[signature]	10/25/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

*U.S. GPO: 1994-592-170/00029

Received [signature] 10/25/94 1100

SAMPLE STATUS REPORT FOR N 3103. RAD SCREEN 6995759 TIME: 10/24/94 20:58
DISPATCHED: 9/28/94 16:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/24/94 15:41

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

BOD4M2
BOD4MB
BW
10-25-94

SAMPLE STATUS REPORT FOR N 3466. RAD SCREEN FLD BLNK TIME: 10/24/94 19:38
DISPATCHED: 10/24/94 10:21 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/24/94 15:40

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	XR5116

END OF REPORT

B0D4P2
B0D4P3
RW
10-25-94

SAMPLE STATUS REPORT FOR N 3101. RAD SCREEN 6995555 TIME: 10/24/94 19:38
DISPATCHED: 9/28/94 16:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/24/94 15:40

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

B0D428
B0D429
BW
10-25-94

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI		W95-0-0001-33

PART I - TO BE COMPLETED BY ORIGINATOR

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

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

Routing ☐ Prepaid ☐ Collect

Shipped to
Company Quanterra (IT)
Address 2800 George Washington Way
City Richland, WA 99352 State Zip Code
Country

Off-site Custodian

On-site Custodian Payroll No.

Qty.	Property No.	Description (Include Manufacture Name, Model, Serial No.)	Acquisition Cost
1 lbs		Sample #: B0D4M2 B0D4M3 Cooler ID; ER-1B Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs		Sample #: B0D4P2 B0D4P3 Cooler ID; ER-2 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

☐ Required for Project Work. List Project No. 200-BP-5

☐ Business Trip

☐ Off-site Assignment

Bill of lading # NA

☐ Shipment to Subcontractor. List Subcontract No. N/A

☐ Other (Please specify) Sampling supports RI/FS work in the 200 AREA

RECEIVED
OCT 25 1994
PROPERTY RECORDS

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
N Smart	PS-Off-0155	10-25-94

Location of and Contact for Property (Name/Phone No./Bldg./Area)
P. H. Butcher/(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
10-25-94	ITE 2072 PL531	

Originated By	Date	Authorized By	Date
BJ. WHITTEN	10-25-94	[signature]	10-25-94
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
		[signature]	10/25/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

*U.S. GPO: 1994-592-170/00029

Received [signature] 10/25/94 1100

54-3000-479 (01/94)

Quanterra Environmental Services

C.U.R. and C.C.C.
COPIED TO: DK-WP
DATE: 10/26/94
TIME: 0110
BY: Larry Phillips

Work Order No.: 6616

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: QES, Richland
Date: 10/26/94
Project No: 550.23
Initiated by: Larry Phillips
Analysis Requested: Refer to RFA/COC
RFA/COC Numbers: B94-036
Client Sample Numbers Affected: Entire Login

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

1. NA 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: 2° Water Bottle Temp 2°
   - ☐ pH _____
   - ☐ 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. NA Sample splits performed by lab.
10. NA 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):
    Shipping containers not rad surveyed.

Notes: missing 4/050105-C, D + E

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: (or designee) _____ Date: _____

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

00062

Quanterra October 27, 1994 02:34 pm
Account: 10722 Project: 550.23 Quanterra-Richland QAS No. 751 Rev. 0
Master Sample Login: 6631

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: M Jackson PM Review:

Sample Header Template:

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6631-001	B004N0	Water	25-OCT-94 09:05	27-OCT-94 09:00	01-DEC-94	FED-EX	3*	Sample not Screened
QES, RICHLAND ID=41053901								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAP/CLP90/Q4	S	HNO3	24-NOV-94	25-APR-95	S3A	(111841:100)
1		SE/CLP90/Q4	S	HNO3	24-NOV-94	25-APR-95	S3A	(111841:100)
1	AN - Amber Glass-500ml	CL/300.0/Q4	S	COLD	24-NOV-94	22-NOV-94	S3A	(111842:100)
1		FL/300.0/Q4	S	COLD	24-NOV-94	22-NOV-94	S3A	(111842:100)
1		NO2/300.0/Q4	S	COLD	24-NOV-94	27-OCT-94	S3A	(111842:100)
1		OPHOS/300.0/Q4	S	COLD	24-NOV-94	27-OCT-94	S3A	(111842:100)
1		SO4/300.0/Q4	S	COLD	24-NOV-94	22-NOV-94	S3A	(111842:100)
1	PN - Plastic-1L	CN/CLP/Q4	S	NAOH	24-NOV-94	08-NOV-94	S3A	(111845:100)
1	PN - Plastic-250ml	ALK/310.1/Q4	S	COLD	24-NOV-94	08-NOV-94	S3A	(111843:100)
1		TDS/160.1/Q4	S	COLD	24-NOV-94	01-NOV-94	S3A	(111844:99)

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
6631-002	B004M1	Water	25-OCT-94 09:05	27-OCT-94 09:00	01-DEC-94	FED-EX	3*	Sample not Screened
QES, RICHLAND ID=41053902								

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-1L	ICAPD/CLP90/Q4	S	HNO3	24-NOV-94	25-APR-95	S3A	(111846:100)
1		SED/CLP90/Q4	S	HNO3	24-NOV-94	25-APR-95	S3A	(111846:100)

3*=Sample has not been rad screened.

00063

Temp. 4° Cor 2/16

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 481971
Page 1 of 1

Project Name/No. 1: B94-036
Sample Team Members 2:
Profit Center No. 3: 4632
Project Manager 4: V Pettey
Purchase Order No. 6:
Required Report Date 11: 11/30/94

Samples Shipment Date 7: 10/26/94
Lab Destination 8: St Louis
Lab Contact 9:
Project Contact/Phone 12:
Carrier/Waybill No. 13:

Bill to: 5: Quanterra Richland
Report to: 10:

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	% Fill	Condition on Receipt 21	Disposal Record No. 22
41053901A	BOD4M0 /H2O	10/25/94 0905 See WHC	Amber Cod SAR	1 Liter	HNO3 4°C	Metals See WHC Cod SAR	100		2
B		10/25/94 0905	Amber	500 mL	Cold	Anions			
C		10/25/94 0905	Poly	250 mL	Cold	Alkalinity			
D		10/25/94 0905	Poly	250 mL	Cold	TDS			
E		10/25/94 0905	Poly	1 Liter	NaOH	Cyanide			
2A	BOD4M1 /H2O	10/25/94 0905	Amber	1 Liter	HNO3	Metals			
10/26/94									

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 ☐ 11/30/94

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0267 closed

1. Relinquished by 28 (Signature/Affiliation)	Date: 10/26/94 Time: 1600	1. Received by 28 (Signature/Affiliation) Larry Phillips	Date: 10/27/94 Time: 09:00
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.

00064

102694A.WQ2

TENNELEC #2

SCREENING CALCULATION SPREADSHEET

(1 R3) 10/26/94

Customer Code	Recieved Date		Screening Prep Date		Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	10/26/94		10/26		10/2	10	15	237	240

Customer ID	Sample Matrix	Residue Wght	Vol. Anal.	Sample Size	SMPLE CNT DATA Hldr	Total Counts		Net Sample Counts/Minute		DPM / Aliquot		uCi per Sample		pCi / Gm or L		1-sigma error pCi/ Gm or L		Category 1	Aliquot to Cat I Gm or L		
WHC	Solid/Liquid	mg	mg ml	Gm L	Num.	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta	Yes/No	Alpha	Beta	
BOD512	LIQUID	77.8	5.0	1.0	1	8	54	0.74	4.41	2.52E+00	8.63E+00	2.3E-04	8.0E-04	2.3E+02	8.0E+02	113.40	136.73	Yes	4.4E+01	1.3E+02	Cat I
BOD513	LIQUID	8.2	10.0	1.0	2	6	114	0.54	10.41	1.59E+00	2.18E+01	7.2E-05	9.8E-04	7.2E+01	9.8E+02	54.12	101.06	Yes	1.4E+02	1.0E+02	
BOD4M6	LIQUID	2.3	10.0	1.0	3	1	19	0.04	0.91	1.02E-01	1.92E+00	4.6E-06	8.6E-05	4.6E+00	8.6E+01	45.04	42.24	Yes	2.2E+03	1.2E+03	
;BOD4P8	LIQUID	0.0	10.0	1.0	4	2	13	0.14	0.31	5.22E-01	5.75E-01	2.4E-05	2.6E-05	2.4E+01	2.6E+01	47.78	34.85	Yes	4.3E+02	3.9E+03	
BOD4M0	LIQUID	5.5	10.0	1.0	5	14	281	1.34	27.11	3.90E+00	5.66E+01	1.8E-04	2.6E-03	1.8E+02	2.6E+03	65.77	158.32	Yes	5.7E+01	3.9E+01	
BOD4P6	LIQUID	0.0	10.0	1.0	6	3	18	0.24	0.81	8.88E-01	1.57E+00	4.0E-05	7.1E-05	4.0E+01	7.1E+01	50.04	40.48	Yes	2.5E+02	1.4E+03	
BOD549	SOLID	82.5	82.5	800.0	7	4	26	0.34	1.61	2.21E+00	3.56E+00	9.7E-03	1.6E-02	1.2E+01	1.9E+01	11.07	6.52	Yes	6.3E+02	5.1E+03	
BOD550	SOLID	84.1	84.1	950.0	8	0	19	-0.06	0.91	-5.0E-01	2.21E+00	0.0E+00	1.1E-02	-2.7E+00	1.2E+01	8.86	5.66	Yes	-3.7E+03	8.4E+03	
BOD542	SOLID	91.3	91.3	1150.0	9	3	31	0.24	2.11	1.56E+00	4.86E+00	8.9E-03	2.8E-02	7.7E+00	2.4E+01	10.03	8.55	Yes	1.3E+03	4.2E+03	
BOD551	SOLID	79.4	79.4	800.0	10	1	57	0.04	4.71	-9.5E-02	1.11E+01	0.0E+00	5.0E-02	-5.4E-01	6.3E+01	9.50	10.09	Yes	-1.9E+04	1.6E+03	
BOD543	SOLID	70.6	70.6	1300.0	11	4	66	0.34	5.61	1.77E+00	1.28E+01	1.5E-02	1.1E-01	1.1E+01	8.2E+01	11.79	11.96	No	8.9E+02	1.2E+03	Cat II

000065

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K. D. Lee	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-26	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-D-0001-37	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	G	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410539	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) 41054001	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
BO D4M0 01	W	10/25/94	~~1140~~ 0905	X	X	X	X	X	X	X	X	X					
BO D4M1 2	W	10/25/94	~~1140~~ 0905										X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: K.D. Lee	Received By: B.W. Hatton	10/25/94 1145
Relinquished By: B.W. Hatton	Received By: R. Boyd Austin	10-26-94 1130
Relinquished By	Received By	
Relinquished By	Received By	

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Hg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Hg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

00066

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 10/26/94 1130 Client Name BHI

Project/Client # 894-036 Batch or Case # 10/26/94

Cooler ID (if noted on the outside of cooler) ~~ER~~ ER-26

1. Condition of shipping container? ok
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☐ No ☑
5. Vermiculite/packing material is: Wet ☐ Dry ☑
6. Each sample is in a plastic bag? Yes ☐ No ☑
7. Number of sample containers in cooler: 19
8. Samples have: ____ tape ____ hazard labels
   ✓ custody seals ✓ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature 20°C

11. The following paperwork should be accounted for (N/A if not applicable): N/A
    Chain of Custody #'(s) ____
    Request for analysis #(s) ____
    Airbill # ____ Carrier ____
12. Have any anomalies been identified above? Yes ☐ No ☑
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Tom Gilmore [signature] Date/Time 10/26/94 1130

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

SAMPLE STATUS REPORT FOR N 3102. RAD SCREEN 6995557 TIME: 10/25/94 22: 9
DISPATCHED: 9/28/94 16:31 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 10/25/94 11:20

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	J12UP

END OF REPORT

B0D4M0
B0D4M1
BW
10-26-94

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI		W95-0-0001-37

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 [X] Contractor [ ] Vendor

Routing [ ] Prepaid [ ] Collect

Shipped to
Company: Quanterra (IT)
Address: 2800 George Washington Way
City: Richland, WA 99352
State / Zip Code
Country

Off-site Custodian

On-site Custodian — Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1 lbs		Sample #: B0D4M0 B0D4M1 Cooler ID: ER-26 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs		Sample #: B0D4P6 B0D4P7 Cooler ID: EMS Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

[ ] Classified [X] Unclassified [ ] Shipped Under DOE Contract [ ] Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

[X] Required for Project Work. List Project No. 200-BP-5

[ ] Business Trip

[ ] Off-site Assignment

[ ] Shipment to Subcontractor. List Subcontract No. N/A

[ ] Other (Please specify) Sampling supports RI/FS work in the 200 AREA

Bill of lading # N/A

RECEIVED
OCT 26 1994
PROPERTY RECORDS

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
S. Sides	PS-OFF-0110	10-26-94

Location of and Contact for Property (Name/Phone No./Bldg./Area)
P. H. Butcher/ (509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
10-26-94	ITE 2072 RL531	

Originated By	Date	Authorized By	Date
B.T. WHITTEN	10-26-94	[signature]	10-26-94

Property Representative Signature	Date	Property Management Approval	Date
		[signature]	10/26/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

*U.S. GPO: 1994-582-170/00029

Received [signature] 10/26/94 1130

54-3000-479 (01/94)

Quanterra Environmental Services

C.U.R. and
COPIED TO: DK - WP
DATE: 10/27/94
TIME: 1110
BY: Larry Phillips

Work Order No.: ~~6630~~ 6631

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: QES, Richland
Date: 10/27/94
Project No: 550.23
Initiated by: Larry Phillips
Analysis Requested: Refer to RFA/COC
RFA/COC Numbers: B94-036
Client Sample Numbers Affected: Entire Login

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

1.	NA	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: 4°
	☐	pH _____
	☐	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.	NA	Sample splits performed by lab.
10.	NA	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): Shipping containers not rad surveyed.

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: (or designate) _____ Date: _____

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

00070

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

Analytical Data Package Prepared For

Westinghouse/Bechtel Hanford

Radiochemical Analysis By

Quanterra Environmental Services
Richland Laboratory

DEC 1994
RECEIVED
Date
Log In

Sample Delivery Group Number: W0267

CLIENT ID NUMBER	QUANTERRA ID NUMBER
B0D4H4	41045101
B0D4P4	41045102
B0D4L6	41045103
B0D4H0	41048301
B0D4K6	41048302
B0D4N8	41048303
B0D4L8	41050201
B0D4M2	41050202
B0D4P2	41050203
B0D4M0	41054001

RECORD COPY

Quanterra Environmental Services

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

CERTIFICATE OF ANALYSIS

DEC 1994
RECEIVED
Data
Log In

Bechtel Hanford, Inc.
345 Hills
Richland, WA 99352

December 12, 1994

Attention: Joan Kessner

SAF Number	:	B94-036
Date SDG Closed	:	October 26, 1994
Number of Samples	:	Ten (10)
Sample Type	:	Water
SDG Number	:	W0267
Data Deliverable	:	Stand Alone

RECORD COPY

I. Introduction

On October 21, 24, 25, and 26, 1994, a total of ten water samples were received by the Quanterra Environmental Services Richland Laboratory (QTESRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

QTESRL ID	BHI ID	Matrix	Date of Receipt
41045101	B0D4H4	Water	10/21/94
41045102	B0D4P4	Water	10/21/94
41045103	B0D4L6	Water	10/21/94
41048301	B0D4H0	Water	10/24/94
41048302	B0D4K6	Water	10/24/94
41048303	B0D4N8	Water	10/24/94
41050201	B0D4L8	Water	10/25/94
41050202	B0D4M2	Water	10/25/94
41050203	B0D4P2	Water	10/25/94
41054001	B0D4M0	Water	10/26/94

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 W0267 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 B0D4P4) results are within contractual limits.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
The Fe-59 RDL was exceeded for samples B0D4K6 and B0D4N8. The batch blank met all required RDLs, therefore, the sample results are accepted. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4H4) results are within contractual limits, except as noted.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The analysis sizes for samples B0D4K6, B0D4N8, and B0D4M0 were reduced due to high beta screening activities. As a result, the RDL was exceeded for those samples. The samples were recounted for 100 minutes to improve the achieved detection limits, however, the RDL was not met on the recount. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4H4) results are within contractual limits, except as noted.

Gross Beta by method ITAS-RD-3222
The analysis sizes for samples B0D4K6, B0D4N8, and B0D4M0 were reduced due to high beta screening activities. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4H4) results are within contractual limits.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4H4) results are within contractual requirements.

Liquid Scintillation Counting

Technetium-99 by method ITAS-IT-RS-0001
The matrix spike recovery for sample B0D4M0 is outside of acceptable limits. The sample activity is more than 20 times greater than the activity of spike that was added, therefore, the batch sample results are accepted. The, LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4P2) results are within contractual requirements.

Tritium by method ITAS-RD-3205
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4L6) results are within contractual requirements.

Total Uranium

Total Uranium by method ITAS-RD-4200
During the calibration check, the 100 ng/ml spike yield did not fall within the required limits, however, five additional spike checks were within acceptable limits. A technician noted possible contaminants in the questionable spike and it was discarded. The matrix spike, LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4L6) results are within contractual requirements.

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

Reviewed and approved:

Suzanne Gaines
Project Manager

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41045101	MATRIX:	WATER
CLIENT ID:	B0D4H4	DATE RECEIVED:	10/21/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-1.10E-02	1.1E-02	1.1E-02	2.64E-01	pCi/L	75.60%	RD3209
PU239/40	4.69E-02	1.1E-01	1.1E-01	2.49E-01	pCi/L	75.60%	RD3209
CO-58	-1.85E+00	5.7E+00	5.7E+00	1.01E+01	pCi/L	N/A	RD3219
CO-60	2.91E+00	4.9E+00	4.9E+00	9.94E+00	pCi/L	N/A	RD3219
CS-137DA	5.32E+00	3.5E+00	3.5E+00	7.98E+00	pCi/L	N/A	RD3219
EU-152	8.78E+00	1.0E+01	1.0E+01	1.89E+01	pCi/L	N/A	RD3219
EU-154	-2.08E+00	1.4E+01	1.4E+01	2.46E+01	pCi/L	N/A	RD3219
EU-155	1.47E+00	9.9E+00	9.9E+00	1.64E+01	pCi/L	N/A	RD3219
FE-59	-1.45E+01	1.1E+01	1.1E+01	1.52E+01	pCi/L	N/A	RD3219
RU-106DA	-2.67E+01	3.9E+01	3.9E+01	6.34E+01	pCi/L	N/A	RD3219
ALPHA	2.02E+00	1.3E+00	1.3E+00	1.36E+00	pCi/L	100.00%	RD3214
BETA	1.42E+01	2.2E+00	2.4E+00	2.84E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.51E-03	2.3E-01	2.3E-01	7.91E-01	pCi/L	91.70%	RD3204
TC-99	2.11E+01	1.3E+00	6.2E+00	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	3.33E+03	2.0E+02	4.2E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	2.47E+00	N/A	3.7E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41045102	MATRIX:	WATER
CLIENT ID:	B0D4P4	DATE RECEIVED:	10/21/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-3.23E-03	6.5E-03	6.5E-03	2.42E-01	pCi/L	64.70%	RD3209
PU239/40	-9.67E-03	1.1E-02	1.1E-02	2.91E-01	pCi/L	64.70%	RD3209
CO-58	-4.90E+00	5.2E+00	5.2E+00	7.91E+00	pCi/L	N/A	RD3219
CO-60	1.20E+00	3.5E+00	3.5E+00	7.29E+00	pCi/L	N/A	RD3219
CS-137DA	-2.41E+00	3.6E+00	3.6E+00	6.05E+00	pCi/L	N/A	RD3219
EU-152	4.56E+00	9.6E+00	9.6E+00	1.78E+01	pCi/L	N/A	RD3219
EU-154	3.73E+00	9.2E+00	9.2E+00	2.05E+01	pCi/L	N/A	RD3219
EU-155	-1.07E+00	6.6E+00	6.6E+00	1.07E+01	pCi/L	N/A	RD3219
FE-59	-6.84E-01	1.2E+01	1.2E+01	2.38E+01	pCi/L	N/A	RD3219
RU-106DA	-8.51E+00	3.7E+01	3.7E+01	6.48E+01	pCi/L	N/A	RD3219
ALPHA	2.72E-01	4.3E-01	4.3E-01	8.60E-01	pCi/L	100.00%	RD3214
BETA	7.91E-01	1.2E+00	1.2E+00	2.64E+00	pCi/L	100.00%	RD3214
STRONTIUM	8.98E-02	2.3E-01	2.3E-01	7.65E-01	pCi/L	100.00%	RD3204
TC-99	4.19E-01	9.8E-01	4.4E+00	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	1.08E+02	1.1E+02	2.1E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	1.90E-02	N/A	3.0E-03	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	**SDG:**	W0267
LAB SAMPLE ID:	41045103	**MATRIX:**	WATER
CLIENT ID:	B0D4L6	**DATE RECEIVED:**	10/21/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	3.65E-01	3.9E-01	4.0E-01	4.90E-01	pCi/L	42.90%	RD3209
PU239/40	-1.46E-02	1.7E-02	1.7E-02	4.38E-01	pCi/L	42.90%	RD3209
CO-58	2.77E+00	4.1E+00	4.1E+00	8.92E+00	pCi/L	N/A	RD3219
CO-60	1.37E+00	4.5E+00	4.5E+00	8.63E+00	pCi/L	N/A	RD3219
CS-137DA	3.19E-01	4.0E+00	4.0E+00	7.48E+00	pCi/L	N/A	RD3219
EU-152	1.58E+01	1.0E+01	1.0E+01	2.03E+01	pCi/L	N/A	RD3219
EU-154	-1.20E+01	1.4E+01	1.4E+01	2.15E+01	pCi/L	N/A	RD3219
EU-155	2.13E+00	1.0E+01	1.0E+01	1.72E+01	pCi/L	N/A	RD3219
FE-59	3.41E+00	1.5E+01	1.5E+01	2.85E+01	pCi/L	N/A	RD3219
RU-106DA	-8.42E+00	3.3E+01	3.3E+01	5.98E+01	pCi/L	N/A	RD3219
ALPHA	2.31E+00	1.4E+00	1.4E+00	1.41E+00	pCi/L	100.00%	RD3214
BETA	6.59E+00	1.8E+00	1.8E+00	2.81E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.18E-01	2.3E-01	2.3E-01	7.49E-01	pCi/L	98.30%	RD3204
TC-99	9.69E-02	9.6E-01	4.4E+00	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	1.37E+01	1.1E+02	2.1E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	2.40E+00	N/A	3.6E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41048301	MATRIX:	WATER
CLIENT ID:	B0D4H0	DATE RECEIVED:	10/24/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	5.83E-02	1.2E-01	1.2E-01	1.58E-01	pCi/L	71.60%	RD3209
PU239/40	-5.82E-03	8.2E-03	8.3E-03	2.43E-01	pCi/L	71.60%	RD3209
CO-58	1.77E+00	5.7E+00	5.7E+00	1.13E+01	pCi/L	N/A	RD3219
CO-60	8.35E+00	4.5E+00	4.5E+00	1.20E+01	pCi/L	N/A	RD3219
CS-137DA	1.14E+00	4.6E+00	4.6E+00	8.72E+00	pCi/L	N/A	RD3219
EU-152	4.11E+00	1.2E+01	1.2E+01	2.08E+01	pCi/L	N/A	RD3219
EU-154	5.63E+00	1.0E+01	1.0E+01	2.42E+01	pCi/L	N/A	RD3219
EU-155	7.96E+00	1.1E+01	1.1E+01	1.92E+01	pCi/L	N/A	RD3219
FE-59	2.19E+00	1.4E+01	1.4E+01	2.70E+01	pCi/L	N/A	RD3219
RU-106DA	4.68E+01	2.9E+01	3.0E+01	7.23E+01	pCi/L	N/A	RD3219
ALPHA	5.06E+00	2.0E+00	2.1E+00	1.55E+00	pCi/L	100.00%	RD3214
BETA	1.60E+02	6.3E+00	1.3E+01	3.03E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.78E-01	2.4E-01	2.4E-01	7.56E-01	pCi/L	99.80%	RD3204
TC-99	6.36E+02	4.7E+00	7.2E+01	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	6.61E+03	2.5E+02	6.4E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	1.06E+01	N/A	1.6E+00	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41048302	MATRIX:	WATER
CLIENT ID:	B0D4K6	DATE RECEIVED:	10/24/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-1.11E-02	1.1E-02	1.1E-02	2.64E-01	pCi/L	75.60%	RD3209
PU239/40	-8.28E-03	9.6E-03	9.7E-03	2.49E-01	pCi/L	75.60%	RD3209
CO-58	-1.18E+01	7.8E+00	7.9E+00	1.09E+01	pCi/L	N/A	RD3219
CO-60	6.26E+01	1.3E+01	1.4E+01	N/A	pCi/L	N/A	RD3219
CS-137DA	6.32E-01	3.8E+00	3.8E+00	7.34E+00	pCi/L	N/A	RD3219
EU-152	5.16E+00	8.9E+00	8.9E+00	1.69E+01	pCi/L	N/A	RD3219
EU-154	-1.05E+01	1.8E+01	1.8E+01	2.95E+01	pCi/L	N/A	RD3219
EU-155	2.95E+00	7.1E+00	7.1E+00	1.27E+01	pCi/L	N/A	RD3219
FE-59	-1.35E+00	1.7E+01	1.7E+01	3.08E+01	pCi/L	N/A	RD3219
RU-106DA	-1.15E+01	3.6E+01	3.6E+01	6.33E+01	pCi/L	N/A	RD3219
ALPHA	4.92E+00	3.7E+00	3.8E+00	5.69E+00	pCi/L	100.00%	RD3214
BETA	1.82E+03	6.5E+01	1.4E+02	2.72E+01	pCi/L	100.00%	RD3214
STRONTIUM	-1.03E-01	2.5E-01	2.5E-01	9.03E-01	pCi/L	78.40%	RD3204
TC-99	4.25E+03	1.2E+01	4.7E+02	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	4.29E+03	2.1E+02	4.8E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	6.82E+00	N/A	1.0E+00	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41048303	MATRIX:	WATER
CLIENT ID:	B0D4N8	DATE RECEIVED:	10/24/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-3.45E-03	6.9E-03	6.9E-03	2.58E-01	pCi/L	60.50%	RD3209
PU239/40	-1.03E-02	1.2E-02	1.2E-02	3.11E-01	pCi/L	60.50%	RD3209
CO-58	-4.58E-01	6.8E+00	6.8E+00	1.15E+01	pCi/L	N/A	RD3219
CO-60	4.93E+01	1.5E+01	1.6E+01	N/A	pCi/L	N/A	RD3219
CS-137DA	1.86E+00	4.5E+00	4.5E+00	8.66E+00	pCi/L	N/A	RD3219
EU-152	2.00E+00	1.1E+01	1.1E+01	1.88E+01	pCi/L	N/A	RD3219
EU-154	-1.48E+01	1.3E+01	1.3E+01	1.75E+01	pCi/L	N/A	RD3219
EU-155	-1.40E+00	1.0E+01	1.0E+01	1.57E+01	pCi/L	N/A	RD3219
FE-59	1.20E+01	1.4E+01	1.5E+01	3.02E+01	pCi/L	N/A	RD3219
RU-106DA	-5.51E+01	5.1E+01	5.1E+01	7.77E+01	pCi/L	N/A	RD3219
ALPHA	4.67E+00	3.6E+00	3.7E+00	5.61E+00	pCi/L	100.00%	RD3214
BETA	1.31E+03	5.5E+01	1.1E+02	2.70E+01	pCi/L	100.00%	RD3214
STRONTIUM	2.13E-01	3.0E-01	3.0E-01	9.30E-01	pCi/L	74.10%	RD3204
TC-99	4.25E+03	1.2E+01	4.7E+02	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	4.08E+03	2.1E+02	4.7E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	6.99E+00	N/A	1.1E+00	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41050201	MATRIX:	WATER
CLIENT ID:	B0D4L8	DATE RECEIVED:	10/25/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-6.54E-03	9.2E-03	9.3E-03	2.73E-01	pCi/L	63.90%	RD3209
PU239/40	5.55E-02	1.3E-01	1.3E-01	2.94E-01	pCi/L	63.90%	RD3209
CO-58	2.32E+00	5.0E+00	5.0E+00	1.01E+01	pCi/L	N/A	RD3219
CO-60	4.76E+00	3.4E+00	3.4E+00	9.44E+00	pCi/L	N/A	RD3219
CS-137DA	-4.61E+00	5.4E+00	5.4E+00	8.52E+00	pCi/L	N/A	RD3219
EU-152	-3.76E+00	1.1E+01	1.1E+01	1.73E+01	pCi/L	N/A	RD3219
EU-154	8.04E+00	7.2E+00	7.2E+00	2.11E+01	pCi/L	N/A	RD3219
EU-155	-6.58E+00	9.6E+00	9.6E+00	1.46E+01	pCi/L	N/A	RD3219
FE-59	1.04E+01	1.1E+01	1.1E+01	2.52E+01	pCi/L	N/A	RD3219
RU-106DA	1.04E+01	4.3E+01	4.3E+01	7.84E+01	pCi/L	N/A	RD3219
ALPHA	2.87E-01	6.4E-01	6.4E-01	1.48E+00	pCi/L	100.00%	RD3214
BETA	6.56E+01	4.1E+00	6.2E+00	2.79E+00	pCi/L	100.00%	RD3214
STRONTIUM	3.39E-01	2.6E-01	2.7E-01	7.48E-01	pCi/L	95.90%	RD3204
TC-99	2.17E+02	2.8E+00	2.7E+01	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	8.98E+03	2.9E+02	8.1E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	1.47E+00	N/A	2.2E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41050202	MATRIX:	WATER
CLIENT ID:	B0D4M2	DATE RECEIVED:	10/25/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	0.00E+00	0.0E+00	2.5E-01	2.21E-01	pCi/L	51.20%	RD3209
PU239/40	0.00E+00	0.0E+00	2.4E-01	2.20E-01	pCi/L	51.20%	RD3209
CO-58	6.51E+00	4.9E+00	4.9E+00	1.12E+01	pCi/L	N/A	RD3219
CO-60	2.31E+00	3.8E+00	3.8E+00	8.33E+00	pCi/L	N/A	RD3219
CS-137DA	-2.12E+00	3.2E+00	3.3E+00	5.60E+00	pCi/L	N/A	RD3219
EU-152	-2.73E+00	9.4E+00	9.4E+00	1.58E+01	pCi/L	N/A	RD3219
EU-154	5.97E+00	1.3E+01	1.3E+01	2.71E+01	pCi/L	N/A	RD3219
EU-155	1.27E+00	8.2E+00	8.2E+00	1.30E+01	pCi/L	N/A	RD3219
FE-59	-9.81E+00	1.4E+01	1.4E+01	2.16E+01	pCi/L	N/A	RD3219
RU-106DA	-1.79E+01	3.2E+01	3.2E+01	5.39E+01	pCi/L	N/A	RD3219
ALPHA	2.43E+00	1.4E+00	1.5E+00	1.48E+00	pCi/L	100.00%	RD3214
BETA	1.73E+01	2.4E+00	2.7E+00	2.90E+00	pCi/L	100.00%	RD3214
STRONTIUM	2.61E-01	2.5E-01	2.6E-01	7.55E-01	pCi/L	97.30%	RD3204
TC-99	4.42E+01	1.6E+00	8.5E+00	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	6.00E+04	7.0E+02	4.5E+03	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	4.20E+00	N/A	6.3E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41050203	MATRIX:	WATER
CLIENT ID:	B0D4P2	DATE RECEIVED:	10/25/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	0.00E+00	0.0E+00	2.5E-01	2.21E-01	pCi/L	51.10%	RD3209
PU239/40	0.00E+00	0.0E+00	2.5E-01	2.21E-01	pCi/L	51.10%	RD3209
CO-58	-2.45E+00	4.8E+00	4.8E+00	8.03E+00	pCi/L	N/A	RD3219
CO-60	2.57E-01	5.2E+00	5.2E+00	9.59E+00	pCi/L	N/A	RD3219
CS-137DA	-2.66E-01	3.5E+00	3.5E+00	6.58E+00	pCi/L	N/A	RD3219
EU-152	-8.08E+00	1.0E+01	1.0E+01	1.61E+01	pCi/L	N/A	RD3219
EU-154	3.93E+00	9.3E+00	9.3E+00	2.08E+01	pCi/L	N/A	RD3219
EU-155	3.75E+00	9.9E+00	9.9E+00	1.67E+01	pCi/L	N/A	RD3219
FE-59	-1.61E+00	1.3E+01	1.3E+01	2.30E+01	pCi/L	N/A	RD3219
RU-106DA	-5.29E+01	4.2E+01	4.2E+01	6.30E+01	pCi/L	N/A	RD3219
ALPHA	4.13E-01	5.2E-01	5.3E-01	8.85E-01	pCi/L	100.00%	RD3214
BETA	1.80E+00	1.4E+00	1.4E+00	2.70E+00	pCi/L	100.00%	RD3214
STRONTIUM	-2.29E-02	2.1E-01	2.1E-01	7.55E-01	pCi/L	97.90%	RD3204
TC-99	2.68E+00	1.0E+00	4.6E+00	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	3.52E+01	1.1E+02	2.1E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	2.60E-02	N/A	4.0E-03	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41054001	MATRIX:	WATER
CLIENT ID:	B0D4M0	DATE RECEIVED:	10/26/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-2.28E-02	3.2E-02	3.2E-02	3.21E-01	pCi/L	73.40%	RD3209
PU239/40	1.02E-01	1.6E-01	1.6E-01	2.72E-01	pCi/L	73.40%	RD3209
CO-58	2.72E+00	5.7E+00	5.7E+00	1.12E+01	pCi/L	N/A	RD3219
CO-60	4.53E+01	1.1E+01	1.2E+01	N/A	pCi/L	N/A	RD3219
CS-137DA	-8.21E+00	5.8E+00	5.8E+00	8.17E+00	pCi/L	N/A	RD3219
EU-152	-6.50E+00	1.1E+01	1.1E+01	1.81E+01	pCi/L	N/A	RD3219
EU-154	2.41E+00	9.4E+00	9.4E+00	2.11E+01	pCi/L	N/A	RD3219
EU-155	-1.46E+00	1.1E+01	1.1E+01	1.65E+01	pCi/L	N/A	RD3219
FE-59	4.81E+00	1.4E+01	1.4E+01	2.72E+01	pCi/L	N/A	RD3219
RU-106DA	-3.12E+01	4.2E+01	4.2E+01	6.96E+01	pCi/L	N/A	RD3219
ALPHA	2.51E+00	2.8E+00	2.8E+00	5.05E+00	pCi/L	100.00%	RD3214
BETA	4.72E+02	3.5E+01	4.8E+01	2.88E+01	pCi/L	100.00%	RD3214
STRONTIUM	4.26E-01	3.4E-01	3.6E-01	1.01E+00	pCi/L	69.10%	RD3204
TC-99	2.03E+03	8.3E+00	2.2E+02	2.20E-01	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	5.74E+03	2.4E+02	5.8E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	5.09E+00	N/A	7.6E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI		W95-0-0001-89

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 ☒ Prepaid ☐ Collect

Shipped to Company: Quanterra (IT)
Address: 2800 George Washington Way
City: Richland, WA 99352
State / Zip Code
Country

Off-site Custodian

On-site Custodian / Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1 lbs.		Sample #: BOD4A4 BOD4A5 Cooler ID; ER-26 Polycooler ~~with~~ groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.		Sample #: BOD328 BOD329 Cooler ID; G-WS-130 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

☐ Required for Project Work. List Project No. 200-KR-5 & 200-UP-1 TREATABILITY

☐ Business Trip

☐ Off-site Assignment

Bill of lading # N/A

☐ Shipment to Subcontractor. List Subcontract No. N/A

☐ Other (Please specify) Sampling supports RI/FS work in the 200 AREA

BEST AVAILABLE COPY

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

RM Clearance for Public Release	RM Survey No.	Date
L. Dillo	OFF-0149	10-21-94

Location of and Contact for Property (Name/Phone No./Bldg./Area)
P. H. Buthher/(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
10-21-94	ITE2072/ PL531	

Originated By	Date	Authorized By	Date
B.T. WHITEN	10-21-94	[signature]	10-21-94
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
		[signature]	11/21/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
0053	

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

*U.S. GPO: 1994-592-170/00029

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 11/30/94

REANALYSIS / RECOUNT
CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Gross Alpha

NAME/DATE JTC / 11-21-94

CUSTOMER BHI

SAMPLE DELIVERY GROUP W0267

MATRIX Water

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 41048302		100 min
2) 41048303		1
3) 41054001		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

JTC 11-21-94

REANALYSIS

REFERENCED QC

ITAS ID - BLANK

ITAS ID - SPIKE

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED

SAMPLE REMAINDER RETURNED TO SCG ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT AJ 11-22-

DATA REVIEWED JTC 11-23-94

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

0106

RC-048 12/92 REV 2

RECORD COPY

JAN 1995
RECEIVED
Validation
Log In

MEMORANDUM

TO: 200-BP-5 Project QA Record January 25, 1995

FR: Dennis K. Robinson, Golder Federal Services, Inc. aj for DKR

RE: GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE: WO267-QES (943-1610.064)

INTRODUCTION

This memo presents the results of data validation on 10 water samples analyzed by Quanterra Laboratory. The sample validated along with the analyses reported and the methods of analyses is provided in the following table.

SAMPLE ID	COMMENTS	MEDIA	ANALYSIS
BOD4P4	FIELD BLANK	Water	See Note 1
BOD4H4*		Water	See Note 1
BOD4L6		Water	See Note 1
BOD4H0		Water	See Note 1
BOD4K6		Water	See Note 1
BOD4N8	FIELD DUPLICATE	Water	See Note 1
BOD4M2*		Water	See Note 1
BOD4P2	FIELD BLANK	Water	See Note 1
BOD4L8		Water	See Note 1
BOD4M0		Water	See Note 1
* indicates sample results which were 100% recalculated			

Note 1: Sample was analyzed for chloride, fluoride, nitrite, phosphate, and sulfate by EPA method 300.0, alkalinity by EPA Method 310.1, and total dissolved solids by EPA Method 160.1.

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

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

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Detection Limits. Target goals for sample detection limit were met.

Completeness. A total of 10 samples were validated in this data package with a total of 70 determinations, 20 of which were deemed unusable. This results in a completeness of 71.4 percent which does not meet the objective of 90 percent.

MAJOR DEFICIENCIES

The following major deficiency was identified during data validation which required qualification of data as unusable.

- **Holding Times.** The 2 day holding time for nitrite and phosphate analysis by ion chromatography was grossly exceeded for all samples (23-27 days), requiring the qualification of the data as unusable for all results. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied, and supporting documentation.

MINOR DEFICIENCIES

No minor deficiencies were identified during data validation which required qualification of the data as estimated.

FIELD QC

- Samples BOD4P4 and BOD4P2 are field blanks collected from the BOD4L6 and BOD4L8 sample locations respectively. Total dissolved solids were measured in field blank sample BOD4P2 at a concentration of 273 mg/l. The TDS concentration of the equipment blank sample BOD4P4 was measured at 71.0 mg/l. No qualification of the data was made based upon the field blank results in accordance with the data validation procedures (WHC 1993). Attachment 3 provides a summary of the results.

- Samples BOD4K6 and BOD4N8 are field duplicates of which a split sample was collected (BOD4P0). Sample reults for BOD4P0 were not available for evaluation of the field split RPDs.

REFERENCES

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

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

aj replaced 2/9/95

002

Attachment 1

Glossary of Data Reporting Qualifiers

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution, and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during the data validation the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during the data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

Attachment 2

Summary of Data Qualifications

Data Qualification Summary

Project: 200-BP-5	Validator: D. Robinson	Date: 1/25/95	Page 1 of 1
Comments: General chemistry analysis			
Analyte	Qualifier	Samples Affected	Reason
Nitrite-N	UR	BOD4P4 BOD4H4 BOD4L6 BOD4H0 BOD4K6 BOD4N8 BOD4M2 BOD4P2 BOD4L8 BOD4M0	Sample holding time was exceeded.
Phosphate	UR	BOD4P4 BOD4H4 BOD4L6 BOD4H0 BOD4K6 BOD4N8 BOD4M2 BOD4P2 BOD4L8 BOD4M0	Sample holding time was exceeded.

Attachment 3

Annotated Laboratory Reports

Validated Data Summary, Data Package: W0267-QES

	Samp#	B0D4H0		B0D4H4		B0D4K6		B0D4L6		B0D4L8		B0D4M0	
	Date	10-21-94		10-20-94		10-21-94		10-20-94		10-24-94		10-25-94	
	Location	299-E33-26		299-E33-39		699-52-54		699-54-57		699-55-55		699-55-57	
	Depth	---		---		---		---		---		---	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments												
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/L	6.440		9.540		18.500		11.300		8.230		19.300	
FLUORIDE	MG/L	0.340		0.490		0.320		0.280		0.670		0.390	
NITRITE	MG/L	0.020	UR	0.020	UR	0.020	UR	0.020	UR	0.020	UR	0.020	UR
ORTHO PHOSPHATE	MG/L	1.000	UR	1.000	UR	1.000	UR	1.000	UR	1.000	UR	1.000	UR
SULFATE	MG/L	34.200		63.600		170.000		16.200		28.400		135.000	
TOTAL DISSOLVED SOLIDS	MG/L	254.000		288.000		660.000		241.000		159.000		448.000	
ALKALINITY	MG/L	102.000		106.000		95.000		122.000		114.000		114.000	

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

verified aj
1/27/95

008

Validated Data Summary, Data Package: W0267-QES

	Samp#	BOD4M2		BOD4N8		BOD4P2		BOD4P4	
	Date	10-23-94		10-21-94		10-24-94		10-20-94	
	Location	699-57-59		699-52-54		699-55-55		699-54-57	
	Depth	---		---		---		---	
	Type	WATER		WATER		WATER		WATER	
	Comments			DUPLICATE		FIELD BLANK		FIELD BLANK	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/L	14.800		20.000		3.030		2.780	
FLUORIDE	MG/L	0.590		0.310		0.100	U	0.100	U
NITRITE	MG/L	0.020	UR	0.020	UR	0.020	UR	0.020	UR
ORTHO PHOSPHATE	MG/L	1.000	UR	1.000	UR	1.000	UR	1.000	UR
SULFATE	MG/L	36.200		182.000		14.100		13.800	
TOTAL DISSOLVED SOLIDS	MG/L	346.000		618.000		273.000		71.000	
ALKALINITY	MG/L	108.000		110.000		46.000		42.000	

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

verified aj
1/27/95

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: Chloride
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 12/15/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit
B004N4	6584-001	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	9.54	MG/L		2.50
B004N4	6584-001DUP	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	9.56	MG/L		2.50
B004N4	6584-001MS	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	96	%REC		
B004P4	6584-002	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	2.78	MG/L		0.25
B004L6	6584-003	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	11.3	MG/L		2.50
B004H0	6603-001	Chloride	16887-00-6	QCBLK52043-1	11/17/94	11/17/94	6.44	MG/L		1.25
B004K6	6603-002	Chloride	16887-00-6	QCBLK52046-1	11/18/94	11/18/94	18.5	MG/L		5.00
B004N8	6603-003	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	20.0	MG/L		1.25
B004L8	6616-001	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	8.23	MG/L		1.25
B004M2	6616-002	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	14.8	MG/L		1.25
B004P2	6616-003	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	3.03	MG/L		0.25
B004M0	6631-001	Chloride	16887-00-6	QCBLK52046-1	11/18/94	11/18/94	19.3	MG/L		1.25
NA	QCBLK51661-1	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	0.25	MG/L	U	0.25
NA	QCBLK51910-2	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	0.25	MG/L	U	0.25
NA	QCBLK52046-1	Chloride	16887-00-6	QCBLK52046-1	11/18/94	11/18/94	0.25	MG/L	U	0.25
NA	QCLCS51661-1	Chloride	16887-00-6	QCBLK51661-1	11/14/94	11/14/94	92	%REC		
NA	QCLCS51910-2	Chloride	16887-00-6	QCBLK51910-2	11/16/94	11/16/94	93	%REC		
NA	QCLCS52046-1	Chloride	16887-00-6	QCBLK52046-1	11/18/94	11/18/94	93	%REC		

DKR
1/24/95

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: FLUORIDE
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Di
B004H4	6584-001	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.49	MG/L		0.10	
B004H4	6584-001DUP	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.46	MG/L		0.10	
B004H4	6584-001MS	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	101	%REC			
B004P4	6584-002	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.10	MG/L	U	0.10	
B004L6	6584-003	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.28	MG/L		0.10	
B004H0	6603-001	Fluoride	16984-48-8	QCBLK52043-2	11/17/94	11/17/94	0.34	MG/L		0.10	
B004K6	6603-002	Fluoride	16984-48-8	QCBLK52043-2	11/17/94	11/17/94	0.32	MG/L		0.10	
B004N8	6603-003	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.31	MG/L		0.10	
B004L8	6616-001	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.67	MG/L		0.10	
B004M2	6616-002	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.59	MG/L		0.10	
B004P2	6616-003	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.10	MG/L	U	0.10	
B004M0	6631-001	Fluoride	16984-48-8	QCBLK52046-1	11/18/94	11/18/94	0.39	MG/L		0.10	
NA	QCBLK51661-1	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	0.10	MG/L	U	0.10	
NA	QCBLK51910-2	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	0.10	MG/L	U	0.10	
NA	QCBLK52043-2	Fluoride	16984-48-8	QCBLK52043-2	11/17/94	11/17/94	0.10	MG/L	U	0.10	
NA	QCBLK52046-1	Fluoride	16984-48-8	QCBLK52046-1	11/18/94	11/18/94	0.10	MG/L	U	0.10	
NA	QCLCS51661-1	Fluoride	16984-48-8	QCBLK51661-1	11/14/94	11/14/94	88	%REC			
NA	QCLCS51910-2	Fluoride	16984-48-8	QCBLK51910-2	11/16/94	11/16/94	93	%REC			
NA	QCLCS52043-3	Fluoride	16984-48-8	QCBLK52043-2	11/17/94	11/17/94	88	%REC			
NA	QCLCS52046-1	Fluoride	16984-48-8	QCBLK52046-1	11/18/94	11/18/94	91	%REC			

DKK
11/24/95

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: Nitrite
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit
B0D4H4	6584-001	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	~~U~~ UK	0.020
B0D4H4	6584-001DUP	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	~~U~~ UK	0.020
B0D4H4	6584-001MS	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	103	%REC		
B0D4P4	6584-002	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	~~U~~ UK	0.020
B0D4L6	6584-003	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	~~U~~ UK	0.020
B0D4H0	6603-001	Nitrite	7632-00-0	QCBLK52043-2	11/17/94	11/17/94	0.020	MG/L	~~U~~ UK	0.020
B0D4K6	6603-002	Nitrite	7632-00-0	QCBLK52043-2	11/17/94	11/17/94	0.020	MG/L	~~U~~ UK	0.020
B0D4N8	6603-003	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	~~U~~ UK	0.020
B0D4L8	6616-001	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	~~U~~ UK	0.020
B0D4M2	6616-002	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	~~U~~ UK	0.020
B0D4P2	6616-003	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	~~U~~ UK	0.020
B0D4M0	6631-001	Nitrite	7632-00-0	QCBLK52046-1	11/18/94	11/18/94	0.020	MG/L	~~U~~ UK	0.020
NA	QCBLK51661-1	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	0.020	MG/L	U	0.020
NA	QCBLK51910-2	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	0.020	MG/L	U	0.020
NA	QCBLK52043-2	Nitrite	7632-00-0	QCBLK52043-2	11/17/94	11/17/94	0.020	MG/L	U	0.020
NA	QCBLK52046-1	Nitrite	7632-00-0	QCBLK52046-1	11/18/94	11/18/94	0.020	MG/L	U	0.020
NA	QCLCS51661-1	Nitrite	7632-00-0	QCBLK51661-1	11/14/94	11/14/94	108	%REC		
NA	QCLCS51910-2	Nitrite	7632-00-0	QCBLK51910-2	11/16/94	11/16/94	100	%REC		
NA	QCLCS52043-3	Nitrite	7632-00-0	QCBLK52043-2	11/17/94	11/17/94	100	%REC		
NA	QCLCS52046-1	Nitrite	7632-00-0	QCBLK52046-1	11/18/94	11/18/94	98	%REC		

DKK
11/24/95

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: ORTHOPHOSPHATE
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit
B0D4H4	6584-001	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	~~U~~ UK	1.00
B0D4H4	6584-001DUP	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	~~U~~ UK	1.00
B0D4H4	6584-001MS	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	96	%REC		
B0D4P4	6584-002	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	~~U~~ UK	1.00
B0D4L6	6584-003	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	~~U~~ UK	1.00
B0D4H0	6603-001	Ortho-Phosphate	7778-77-0	QCBLK52043-2	11/17/94	11/17/94	1.00	MG/L	~~U~~ UK	1.00
B0D4K6	6603-002	Ortho-Phosphate	7778-77-0	QCBLK52043-2	11/17/94	11/17/94	1.00	MG/L	~~U~~ UK	1.00
B0D4N8	6603-003	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	~~U~~ UK	1.00
B0D4L8	6616-001	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	~~U~~ UK	1.00
B0D4M2	6616-002	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	~~U~~ UK	1.00
B0D4P2	6616-003	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	~~U~~ UK	1.00
B0D4M0	6631-001	Ortho-Phosphate	7778-77-0	QCBLK52046-1	11/18/94	11/18/94	1.00	MG/L	~~U~~ UK	1.00
NA	QCBLK51661-1	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	U	1.00
NA	QCBLK51910-2	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	U	1.00
NA	QCBLK52043-2	Ortho-Phosphate	7778-77-0	QCBLK52043-2	11/17/94	11/17/94	1.00	MG/L	U	1.00
NA	QCBLK52046-1	Ortho-Phosphate	7778-77-0	QCBLK52046-1	11/18/94	11/18/94	1.00	MG/L	U	1.00
NA	QCLCS51661-1	Ortho-Phosphate	7778-77-0	QCBLK51661-1	11/14/94	11/14/94	94	%REC		
NA	QCLCS51910-2	Ortho-Phosphate	7778-77-0	QCBLK51910-2	11/16/94	11/16/94	96	%REC		
NA	QCLCS52043-3	Ortho-Phosphate	7778-77-0	QCBLK52043-2	11/17/94	11/17/94	96	%REC		
NA	QCLCS52046-1	Ortho-Phosphate	7778-77-0	QCBLK52046-1	11/18/94	11/18/94	96	%REC		

DKR
1/24/95

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: Sulfate
Method: EPA 300.0
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Di
B0D4H4	6584-001	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	63.6	MG/L		10.0	1
B0D4H4	6584-001DUP	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	63.8	MG/L		10.0	1
B0D4H4	6584-001MS	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	84	%REC			1
B0D4P4	6584-002	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	13.8	MG/L		1.00	
B0D4L6	6584-003	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	16.2	MG/L		1.00	
B0D4H0	6603-001	Sulfate	14808-79-8	QCBLK52043-2	11/17/94	11/17/94	34.2	MG/L		5.00	5
B0D4K6	6603-002	Sulfate	14808-79-8	QCBLK52046-1	11/18/94	11/18/94	170	MG/L		20.0	2
B0D4N8	6603-003	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	182	MG/L		10.0	1
B0D4L8	6616-001	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	28.4	MG/L		5.00	5
B0D4M2	6616-002	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	36.2	MG/L		5.00	5
B0D4P2	6616-003	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	14.1	MG/L		1.00	1
B0D4M0	6631-001	Sulfate	14808-79-8	QCBLK52046-1	11/18/94	11/18/94	135	MG/L		10.0	10
NA	QCBLK51661-1	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	1.00	MG/L	U	1.00	1
NA	QCBLK51910-2	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	1.00	MG/L	U	1.00	1
NA	QCBLK52043-2	Sulfate	14808-79-8	QCBLK52043-2	11/17/94	11/17/94	1.00	MG/L	U	1.00	1
NA	QCBLK52046-1	Sulfate	14808-79-8	QCBLK52046-1	11/18/94	11/18/94	1.00	MG/L	U	1.00	1
NA	QCLCS51661-1	Sulfate	14808-79-8	QCBLK51661-1	11/14/94	11/14/94	95	%REC			1
NA	QCLCS51910-2	Sulfate	14808-79-8	QCBLK51910-2	11/16/94	11/16/94	95	%REC			1
NA	QCLCS52043-3	Sulfate	14808-79-8	QCBLK52043-2	11/17/94	11/17/94	93	%REC			1
NA	QCLCS52046-1	Sulfate	14808-79-8	QCBLK52046-1	11/18/94	11/18/94	94	%REC			1

DKK
1/24/95

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: TDS
Method: EPA 160.1
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil
B0D4H4	6584-001	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	288	MG/L		5.00	
B0D4H4	6584-001DUP	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	282	MG/L		5.00	1
B0D4P4	6584-002	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	71.0	MG/L		5.00	1
B0D4L6	6584-003	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	241	MG/L		5.00	1
B0D4H0	6603-001	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	254	MG/L		5.00	1
B0D4K6	6603-002	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	660	MG/L		5.00	1
B0D4N8	6603-003	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	618	MG/L		5.00	1
B0D4L8	6616-001	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	159	MG/L		5.00	1
B0D4M2	6616-002	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	346	MG/L		5.00	1
B0D4P2	6616-003	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	273	MG/L		5.00	1
B0D4M0	6631-001	Total Dissolved	10-33-3	QCBLK50055-1	11/01/94	11/01/94	448	MG/L		5.00	1
NA	QCBLK49619-1	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	5.00	MG/L	U	5.00	1
NA	QCBLK49923-1	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	5.00	MG/L	U	5.00	1
NA	QCBLK50055-1	Total Dissolved	10-33-3	QCBLK50055-1	11/01/94	11/01/94	5.00	MG/L	U	5.00	1
NA	QCLCS49619-1	Total Dissolved	10-33-3	QCBLK49619-1	10/27/94	10/27/94	99	%REC			1
NA	QCLCS49923-1	Total Dissolved	10-33-3	QCBLK49923-1	10/28/94	10/28/94	101	%REC			1
NA	QCLCS50055-1	Total Dissolved	10-33-3	QCBLK50055-1	11/01/94	11/01/94	95	%REC			1

DKR 1/24/95

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.23

Category: Alkalinity
Method: EPA 310.1
Matrix: LIQUID

Sample Date : 10/20/94
Receipt Date : 10/22/94
Report Date : 11/30/94

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0D4H4	6584-001	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	106	MG/L		10.0	1
B0D4H4	6584-001DUP	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	107	MG/L		10.0	1
B0D4P4	6584-002	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	42.0	MG/L		10.0	1
B0D4L6	6584-003	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	122	MG/L		10.0	1
B0D4H0	6603-001	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	102	MG/L		10.0	1
B0D4K6	6603-002	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	95.0	MG/L		10.0	1
B0D4N8	6603-003	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	110	MG/L		10.0	1
B0D4L8	6616-001	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	114	MG/L		10.0	1
B0D4M2	6616-002	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	108	MG/L		10.0	1
B0D4P2	6616-003	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	46.0	MG/L		10.0	1
B0D4M0	6631-001	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	114	MG/L		10.0	1
NA	QCBLK50195-1	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	5.00	MG/L	U	5.00	1
NA	QCBLK50217-1	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	5.00	MG/L	U	5.00	1
NA	QCLCS50195-1	Alkalinity, Tot	T-005	QCBLK50195-1	11/02/94	11/02/94	94	%REC			1
NA	QCLCS50217-1	Alkalinity, Tot	T-005	QCBLK50217-1	11/02/94	11/02/94	95	%REC			1

DLK 1/24/95

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CERTIFICATE OF ANALYSIS

Bechtel Hanford Incorporated
P.O. Box 1970
Richland, Washington 99352

December 10, 1994

Attention: Joan Kessner

Project number	:	550.23
Date Received	:	October 22,24,25 and 27, 1994
Number of Samples	:	Twenty (20)
Sample Type	:	Water
SDG Number	:	W0267
Data Deliverable	:	Standalone

I. Introduction

Between October 22 and 27, 1994, twenty (20) water samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the samples were given the following laboratory ID numbers to correspond with their specific client ID's:

St Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
6584-001	B0D4H4	41045001	Water	10/22/94
6584-002	B0D4P4	41045003	Water	10/22/94
6584-003	B0D4L6	41045005	Water	10/22/94
6584-004	B0D4H5	41045002	Water	10/22/94
6584-005	B0D4P5	41045004	Water	10/22/94
6584-006	B0D4L7	41045006	Water	10/22/94
6603-001	B0D4H0	41048201	Water	10/24/94
6603-002	B0D4K6	41048203	Water	10/24/94
6603-003	B0D4N8	41048205	Water	10/24/94
6603-004	B0D4H1	41048202	Water	10/24/94
6603-005	B0D4K7	41048204	Water	10/24/94
6603-006	B0D4N9	41048206	Water	10/24/94
6616-001	B0D4L8	41050101	Water	10/25/94
6616-002	B0D4M2	41050103	Water	10/25/94

St Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
6616-003	B0D4P2	41050105	Water	10/25/94
6616-004	B0D4L9	41050102	Water	10/25/94
6616-005	B0D4M3	41050104	Water	10/25/94
6616-006	B0D4P3	41050106	Water	10/25/94
6631-001	B0D4M0	41053901	Water	10/27/94
6631-002	B0D4M1	41053902	Water	10/27/94

II. Analytical Results/ Methodology

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

Analyses requested: Total and dissolved TAL Metals using EPA CLP methodology. Cyanide and Selenium using EPA CLP methodology. Anions including Chloride, Fluoride, Nitrite, Phosphate, and Sulfate by EPA method 300.0. Total Dissolved Solids by EPA method 160.1. Alkalinity by EPA method 310.1

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Sample Duplicate analyses were performed per the protocol for this SDG.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike

V. Comments

Samples 6603-001,-002,-003, 6616-001,-002,-003, and 6631-001 were received with pH < 12. Protocol states that proper preservation of the sample for this analysis should have pH > 12.

All samples requiring NO2, NO3, and PO4 analyses by EPA 300.0 were received out of holding time for this analysis.

Matrix Spike recoveries for selenium on samples 6584-001 and 6584-004 were outside of the suggested control limits of 75-125%.

Cyanide results for Peak # 72 and Peak # 78 had to be hand calculated using peak height do to incorrect instrument integration.

The Relative Percent Difference (RPD) could not be calculated for the Cyanide analysis of sample 6584-001 due to values below the detection limit.

The Fluoride analyses of samples 6584-002 and 6616-0003 showed hits, yet the peak areas were less than the lowest calibration standard, so the results are reported as nondetected.

The RPD could not be calculated for PO4 and NO2 for sample 6584-001 due to both sample and duplicate results both being below the detection limit.

Quanterra
Environmental Services

I certify that this data package 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:

Wade H. Price
Project Manager
e:\\sqtlmo01\price$\abbydave\hanford\hanw0267.nar

000783

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: L Seltzer	Company Contact: PM BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: 894-036
Ice Chest No.: Akey	Field Logbook No.: SFC-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-298	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks:		

SAMPLE ANALYSIS: 410450

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 410415102	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1		1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
80 D4P4 03	W	10 20 94	0940	X	X	X	X	X	X	X	X	X						
80 D4P5 04	W	10 20 94	0940											X				

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

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: AG R223	Date/Time: 10/21/94 0725	Received By: B Butcher	Date/Time: 0725 10/21/94
Relinquished By: B Butcher	Date/Time: 10/21/94 1015	Received By: Quanterra	Date/Time: 10/21/94 10:15
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
Test Area 100 CPM
NOTE: 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)

022
00016

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priorty [X] Normal

Collector: A. J. Simpson	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-26	Field Logbook No.: FFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-29	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks: prior producing lots of gas in sample.

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

SAMPLE ANALYSIS: 410450

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) 410450101	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1		1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
BODYH4 01	W	10/20/94	1015	X	X	X	X	X	X	X	X	X						
BODYH5 02	W	10/20/94	1015											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: K. Oren	Date/Time: 10/20/94 1114	Received By: B. Walters	Date/Time: 1114 10-20-94
Relinquished By: B. Walters	Date/Time: 1015 10-21-94	Received By: Karen Lichtenberg	Date/Time: 10:15 10-21-94
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
Contact CPR
NOTE: DATA DELIVERABLE-STANDALONE

SDL W0267

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)

023

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: A E Carson	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: 894-036
Ice Chest No.: 1037 A-1-1	Field Logbook No.: EFL 1520	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-828	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) H	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1		1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS				410450						410451	03							
BD D4L6	05	W	10-20-94	1415	X	X	X	X	X	X	X	X	X					
BD D4L7	06	W	10-20-94	1415										X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
A E Carson	1021 94 0725	[signature] B.W.H. 10-21-94	0725
[signature] B.W.H. 10-21-94	1015	quanterra [signature] 10-21-94	10:15

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
NOTE: 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)

024
00017

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: KD	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B96-036
Ice Chest No.: 972	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: 1W95-0-0001-30	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks:

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

SAMPLE ANALYSIS: 410482

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 4104830	TRITIUM	Tc-99	ACTIVITY SCAN	METALS (see S.I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2		HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P	P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1	1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml	1000ml				
BQ D4H0	01	W	10/21/94	0900	X	X	X	X	X	X	X	X	X				
BQ D4H1	2	W	10/21/94	0900									X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	CH ZELMILL AJSIMPSON	10/21/94 1050	B. Whitten	1050 10-21-94
Relinquished By	B. Whitten	10-24-94 1350		1100 pm 10/24/94 1350
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG-W0267

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

00032

025

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: A Rizzo	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: SML-73	Field Logbook No.: SFL-1026	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-31	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks:

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

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 410483	TRITIUM 02	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1		1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410482																		
BD D4K6 03	W	102194	0920	X	X	X	X	X	X	X	X	X						
BD D4K7 4	W	10·21·94	0920											X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	SGRiffe A G R.izzo	1025 10-21-94	Received By: Bill Butcher	1015 10-21-94
Relinquished By	Bill Butcher	1350 10-24-94	Received By: Tomas Martinez	1100 10/24/94 1350
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

00033

920 026

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priorty ☒ Normal

Collector: A Rizzo	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: CWS-013	Field Logbook No.: EFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-000131	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410482	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 41048303	TRITIUM —	Tc-99 —	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
BD DYN8 05	W	10-21-94	0920	X	X	X	X	X	X	X	X	X					
BD DYN9 6	W	10-21-94	0920											X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: A G Rizzo	Date/Time: 10-21-94 1095	Received By: Bill Whitten Butcher	Date/Time: 1045 10-21-94
Relinquished By: Bill Whitten Butcher	Date/Time: 10-24-94 1350	Received By: Quantum	Date/Time: 10/24/94 1350
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDGW0267

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)

027

000344

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: W. Setzer	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-1B	Field Logbook No.: EFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-33	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	G	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE — Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS	METALS (see S.I. #1) UNFILTERED	IC ANIONS-F,Cl,SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S.I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED				
410501	A	B	C	D	E	410502	2				A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
BO D4M2 3	W	10-23-94	1030	X	X	X	X	X	X	X	X	X						
BO D4M3 4	W	10-23-94	1030											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
AG Rizzo	1230 10-23-94	B. Whitten	10-24-94
B. Whitten	1100 10-25-94		1100 10/25/94

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG-W0267

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

RC-9000-828 (12/92)

028

00057

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K.D. LEE	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-8	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-33	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks:

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

SAMPLE ANALYSIS: 410501

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2					
Type of Container	P/G	G	P/G	P	P	G/P	G	G/P	G/P		P/G					
No. of Container(s)	1	1	1	1	1	8	2	2	1		1					
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml					
SAMPLE ANALYSIS	METALS (see S. I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S. I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED					
	A	B	C	D	E	41050203					A					

Sample No.	Matrix*	Date Sampled	Time Sampled														
BD D4P2 5	W	10/25/94	1000	X	X	X	X	X	X	X	X	X					
BD D4P3 6	W	10/25/94	1000											X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D. Lee	10/25/94 0730	B.Whitten	10-25-94
B.Whitten	10-25-94 1100	[illegible]	10/25/94 1100

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

029

00052

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: K.D. LEE	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-26	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: IN95-0-0001-34	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS	METALS (see S. I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S. I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED				
410501	A	B	C	D	E	41050201					A				

Special Handling and/or Storage
COOL TO 4 DEGREES CENTIGRADE

Sample No.	Matrix*	Date Sampled	Time Sampled													
BO D4C8 01	W	10/28/94	1026	X	X	X	X	X	X	X	X	X				
BO D4C9 2	W	10/28/94	1026									X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
[signature]	10/25/94 0730	[signature] Butcher	10-25-94
Relinquished By	Date/Time	Received By	Date/Time
[signature] Butcher	10-25-94 1100	[signature]	10/25/94 1100
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

0300

00050

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: K.D. Lee	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-26	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-37	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks:

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

SAMPLE ANALYSIS	METALS (see S.I. #1) UNFILTERED	IC ANIONS-F,Cl,SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S.I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN	METALS (see S.I. #3) FILTERED
Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2		HNO3<2
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P	P/G
No. of Container(s)	1	1	1	1	1	8	2	2	1	1
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml	1000ml
410539	A	B	C	D	E	4105400	/	—		A

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED	IC ANIONS-F,Cl,SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S.I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN	METALS (see S.I. #3) FILTERED
B0D4M0 01	W	10/25/94	~~1140~~ 0905	X	X	X	X	X	X	X	X	X	
B0D4M1 2	W	10/25/94	~~1140~~ 0905										X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K.D. Lee / K.D. Lee	10/25/94 1145	B.W. Hoa	10-25-94 1145
B.W. Hoa	10-26-94 1130	Q. Boyd Gustens	10-26-94 1130

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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-0000-828 (12/92)

031

~~AAAAE~~

Attachment 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT: 200-BP-5			DATA PACKAGE: WC267-QES		
VALIDATOR: D. Robinson		LAB: Quanterra		DATE: 1/24/95	
CASE:			SDG: WC267		
ANALYSES PERFORMED					
☒ Anions/IC	☐ TOC	☐ TOX	☐ TPH-418.1	☐ Oil and Grease	☒ Alkalinity
☐ Ammonia	☐ BOD/COD	☐ Chloride	☐ Chromium-VI	☐ pH	☐ NO_3/NO_2
☐ Sulfate	☒ TDS	☐ TKN	☐ Phosphate	☐	☐

SAMPLES/MATRIX Water

BOD4P4 (Field Blank)	BOD4N8 (Field Dup of BOD4K6)
BOD4H4	BOD4M2
BOD4L6	BOD4P2 (Field Blank)
BOD4H0	BOD4L8
BOD4K4	BOD4M0

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: Data package is complete.

2. HOLDING TIMES

Are sample holding times acceptable? ..... Yes (No) N/A

Comments: All holding times met except for nitrite and phosphate (See attached holding time summary). All NO_2 & PO_4 results are qualified as unusable, UR.

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Was initial calibration performed for all applicable analyses? ..... (Yes) No N/A

Are initial calibration results acceptable? ..... (Yes) No N/A

Was a calibration check performed for all applicable analyses? ..... (Yes) No N/A

Are calibration check results acceptable? ..... (Yes) No N/A

Comments: No qualification of data is necessary.

4. BLANKS

Were laboratory blanks analysed? ..... (Yes) No N/A

Are laboratory blank results acceptable? ..... (Yes) No N/A

Were field blanks analyzed? ..... (Yes) No N/A

Are field blank results acceptable? ..... Yes (No) N/A

Comments: Minor concentrations of target parameters were detected in the field blank samples. In accordance with the data validation procedures no qualification of the data was made.

5. ACCURACY

Were spike samples analyzed at the required frequency? ..... (Yes) No N/A

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

Were laboratory control samples (LCS) analyzed at the required frequency? ..... (Yes) No N/A

Are LCS recoveries acceptable? ..... (Yes) No N/A

Comments: No qualification of the data was necessary.

revised 2/9/95

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GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed at the required frequency? ..... (Yes) No N/A

Are laboratory duplicate samples RPD values acceptable? ..... (Yes) No N/A

Are field duplicate RPD values acceptable? ..... (Yes) No N/A

Are field split RPD values acceptable? ..... Yes No (N/A)

Comments: Samples B0D4K4 and B0D4K3 are field duplicates. All RPD within specified control limits. A split sample (B0D4P0) of the field duplicates was sent to TMA. The results for the split were not available for validation.

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? ..... (Yes) No N/A

Comments: No qual. flagging of the data was necessary.

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? ..... (Yes) No N/A

Are results supported in the raw data? ..... (Yes) No N/A

Are results calculated properly? ..... (Yes) No N/A

Do results meet the CRDLs? ..... (Yes) No N/A

Comments:

HOLDING TIME SUMMARY

SDG: W0269	VALIDATOR: D. Robinson	DATE: 1/24/95	PAGE 1 OF 2
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOD4P4	Alkalinity	10/20/94	NA	11/02/94	NA	13	None
BOD4H4		10/20/94				13	
BOD4L4		10/20/94				13	
BOD4H0		10/21/94				12	
BOD4K4		10/21/94				12	
BOD4N8		10/21/94				12	
BOD4M2		10/23/94				10	
BOD4P2		10/24/94				9	
BOD4L8		10/24/94				9	
BOD4M0		10/25/94				8	
BOD4P4	Anions IC	10/20/94		11/14/94		25	UR - PO_4/NO_2
BOD4H4		10/20/94		11/14/94		25	
BOD4L4		10/20/94		11/14/94		25	
BOD4H0		10/21/94		11/17/94 Cl - 11/10/94		Cl-26/27	
BOD4K4		10/21/94		Cl - 11/10/94 11/17/94 Sulfate - 11/15/94		Cl-26 SO4-26/27	
BOD4N8		10/21/94		11/16/94		26	
BOD4M2		10/23/94		11/16/94		24	
BOD4P2		10/24/94		11/16/94		23	
BOD4L8		10/24/94		11/16/94		23	
BOD4M0		10/25/94		11/18/94		24	

HOLDING TIME SUMMARY

SDG: W0267	VALIDATOR: D. Robinson	DATE: 1/24/95	PAGE 2 OF 2
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOD4P4	TDS	10/20/94	NA	10/27/94	NA	7	None
BOD4H4		10/20/94		10/27/94		7	
BOD4L6		10/20/94		10/27/94		7	
BOD4H8		10/21/94		10/27/94		6	
BOD4K6		10/21/94		10/27/94		6	
BOD4N8		10/21/94		10/27/94		6	
BOD4M2		10/23/94		10/28/94		5	
BOD4P2		10/24/94		10/28/94		4	
BOD4L8		10/24/94		10/28/94		4	
BOD4M0		10/25/94		11/01/94		7	

RECORD COPY

MEMORANDUM

FEB 1995 RECEIVED Validation Log In

TO: 200-BP-5 Project QA Record February 9, 1995

FR: Dennis K. Robinson, Golder Federal Services, Inc. aj for DKR

RE: METALS DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0267-QES (943-1610.064)

INTRODUCTION

This memo presents the results of data validation on twenty water samples analyzed by Quanterra Laboratory. The samples validated along with the analyses reported and the methods of analyses are provided in the following table.

SAMPLE ID	COMMENTS	MEDIA	ANALYSIS
BOD4P4	FIELD BLANK	Water	CLP Metals*/Cyanide
BOD4P5	FIELD BLANK	Water (Filtered)	CLP Metals*
BOD4H4*		Water	CLP Metals*/Cyanide
BOD4H5		Water (Filtered)	CLP Metals*
BOD4L6		Water	CLP Metals*/Cyanide
BOD4L7		Water (Filtered)	CLP Metals*
BOD4H0		Water	CLP Metals*/Cyanide
BOD4H1		Water (Filtered)	CLP Metals*
BOD4K6		Water	CLP Metals*/Cyanide
BOD4K7		Water (Filtered)	CLP Metals*
BOD4N8	FIELD DUPLICATE	Water	CLP Metals*/Cyanide
BOD4N9	FIELD DUPLICATE	Water (Filtered)	CLP Metals*
BOD4M2*		Water	CLP Metals*/Cyanide
BOD4M3		Water (Filtered)	CLP Metals*
BOD4P2	FIELD BLANK	Water	CLP Metals*/Cyanide
BOD4P3*	FIELD BLANK	Water (Filtered)	CLP Metals*
BOD4L8		Water	CLP Metals*/Cyanide
BOD4L9*		Water (Filtered)	CLP Metals*
BOD4M0		Water	CLP Metals*/Cyanide
BOD4M1		Water (Filtered)	CLP Metals*
			*See Note 1
*indicates samples which were 100% recalculated			

Note 1: Metals analyzed were calcium, magnesium, sodium, potassium, iron, manganese, silicon, aluminum, bismuth, and selenium.

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

aj replaced 2/9/9:

001

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

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met with the exception of the deficiencies identified below.

Accuracy. Goals for accuracy were met with the exception of the deficiencies identified below.

Detection Limits. Target goals for sample detection limits were met, with the exception of selenium for several of the samples. Data qualification is not required. Attachment 5 provides a list of these samples.

Completeness. A total of 20 samples were validated in this data package with a total of 210 determinations reported, all of which were deemed usable. This results in a completeness of 100 percent which meets the objective of 90 percent.

MAJOR DEFICIENCIES

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

MINOR DEFICIENCIES

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

Metals

- **Positive Blanks.** Bismuth, iron, magnesium, manganese, sodium, and cyanide were detected at positive concentrations in the associated calibration and/or preparation blanks. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied, and supporting documentation.

- **Negative Blanks.** Aluminum was detected at a negative concentration in an associated calibration blank. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied, and supporting documentation.

- **Matrix Spike Recovery.** The percent recovery of the unfiltered and filtered spike sample was outside the control limits for selenium (46.5% and 45.6% respectively). Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied, and supporting documentation.

gj replaced 2/9/9
~~001~~
002

- **Graphite Furnace Quality Control.** The percent recovery of the analytical spike was outside the control limits for the following samples for the selenium analysis: BOD4L6, BOD4L7, BOD4H4, BOD4H5, BOD4P2, and BOD4M0. Attachments 2 and 5 provide a summary of the data qualifications applied and supporting documentation.

- **ICP Serial Dilution.** The percent difference (%D) for the magnesium serial dilution was outside the control limits. Data qualification is required. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

- **Laboratory Duplicates.** The duplicate relative percent difference (RPD) for iron was outside the control limits. Data qualification is required. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

FIELD QC

- Samples BOD4P4/BOD4P5 and BOD4P2/BOD4P3 are field blanks collected from the BOD4L6/BOD4L7 and BOD4L8/BOD4L9 sample locations respectively. Calcium, iron, magnesium, selenium, sodium and silicon were detected in samples BOD4P2 and BOD4P3. Calcium, iron, magnesium, selenium and silicon were detected in samples BOD4P4 and BOD4P5. Qualification of data is not required for field QC. Attachment 3 provides a summary of the results.

- Samples BOD4N8/BOD4N9 are field duplicates of samples BOD4K6/BOD4K7. BOD4P0/BOD4P1 were field splits of the same samples. All relative percent differences were within control limits for the field duplicates. A comparison of the split sample results will be made in the final summary report.

REFERENCES

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

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

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Attachment 1

Glossary of Data Reporting Qualifiers

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution, and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during the data validation the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during the data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

Attachment 2

Summary of Data Qualifications

Data Qualification Summary

Project: 200-BP-5	Validator: D. Robinson	Date: 1/25/95	Page 1 of 2
Comments: Metals analysis			
Analyte	Qualifier	Samples Affected	Reason
Aluminum	J	BOD4N8	Present in associated calibration blank at a negative concentration
Bismuth	U	BOD4H1 BOD4K6 BOD4K7 BOD4N8 BOD4N9 BOD4M2 BOD4M3 BOD4P2 BOD4P3 BOD4L8 BOD4L9 BOD4M0 BOD4M1	Present in associated preparation and/or calibration blank at a positive concentration
Iron	U	BOD4P4 BOD4P5 BOD4L7	Present in associated preparation and/or calibration blank at a positive concentration
Iron	BJ,J or UJ	All	RPD of laboratory duplicate sample analysis results were outside control limits of ± 20% or ± CRDL.
Magnesium	U	BOD4P4 BOD4P5	Present in associated calibration blank at a positive concentration
Magnesium	J or UJ	All	Percent difference for the serial dilution was outside the control limits of ± 10%.
Manganese	U	BOD4P4 BOD4P5 BOD4H4 BOD4H5 BOD4L6 BOD4L7 BOD4H1 BOD4K7 BOD4N8 BOD4N9 BOD4M2 BOD4M3 BOD4P2 BOD4P3 BOD4L8 BOD4L9	Present in associated preparation and/or calibration blank at a positive concentration

Data Qualification Summary

Project: 200-BP-5	Validator: D. Robinson	Date: 1/25/95	Page 2 of 2
Comments: Metals analysis			
Analyte	Qualifier	Samples Affected	Reason
Sodium	U	BOD4P4 BOD4P5	Present in associated calibration blank at a positive concentration
Selenium	J or UJ	BOD4H4 BOD4H5 BOD4L6 BOD4L7 BOD4P2 BOD4M0	Percent recovery of analytical spike below the specified control limits of 85 to 115%.
Selenium	BJ, J or UJ	All	Percent recovery of spike sample less than 75% but greater than 30%.
Cyanide	U	BOD4H0 BOD4L8 BOD4M2 BOD4P2	Present in an associated CCB at a positive concentration.

Attachment 3

Annotated Laboratory Reports

Validated Data Summary, Data Package: W0267-QES

	Samp#	B0D4H0		B0D4H1		B0D4H4		B0D4H5		B0D4K6		B0D4K7	
	Date	10-21-94		10-21-94		10-20-94		10-20-94		10-21-94		10-21-94	
	Location	299-E33-26		299-E33-26		299-E33-39		299-E33-39		699-52-54		699-52-54	
	Depth	---		---		---		---		---		---	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments												
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	24.900	U	24.900	U	38.200	B	24.900	U	24.900	U	24.900	U
CALCIUM	UG/L	30200.000		38800.000		42600.000		44000.000		97100.000		101000.000	
IRON	UG/L	307.000	J	60.600	BJ	556.000	J	226.000	J	352.000	J	133.000	J
MAGNESIUM	UG/L	10300.000	J	12100.000	J	12500.000	J	12500.000	J	30300.000	J	30400.000	J
MANGANESE	UG/L	15.000		9.500	U	9.500	U	7.700	U	10.800	B	6.600	U
POTASSIUM	UG/L	1940.000	U	4850.000	B	6880.000		6490.000		1940.000	U	10100.000	
SELENIUM	UG/L	6.500	UJ	6.500	UJ	6.500	UJ	1.300	UJ	12.300	BJ	10.800	BJ
SODIUM	UG/L	20900.000		20900.000		23400.000		23500.000		46100.000		45100.000	
CYANIDE	UG/L	4.000	U	---		1.200	U	---		160.000		---	
SILICON	UG/L	15800.000		18000.000		20000.000		20000.000		18000.000		18200.000	
BISMUTH	UG/L	38.000	U	100.000	U	38.000	U	38.000	U	46.300	U	135.000	U

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

verified aj
1/27/95

010

Validated Data Summary, Data Package: W0267-QES

	Samp#	B0D4L6		B0D4L7		B0D4L8		B0D4L9		B0D4M0		B0D4M1	
	Date	10-20-94		10-20-94		10-24-94		10-24-94		10-25-94		10-25-94	
	Location	699-54-57		699-54-57		699-55-55		699-55-55		699-55-57		699-55-57	
	Depth	---		---		---		---		---		---	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments												
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	25.600	B	25.500	B	24.900	U	24.900	U	24.900	U	24.900	U
CALCIUM	UG/L	33700.000		32100.000		27300.000		27600.000		79500.000		79200.000	
IRON	UG/L	320.000	J	156.000	UJ	141.000	J	58.900	BJ	384.000	J	94.200	BJ
MAGNESIUM	UG/L	11200.000	J	11500.000	J	10300.000	J	10400.000	J	22600.000	J	22400.000	J
MANGANESE	UG/L	9.400	U	8.100	U	5.000	U	3.400	U	27.200		24.200	
POTASSIUM	UG/L	5390.000		8520.000		3910.000	B	4190.000	B	6910.000		5080.000	
SELENIUM	UG/L	1.300	UJ	6.500	UJ	6.500	UJ	6.500	UJ	11.600	BJ	8.600	BJ
SODIUM	UG/L	14100.000		14500.000		25800.000		25800.000		29600.000		29900.000	
CYANIDE	UG/L	1.200	U	---		5.400	U	---		78.900		---	
SILICON	UG/L	32900.000		33800.000		17000.000		17000.000		15300.000		15400.000	
BISMUTH	UG/L	38.000	U	41.000	B	98.500	U	102.000	U	118.000	U	123.000	U

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

011

verified aj
1/27/95

Validated Data Summary, Data Package: W0267-QES

	Samp#	B0D4M2		B0D4M3		B0D4N8		B0D4N9		B0D4P2		B0D4P3	
	Date	10-23-94		10-23-94		10-21-94		10-21-94		10-24-94		10-24-94	
	Location	699-57-59		699-57-59		699-52-54		699-52-54		699-55-55		699-55-55	
	Depth	---		---		---		---		---		---	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments					DUPLICATE		DUPLICATE		FIELD BLANK		FIELD BLANK	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	24.900	U	24.900	U	32.400	J	24.900	U	24.900	U	24.900	U
CALCIUM	UG/L	31100.000		31000.000		102000.000		101000.000		14900.000		11600.000	
IRON	UG/L	70.500	BJ	114.000	J	308.000	J	122.000	J	244.000	J	409.000	J
MAGNESIUM	UG/L	9650.000	J	9630.000	J	31000.000	J	30500.000	J	3510.000	BJ	2730.000	BJ
MANGANESE	UG/L	5.100	U	5.700	U	9.900	U	6.100	U	7.200	U	5.400	U
POTASSIUM	UG/L	4700.000	B	4140.000	B	8150.000		8300.000		1940.000	U	1940.000	U
SELENIUM	UG/L	6.500	UJ	6.500	UJ	8.600	BJ	8.800	BJ	1.300	UJ	1.300	UJ
SODIUM	UG/L	26600.000		26600.000		46100.000		45400.000		1850.000	B	1470.000	B
CYANIDE	UG/L	3.100	U	---		143.000		---		2.100	U	---	
SILICON	UG/L	19200.000		19100.000		18600.000		18200.000		1330.000		1070.000	
BISMUTH	UG/L	96.800	U	91.000	U	106.000	U	129.000	U	90.800	U	63.800	U

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

Verified gj
1/27/95

Validated Data Summary, Data Package: W0267-QES

	Samp#	B0D4P4		B0D4P5	
	Date	10-20-94		10-20-94	
	Location	699-54-57		699-54-57	
	Depth	---		---	
	Type	WATER		WATER	
	Comments	FIELD BLANK		FIELD BLANK	
Parameter	Units	Result	Q	Result	Q
ALUMINUM	UG/L	24.900	U	24.900	U
CALCIUM	UG/L	2360.000	B	2190.000	B
IRON	UG/L	45.100	UJ	45.300	UJ
MAGNESIUM	UG/L	1000.000	UJ	1000.000	UJ
MANGANESE	UG/L	5.100	U	5.200	U
POTASSIUM	UG/L	1940.000	U	1940.000	U
SELENIUM	UG/L	1.300	UJ	1.300	UJ
SODIUM	UG/L	643.000	U	678.000	U
CYANIDE	UG/L	1.200	U	---	
SILICON	UG/L	224.000		270.000	
BISMUTH	UG/L	38.000	U	38.000	U

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

Verified aj
1/27/95

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4H0

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-001

Level (low/med): LOW__ Date Received: 10/24/94

% 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_	24.9	U		P_	
7440-70-2	Calcium__	30200			P_	
7439-89-6	Iron____	307		~~*~~	P_	J
7439-95-4	Magnesium	10300		~~E~~	P_	J
7439-96-5	Manganese	15.0			P_	
7440-09-7	Potassium	1940	U		P_	
7782-49-2	Selenium_	6.5	~~U~~	~~N~~	F_	UJ
7440-23-5	Sodium___	20900			P_	
	Cyanide__	4.0	~~B~~		AS	U
7440-21-3	Silicon__	15800			P_	
7440-69-9	Bismuth__	38.0	U		P_	

DKR 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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014

HG 12/15/95

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U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4H1

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-004

Level (low/med): LOW__ Date Received: 10/24/94

% 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_	24.9	U		P	
7440-70-2	Calcium__	38800			P	
7439-89-6	Iron____	60.6	~~B~~	~~*~~	P	BJ
7439-95-4	Magnesium	12100		~~E~~	P	J
7439-96-5	Manganese	9.5	~~B~~		P	U
7440-09-7	Potassium	4850	B		P	
7782-49-2	Selenium_	6.5	~~U~~	~~N~~	F	UJ
7440-23-5	Sodium___	20900			P	
	Cyanide__				NR	
7440-21-3	Silicon__	18000			P	
7440-69-9	Bismuth__	100			P	U

DKR 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4H4

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-001

Level (low/med): LOW__ Date Received: 10/22/94

% 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_	38.2	B		P	
7440-70-2	Calcium__	42600			P	
7439-89-6	Iron____	556		~~W~~	P	J
7439-95-4	Magnesium	12500		~~E~~	P	J
7439-96-5	Manganese	9.5	~~B~~		P	UJ
7440-09-7	Potassium	6880			P	
7782-49-2	Selenium_	6.5	~~U~~	~~WN~~	F	UJ
7440-23-5	Sodium___	23400			P	
	Cyanide__	1.2	U		AS	
7440-21-3	Silicon__	20000			P	
7440-69-9	Bismuth__	38.0	U		P	

DKR 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4H5

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-004

Level (low/med): LOW__ Date Received: 10/22/94

% 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_	24.9	U		P	
7440-70-2	Calcium__	44000			P	
7439-89-6	Iron____	226		~~*~~	P	J
7439-95-4	Magnesium	12500		~~E~~	P	J
7439-96-5	Manganese	7.7	~~B~~		P	W
7440-09-7	Potassium	6490			P	
7782-49-2	Selenium_	1.3	~~U~~	~~WN~~	F	WJ
7440-23-5	Sodium___	23500			P	
	Cyanide__				NR	
7440-21-3	Silicon__	20000			P	
7440-69-9	Bismuth__	38.0	U		P	

DKK 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4K6

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-002

Level (low/med): LOW__ Date Received: 10/24/94

% 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	24.9	U		P	
7440-70-2	Calcium	97100			P	
7439-89-6	Iron	352		*	P	J
7439-95-4	Magnesium	30300		E	P	J
7439-96-5	Manganese	10.8	B		P	
7440-09-7	Potassium	1940	U		P	
7782-49-2	Selenium	12.3	~~B~~	N	F	BJ
7440-23-5	Sodium	46100			P	
	Cyanide	160			AS	
7440-21-3	Silicon	18000			P	
7440-69-9	Bismuth	46.3	~~B~~		P	U

DKR 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4K7

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-005

Level (low/med): LOW__ Date Received: 10/24/94

% 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	24.9	U		P	
7440-70-2	Calcium	101000			P	
7439-89-6	Iron	133		~~*~~	P	~~J~~
7439-95-4	Magnesium	30400		~~E~~	P	J
7439-96-5	Manganese	6.6	~~B~~		P	U
7440-09-7	Potassium	10100			P	
7782-49-2	Selenium	10.8	~~B~~	~~N~~	F	BJ
7440-23-5	Sodium	45100			P	
	Cyanide				NR	
7440-21-3	Silicon	18200			P	
7440-69-9	Bismuth	135			P	U

DCK 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4L6

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-003

Level (low/med): LOW__ Date Received: 10/22/94

% 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_	25.6	B		P	
7440-70-2	Calcium__	33700			P	
7439-89-6	Iron____	320		~~*~~	P	J
7439-95-4	Magnesium	11200		~~E~~	P	J
7439-96-5	Manganese	9.4	~~B~~		P	UL
7440-09-7	Potassium	5390			P	
7782-49-2	Selenium_	1.3	~~U~~	~~WN~~	F	UJ
7440-23-5	Sodium___	14100			P	
	Cyanide__	1.2	U		AS	
7440-21-3	Silicon__	32900			P	
7440-69-9	Bismuth__	38.0	U		P	

DKK 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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020

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LG 1/30/95

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4L7

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-006

Level (low/med): LOW__ Date Received: 10/22/94

% 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_	25.5	B		P_	
7440-70-2	Calcium__	32100			P_	
7439-89-6	Iron_____	156		*	P_	UJ
7439-95-4	Magnesium	11500		E	P_	J
7439-96-5	Manganese	8.1	B		P_	U
7440-09-7	Potassium	8520			P_	
7782-49-2	Selenium_	6.5	U	WN	F_	UJ
7440-23-5	Sodium___	14500			P_	
	Cyanide__				NR	
7440-21-3	Silicon__	33800			P_	
7440-69-9	Bismuth__	41.0	B		P_	

DKK 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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021

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HG 1/30/95

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4L8

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-001

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P	
7440-70-2	Calcium__	27300			P	
7439-89-6	Iron____	141		*	P	J
7439-95-4	Magnesium	10300		E	P	J
7439-96-5	Manganese	5.0	~~B~~		P	U
7440-09-7	Potassium	3910	B		P	
7782-49-2	Selenium_	6.5	~~U~~	N	F	UJ
7440-23-5	Sodium___	25800			P	
	Cyanide__	5.4			AS	U
7440-21-3	Silicon__	17000			P	
7440-69-9	Bismuth__	98.5	~~B~~		P	U

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Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4L9

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-004

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P_	
7440-70-2	Calcium__	27600			P_	
7439-89-6	Iron____	58.9	~~B~~	~~*~~	P_	B J
7439-95-4	Magnesium	10400		~~E~~	P_	J
7439-96-5	Manganese	3.4	~~B~~		P_	U
7440-09-7	Potassium	4190	B		P_	
7782-49-2	Selenium_	6.5	~~U~~	~~N~~	F_	UJ
7440-23-5	Sodium___	25800			P_	
	Cyanide__				NR	
7440-21-3	Silicon__	17000			P_	
7440-69-9	Bismuth__	102			P_	U

DKB 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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023

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4M0

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6631-001

Level (low/med): LOW__ Date Received: 10/27/94

% 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	24.9	U		P	
7440-70-2	Calcium	79500			P	
7439-89-6	Iron	384		~~*~~	P	J
7439-95-4	Magnesium	22600		~~E~~	P	J
7439-96-5	Manganese	27.2			P	
7440-09-7	Potassium	6910			P	
7782-49-2	Selenium	11.6	~~B~~	~~WN~~	F	BJ
7440-23-5	Sodium	29600			P	
	Cyanide	78.9			AS	
7440-21-3	Silicon	15300			P	
7440-69-9	Bismuth	118			P	u

DKR 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4M1

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6631-002

Level (low/med): LOW__ Date Received: 10/27/94

% 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	24.9	U		P	
7440-70-2	Calcium	79200			P	
7439-89-6	Iron	94.2	~~B~~	~~*~~	P	BJ
7439-95-4	Magnesium	22400		~~E~~	P	J
7439-96-5	Manganese	24.2			P	
7440-09-7	Potassium	5080			P	
7782-49-2	Selenium	8.6	~~B~~	~~N~~	F	BJ
7440-23-5	Sodium	29900			P	
	Cyanide				NR	
7440-21-3	Silicon	15400			P	
7440-69-9	Bismuth	123			P	U

DKR 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOD4M2

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-002

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P	
7440-70-2	Calcium__	31100			P	
7439-89-6	Iron____	70.5	~~B~~	*	P	BJ
7439-95-4	Magnesium	9650		~~E~~	P	J
7439-96-5	Manganese	5.1	~~B~~		P	U
7440-09-7	Potassium	4700	B		P	
7782-49-2	Selenium_	6.5	~~U~~	~~N~~	F	UJ
7440-23-5	Sodium___	26600			P	
	Cyanide__	3.1	~~B~~		AS	U
7440-21-3	Silicon__	19200			P	
7440-69-9	Bismuth__	96.8	~~B~~		P	U

DKK 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4M3

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-005

Level (low/med): LOW__ Date Received: 10/25/94

% 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	24.9	U		P	
7440-70-2	Calcium	31000			P	
7439-89-6	Iron	114		*	P	J
7439-95-4	Magnesium	9630		E	P	J
7439-96-5	Manganese	5.7	B		P	U
7440-09-7	Potassium	4140	B		P	
7782-49-2	Selenium	6.5	U	N	F	UJ
7440-23-5	Sodium	26600			P	
	Cyanide				NR	
7440-21-3	Silicon	19100			P	
7440-69-9	Bismuth	91.0	B		P	U

DLR 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4N8

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-003

Level (low/med): LOW__ Date Received: 10/24/94

% 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	32.4	B		P	UJ
7440-70-2	Calcium	102000			P	
7439-89-6	Iron	308		*	P	J
7439-95-4	Magnesium	31000		E	P	J
7439-96-5	Manganese	9.9	B		P	U
7440-09-7	Potassium	8150			P	
7782-49-2	Selenium	8.6	B	N	F	BJ
7440-23-5	Sodium	46100			P	
	Cyanide	143			AS	
7440-21-3	Silicon	18600			P	
7440-69-9	Bismuth	106			P	U

aj 1/27/95

DJR 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

028

~~00096~~

HG 1/30/95

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4N9

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6603-006

Level (low/med): LOW__ Date Received: 10/24/94

% 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_	24.9	U		P_	
7440-70-2	Calcium__	101000			P_	
7439-89-6	Iron____	122		*	P_	J
7439-95-4	Magnesium	30500		E	P_	J
7439-96-5	Manganese	6.1	B		P_	u
7440-09-7	Potassium	8300			P_	
7782-49-2	Selenium_	8.8	B	N	F_	BJ
7440-23-5	Sodium___	45400			P_	
	Cyanide__				NR	
7440-21-3	Silicon__	18200			P_	
7440-69-9	Bismuth__	129			P_	u

DLK 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4P2

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-003

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P_	
7440-70-2	Calcium__	14900			P_	
7439-89-6	Iron____	244		*	P_	J
7439-95-4	Magnesium	3510	B	E	P_	BJ
7439-96-5	Manganese	7.2	B		P_	u
7440-09-7	Potassium	1940	U		P_	
7782-49-2	Selenium_	1.3	U	WN	F_	uJ
7440-23-5	Sodium___	1850	B		P_	
	Cyanide__	2.1	B		AS	u
7440-21-3	Silicon__	1330			P_	
7440-69-9	Bismuth__	90.8	B		P_	u

DKH 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4P3

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6616-006

Level (low/med): LOW__ Date Received: 10/25/94

% 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_	24.9	U		P_	
7440-70-2	Calcium__	11600			P_	
7439-89-6	Iron____	409		*	P_	
7439-95-4	Magnesium	2730	~~B~~	~~E~~	P_	BJ
7439-96-5	Manganese	5.4	~~B~~		P_	u
7440-09-7	Potassium	1940	U		P_	
7782-49-2	Selenium_	1.3	~~U~~	~~N~~	F_	UJ
7440-23-5	Sodium___	1470	B		P_	
	Cyanide__				NR	
7440-21-3	Silicon__	1070			P_	
7440-69-9	Bismuth__	63.8	~~B~~		P_	u

DKH 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4P4

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-002

Level (low/med): LOW__ Date Received: 10/22/94

% 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_	24.9	U		P_	
7440-70-2	Calcium__	2360	B		P_	
7439-89-6	Iron_____	45.1	~~B~~	*	P_	uJ
7439-95-4	Magnesium	1000	~~B~~	E	P_	uJ
7439-96-5	Manganese	5.1	~~B~~		P_	u
7440-09-7	Potassium	1940	U		P_	
7782-49-2	Selenium_	1.3	~~U~~	N	F_	uJ
7440-23-5	Sodium___	643	~~B~~		P_	u
	Cyanide__	1.2	U		AS	
7440-21-3	Silicon__	224			P_	
7440-69-9	Bismuth__	38.0	U		P_	

DKK 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0D4P5

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): WATER Lab Sample ID: 6584-005

Level (low/med): LOW__ Date Received: 10/22/94

% 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	24.9	U		P	
7440-70-2	Calcium	2190	B		P	
7439-89-6	Iron	45.3	~~B~~	*	P	UJ
7439-95-4	Magnesium	1000	~~B~~	E	P	UJ
7439-96-5	Manganese	5.2	~~B~~		P	U
7440-09-7	Potassium	1940	U		P	
7782-49-2	Selenium	1.3	~~U~~	N	F	UJ
7440-23-5	Sodium	678	~~B~~		P	U
	Cyanide				NR	
7440-21-3	Silicon	270			P	
7440-69-9	Bismuth	38.0	U		P	

DKR 1/24/95

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN ILM03.0

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

Quanterra Environmental Services

CERTIFICATE OF ANALYSIS

Bechtel Hanford Incorporated
P.O. Box 1970
Richland, Washington 99352

December 10, 1994

Attention: Joan Kessner

Project number	:	550.23
Date Received	:	October 22,24,25 and 27, 1994
Number of Samples	:	Twenty (20)
Sample Type	:	Water
SDG Number	:	W0267
Data Deliverable	:	Standalone

I. Introduction

Between October 22 and 27, 1994, twenty (20) water samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the samples were given the following laboratory ID numbers to correspond with their specific client ID's:

St Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
6584-001	B0D4H4	41045001	Water	10/22/94
6584-002	B0D4P4	41045003	Water	10/22/94
6584-003	B0D4L6	41045005	Water	10/22/94
6584-004	B0D4H5	41045002	Water	10/22/94
6584-005	B0D4P5	41045004	Water	10/22/94
6584-006	B0D4L7	41045006	Water	10/22/94
6603-001	B0D4H0	41048201	Water	10/24/94
6603-002	B0D4K6	41048203	Water	10/24/94
6603-003	B0D4N8	41048205	Water	10/24/94
6603-004	B0D4H1	41048202	Water	10/24/94
6603-005	B0D4K7	41048204	Water	10/24/94
6603-006	B0D4N9	41048206	Water	10/24/94
6616-001	B0D4L8	41050101	Water	10/25/94
6616-002	B0D4M2	41050103	Water	10/25/94

Bechtel Hanford Incorporated
December 10, 1994
Project Number: 550.23
SDG: W0267
Page 2

St Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
6616-003	B0D4P2	41050105	Water	10/25/94
6616-004	B0D4L9	41050102	Water	10/25/94
6616-005	B0D4M3	41050104	Water	10/25/94
6616-006	B0D4P3	41050106	Water	10/25/94
6631-001	B0D4M0	41053901	Water	10/27/94
6631-002	B0D4M1	41053902	Water	10/27/94

II. Analytical Results/ Methodology

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

Analyses requested: Total and dissolved TAL Metals using EPA CLP methodology. Cyanide and Selenium using EPA CLP methodology. Anions including Chloride, Fluoride, Nitrite, Phosphate, and Sulfate by EPA method 300.0. Total Dissolved Solids by EPA method 160.1. Alkalinity by EPA method 310.1

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Sample Duplicate analyses were performed per the protocol for this SDG.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike

V. Comments

Samples 6603-001,-002,-003, 6616-001,-002,-003, and 6631-001 were received with pH < 12. Protocol states that proper preservation of the sample for this analysis should have pH > 12.

All samples requiring NO2, NO3, and PO4 analyses by EPA 300.0 were received out of holding time for this analysis.

Matrix Spike recoveries for selenium on samples 6584-001 and 6584-004 were outside of the suggested control limits of 75-125%.

Cyanide results for Peak # 72 and Peak # 78 had to be hand calculated using peak height do to incorrect instrument integration.

The Relative Percent Difference (RPD) could not be calculated for the Cyanide analysis of sample 6584-001 due to values below the detection limit.

The Fluoride analyses of samples 6584-002 and 6616-0003 showed hits, yet the peak areas were less than the lowest calibration standard, so the results are reported as nondetected.

The RPD could not be calculated for PO4 and NO2 for sample 6584-001 due to both sample and duplicate results both being below the detection limit.

Quanterra
Environmental Services

I certify that this data package 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:

Wade H. Price
Project Manager
e:\\sqtlmo01\price$\abbydave\hanford\hanw0267.nar

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: L. Seltzer	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: 894-036
Ice Chest No.: AKEY	Field Logbook No.: SFC-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-296	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

SAMPLE ANALYSIS: 410450

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 410415102	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1		1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
BO D4P4	03	W	10 20 94	0940	X	X	X	X	X	X	X	X						
BO D4P5	04	W	10 20 94	0940										X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
AG Rees	10/21/94 0725	Bukthru	10/21-94 0725
Bukthru	10/21-94 1015	Quantera	10/21-94 1015

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
Test Man 100 cpm
NOTE: 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)

039

00016

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: A. J. Simpson	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: 894-036
Ice Chest No.: ER-26	Field Logbook No.: FFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-29	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks: pump producing lots of gas in sample.

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

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410450	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) 410450	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
B0D4H4 01	W	10/20/94	1015	X	X	X	X	X	X	X	X	X						
B0D4H5 02	W	10/20/94	1015											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kimberley K. Ocer	10/20/94 1114	[signature] B Whitten	1114 10-20-94
[signature] B Whitten	1015 10-21-94	[signature]	1015 10-21-94
		[signature]	10-21-94

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
[signature] 10 CPM
NOTE: DATA DELIVERABLE-STANDALONE

SDL-W0267

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)

040

00015

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: A Ross	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: 894-036
Ice Chest No.: 4037 Ash	Field Logbook No.: EFL 1520	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-08K	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

SAMPLE ANALYSIS: 410450

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) H10451 03	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1		1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
BQ D4L6 05	W	10-20-94	1415	X	X	X	X	X	X	X	X	X						
BQ D4L7 06	W	10-20-94	1415											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: A Ross	Date/Time: 0725 10-21-94	Received By: Kee Butcher B.W. Hall 10-21-94	Date/Time: 0725
Relinquished By: Kee Butcher B.W. Hall 10-21-94	Date/Time: 1015	Received By: Quanterra Karen Hettinger 10-21-94	Date/Time: 10:15
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: 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-6000-82B (12/92)

041

00017

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priorty [X] Normal

Collector: KD	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: 972	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: 1W95-0-0001-32	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks:

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

SAMPLE ANALYSIS: 410482

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS	METALS (see S.I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S.I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED				
	A	B	C	D	E	4104830					A				
Sample No. / Matrix* / Date Sampled / Time Sampled															
B0D4H0 01 / W / 10/21/94 / 0900	X	X	X	X	X	X	X	X	X						
B0D4H1 2 / W / 10/21/94 / 0900											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: CHARMILL ASSIMPSON	Date/Time: 10/21/94 1050	Received By: B.Whitten	Date/Time: 1050 10-21-94
Relinquished By: B.Whitten	Date/Time: 1350 10-24-94	Received By: 2100 PM	Date/Time: 10/24/94 1350
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG-W0267

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 ...

0042

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: A. Rizzo	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: SML-73	Field Logbook No.: SFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-31	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	G	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 41048Z	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) 41048302	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled														
BD D4K6 03	W	102194	0920	X	X	X	X	X	X	X	X	X					
BD D4K7 4	W	10·21·94	0920										X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature]	1025 10-21-94	[signature] Buchanan	1015 10-21-94
[signature] Buchanan	1550 10-24-94	[signature]	10/24/94 1550

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG-W0267

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)

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: A Rizzo	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B96-036
Ice Chest No.: CWS-013	Field Logbook No.: EFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-000131	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410482	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) 41048303	TRITIUM —	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
BD D4N8 05	W	10-21-94	0920	X	X	X	X	X	X	X	X	X						
BD D4N9 6	W	10-21-94	0920											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: A G Rizzo	Date/Time: 1095 10-21-94	Received By: Bulkley	Date/Time: 1045 10-21-94
Relinquished By: Bulkley	Date/Time: 1350 10-24-94	Received By: Quantera	Date/Time: 10/24/94 1350
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

Matrix*
- S = Soil
- SE = Sediment
- SD = 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)

044

00034

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: U. Setzer	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-1B	Field Logbook No.: EFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-33	Bill of Lading/Air Bill No.: NIA
Possible Sample Hazards/Remarks		

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

Sample No.	Matrix*	Date Sampled	Time Sampled	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Preservative																		
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1		1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS				METALS (see S.I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S.I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED				
410501				A	B	C	D	E	41050202					F				
BO D4M2 3	W	10-23-94	1030	X	X	X	X	X	X	X	X	X						
BO D4M3 4	W	10-23-94	1030											X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: A.G. Rizzo		10-23-94 1230
Received By: B. Whitten		10-24-94
Relinquished By: B. Whitten		10-25-94 1100
Received By: [illegible]		10/05/94 1100
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDGW0267

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

045

00051

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priorty ☒ Normal

Collector: K.D. LEE	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-8	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-33	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

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

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G
No. of Container(s)	1	1	1	1	1	8	2	2	1		1
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml
SAMPLE ANALYSIS	METALS (see S. I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S. I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED
410501	A	B	C	D	E	41050203	—				A

Sample No.	Matrix*	Date Sampled	Time Sampled														
BD D4P2 5	W	10/25/94	1000	X	X	X	X	X	X	X	X	X					
BD D4P3 6	W	10/25/94	1000											X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature]	10/25/94 0730	[signature] B.Butcher	10-25-94
[signature] B.Butcher	10-25-94 1100	[signature]	10/25/94 1100

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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

046

00052

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K.D. LEE	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-26	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: 1N95-0-0001-34	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2					
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G					
No. of Container(s)	1	1	1	1	1	8	2	2	1		1					
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml					
SAMPLE ANALYSIS 410501	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 41050201	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A					

Sample No.	Matrix*	Date Sampled	Time Sampled														
BO D4C8 01	W	10/24/94	1026	X	X	X	X	X	X	X	X	X					
BO D4C9 2	W	10/24/94	1026										X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	K.D. Lee	10/25/94 0730
Received By	B Butcher	10-25-94
Relinquished By	B Butcher	10-25-94 1100
Received By	[illegible]	10/25/94 1100
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

047

00050

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K. D. Lee	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-26	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-37	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS	METALS (see S. I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S. I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED				
410539	A	B	C	D	E	41054001	—				A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
BD D4M0 01	W	10/25/94	~~1140~~ 0905	X	X	X	X	X	X	X	X	X						
BD D4M1 2	W	10/25/94	~~1140~~ 0905											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: K. D. Lee	Date/Time: 10/25/94 1145	Received By: B.W. Hoa	Date/Time: 1145 10-25-94
Relinquished By: B.W. Hoa	Date/Time: 1130 10-26-94	Received By: Q. Boyd Quantera	Date/Time: 10-26-94 1130
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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-6000-528 (12/92)

048

00066

Attachment 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200 BP-5			DATA PACKAGE: W0267-GES		
VALIDATOR: D. Kilgore		LAB: Cimarron		DATE: 1/24/95	
CASE:			SDG: W0267		
ANALYSES PERFORMED					
☒ CLP/ICP	☒ CLP/GFAA	☐ CLP/Hg	☒ CLP/Cyanide	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846/ Cyanide	☐	☐

SAMPLES/MATRIX Water

*BCD4P4 - BCD4P5	** BCD4N8 - BCD4N9
BCD4H4 - BCD4H5	BCD4M2 - BCD4M3
BCD4L6 - BCD4L7	*BCD4P2 - BCD4P3
BCD4H0 - BCD4H1	BCD4L8 - BCD4L9
** BCD4K6 - BCD4K7	BCD4M0 - BCD4M1

* Field Blanks ** Field Duplicates

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: Data package is complete.

2. HOLDING TIMES

Are sample holding times acceptable? ..... (Yes) No N/A

Comments: All holding times were met, no qualification of the data was necessary. See attached "Holding Time Summaries"

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? ..... (Yes) No N/A

Are initial calibrations acceptable? ..... (Yes) No N/A

Are ICP interference checks acceptable? ..... (Yes) No N/A

Were ICV and CCV checks performed on all instruments? ..... (Yes) No N/A

Were ICV and CCV checks acceptable? ..... (Yes) No N/A

Comments: No qualification of the data was necessary.

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? ..... (Yes) No N/A

Are ICB and CCB results acceptable? ..... ~~Yes~~ (No) N/A aj 2/9

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

Are preparation blank results acceptable? ..... ~~Yes~~ (No) N/A aj 2/9

Were field blanks analyzed? ..... (Yes) No N/A

Are field blank results acceptable? ..... ~~Yes~~ (No) N/A aj 1/27

Comments: Minor concentrations of target analytes were detected in the blanks. See attached "Blank and Sample Data Summary" for data qualification. No data qualification was made as a result of field blank results in accordance with data validation procedures.

5. ACCURACY

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

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

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

Are LCS recoveries acceptable? ..... (Yes) No N/A

Comments: Matrix spike sample recovery for selenium (46.5-unfil. and (45.6-filtered) were outside the control limits of 75-125%. All selenium results are qualified as estimated (J). See attached Form V.

revised 2/9/95

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? ..... (Yes) No N/A

Are laboratory duplicate samples RPD values acceptable? ..... Yes (No) N/A

Was an ICP serial dilution sample analyzed? ..... (Yes) No N/A

Are the ICP serial dilution %D values acceptable? ..... Yes (No) N/A

Are field duplicate RPD values acceptable? ..... (Yes) No N/A

Are field split RPD values acceptable? ..... Yes No (N/A)

Comments: Lab duplicate RPD for iron was outside the control limit of ±CRDL (100 ug/l) (See attached Form VI). All iron results were qualified as estimated, J or UJ. ICP serial dilution %D for magnesium (13.6 + 16.4%) were outside the control limit of 10% (See attached Form IX). All magnesium results are qualified as estimated, J or UJ. (Continued on Comments Sheet)

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? ..... (Yes) No N/A

Are duplicate injection %RSD values acceptable? ..... (Yes) No N/A

Were analytical spikes performed as required? ..... (Yes) No N/A

Are analytical spike recoveries acceptable? ..... Yes (No) N/A

Was MSA performed as required? ..... Yes No (N/A)

Are MSA results acceptable? ..... Yes No (N/A)

Comments: Analytical spike recoveries were outside the control limits of 85-115% but greater than 40% for samples: BOD4L6, BOD4H5, BOD4P2. Results for these samples were qualified as estimated, J or UJ. (Continued on Comments Sheet)

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? ..... (Yes) No N/A

Are all results supported in the raw data? ..... (Yes) No N/A

Are results calculated properly? ..... (Yes) No N/A

Do results meet the CRDLs? ..... Yes (No) N/A

Comments: Results for a number of selenium samples have elevated sample detection limits as a result of matrix interferences requiring dilution and reanalysis. No qualification of the data was necessary. Samples with elevated detection limits are: BOD4H4, BOD4L7, BOD4H0, BOD4K6, BOD4N8, BOD4H1, BOD4K7, BOD4N9, BOD4L8, BOD4M2, BOD4L9, BOD4M3 and BOD4M1. aj 2/9/95

aj 1/27/95

revised 2/9/95

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary): #6. Precision

Samples B0D4K6/B0D4K7 and B0D4N8/B0D4N9 are field duplicates. All Field duplicate RPDs were within specified criteria except for potassium in the unfiltered samples. In accordance with the data validation procedures, no qualification of the data was made based on the field duplicate results.

A split sample of B0D4K6/B0D4K7 and B0D4N8/B0D4N9 was collected and shipped to TMA as sample B0D4P0/B0D4P1. The results for these samples were not available to allow validation of the field split samples RPDs.

#7. Furnace AA Quality Control

Selenium analytical spike recoveries were less than 40% for original analysis of the following samples requiring reanalysis at a 5X dilution resulting in an elevated Sample Detection Limit: B0D4H4, B0D4L7, B0D4H0, B0D4K6, B0D4N8, B0D4H1, B0D4K7, B0D4N9, B0D4L5, B0D4M2, B0D4L9, B0D4M3, B0D4M0, and B0D4M1. The analytical spike recovery was outside the control limits of 85-115% but greater than 40% for the analysis of the 5X dilution for the following samples: B0D4H4 (62.5%), B0D4L7 (72.5%), and B0D4M0 (83.2%). Results for these samples ~~will~~ are ~~be~~ qualified as estimated, J or UJ.

HOLDING TIME SUMMARY

SDG: W0267	VALIDATOR: D. Robinson	DATE: 1/24/95	PAGE 1 OF 3
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
~~BOD4~~ BOD4P4	ICP Metals	10/20/94	NA	11/16/94	NA	27	None
BOD4P5		10/20/94		11/16/94		27	None
BOD4H4		10/20/94		11/16/94		27	None
BOD4H5		10/20/94		11/16/94		27	None
BOD4L6		10/20/94		11/16/94		27	None
BOD4L7		10/20/94		11/16/94		27	None
BOD4H0		10/21/94		11/23/94		33	None
BOD4H1		10/21/94		11/23/94		33	None
BOD4K6		10/21/94		11/23/94		33	None
BOD4K7		10/21/94		11/23/94		33	None
BOD4N8		10/21/94		11/23/94		33	None
BOD4N9		10/21/94		11/23/94		33	None
BOD4M2		10/23/94		11/23/94		31	None
BOD4M3		10/23/94		11/23/94		31	None
BOD4P2		10/24/94		11/23/94		30	None
BOD4P3		10/24/94		11/23/94		30	None
BOD4L8		10/24/94		11/23/94		30	None
BOD4L9		10/24/94		11/23/94		30	None
BOD4M0		10/25/94		11/23/94		29	None
BOD4M1		10/25/94		11/23/94		29	None

HOLDING TIME SUMMARY

SDG: W0267	VALIDATOR: D. Robinson	DATE: 12/24/94	PAGE 2 OF 3
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOD4P4	GFAA Metals	10/20/94	NA	11/10/94	NA	21	None
BOD4P5		10/20/94		11/10/94		21	
BOD4H4		10/20/94		11/11/94		22	
BOD4H5		10/20/94		11/10/94		21	
BOD4L6		10/20/94		11/10/94		21	
BOD4L7		10/20/94		11/11/94		22	
BOD4H0		10/21/94		11/23/94		33	
BOD4H1		10/21/94		11/23/94		33	
BOD4K6		10/21/94		11/23/94		33	
BOD4K7		10/21/94		11/23/94		33	
BOD4N8		10/21/94		11/23/94		33	
BOD4N9		10/21/94		11/23/94		33	
BOD4M2		10/23/94		11/23/94		31	
BOD4M3		10/23/94		11/23/94		31	
BOD4P2		10/24/94		11/22/94		29	
BOD4P3		10/24/94		11/22/94		29	
BOD4L8		10/24/94		11/23/94		30	
BOD4L9		10/24/94		11/23/94		30	
BOD4M0		10/25/94		11/23/94		29	
BOD4M1	✓	10/25/94	✓	11/23/94	✓	29	✓

HOLDING TIME SUMMARY

SDG: J0267	VALIDATOR: D. Robinson	DATE: 1/21/95	PAGE 3 OF 3
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0D4P4	Cyanide	10/20/94	NA	11/02/94	NA	13	None
B0D4H4		10/20/94		11/02/94		13	
B0D4L6		10/20/94		11/02/94		13	
B0D4H0		10/21/94		11/03/94		13	
B0D4K6		10/21/94		11/03/94		13	
B0D4N8		10/21/94		11/03/94		13	
B0D4M2		10/23/94		11/03/94		11	
B0D4P2		10/24/94		11/03/94		10	
B0D4L8		10/24/94		11/03/94		10	
B0D4M0		10/25/94		11/03/94		9	

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3
BLANKS

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Preparation Blank Matrix (soil/water): WATER

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	24.9	U	24.9	U	24.9	U	24.9	U	24.900	U	P
Calcium	20.6	U	20.6	U	29.2	B	20.6	U	135.710	B	P
Iron	11.4	U	17.3	B	20.9	B	28.9	B	16.660	B	P
Magnesium	44.9	U	44.9	U	220.0	B	428.6	B	125.700	B	P
Manganese	1.8	B	1.3	B	3.1	B	4.3	B	1.560	B	P
Potassium	1944.0	U	1944.0	U	1944.0	U	1944.0	U	1944.000	U	P
Selenium	1.3	U	1.3	U	1.3	U	1.3	U	1.300	U	F
Sodium	42.4	U	42.4	U	128.6	B	262.9	B	116.400	B	P
Cyanide	2.4	U	2.4	U	-3.4	B	2.4	U	1.200	U	AS
Silicon	13.9	U	13.9	U	13.9	U	13.9	U	13.900	U	P
Bismuth	38.0	U	38.0	U	38.0	U	38.0	U	38.000	U	P

FORM III - IN ILM03.0

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Preparation Blank Matrix (soil/water): WATER

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum			24.9	U	37.5	B			24.900	U	P
Calcium			31.0	B	20.6	U	47.6	B	26.680	B	P
Iron			34.6	B	57.9	B			11.400	U	P
Magnesium			480.2	B	532.9	B			148.480	B	P
Manganese			5.4	B	6.5	B			2.000	B	P
Potassium			1944.0	U	1944.0	U			1944.000	U	P
Selenium			1.3	U	1.3	U	1.3	U	1.300	U	F
Sodium			309.8	B	345.4	B			101.010	B	P
Cyanide			2.4	U					1.200	U	AS
Silicon			13.9	U	13.9	U			-41.390	B	P
Bismuth			38.0	U	38.0	U	38.0	U	59.530	B	P

FORM III - IN ILM03.0

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

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	-25.0	B	24.9	U	24.9	U	24.9	U			P
Calcium			45.5	B							P
Iron	11.4	U	11.4	U	11.4	U	11.4	U			P
Magnesium	44.9	U	75.1	B	143.2	B	76.8	B			P
Manganese	0.7	U	1.0	B	1.8	B	1.5	B			P
Potassium	1944.0	U	1944.0	U	1944.0	U	1944.0	U			P
Selenium	1.3	U	1.3	U	1.3	U	1.3	U			F
Sodium	42.4	U	45.7	B	105.4	B	77.3	B			P
Cyanide	2.4	U	2.4	U	2.9	B	5.1	B			AS
Silicon	13.9	U	13.9	U	-21.6	B	-28.9	B			P
Bismuth			38.0	U	38.0	U	38.0	U			P

FORM III - IN ILM03.0

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

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			24.9	U							P
Calcium	-21.1	B	20.6	U	20.6	U	20.6	U			P
Iron			11.4	U							P
Magnesium			109.5	B							P
Manganese			1.4	B							P
Potassium			1944.0	U							P
Selenium			1.3	U							F
Sodium			101.9	B							P
Cyanide											NR
Silicon			-33.8	B							P
Bismuth	38.0	U	38.0	U	73.1	B	54.0	B			P

FORM III - IN ILM03.0

BLANK AND SAMPLE DATA SUMMARY

SDG: W0267	VALIDATOR: D. Robinson	DATE: 1/24/95	PAGE 1 OF 3

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB2	Iron	20.9	B	–	ug/l	104.5	NA	BCD4P4	UL
CCB3	Iron	28.9	B	–	ug/l	144.5	NA	BCD4P4, BCD4P5	UL
CCB4	Iron	34.6	B	–	ug/l	173.0	NA	BCD4P5, BCD4L7	UL
Prep Blank 50133	Iron	16.66	B	–	ug/l	83.3	NA	BCD4P4, BCD4P5	UL
CCB2	Magnesium	220.0	B	–	ug/l	1,100.	NA	BCD4P4	UL
CCB3	Magnesium	428.6	B	–	ug/l	2,143.	NA	BCD4P4, BCD4P5	UL
CCB4	Magnesium	480.2	B	–	ug/l	2,401.	NA	BCD4P5	UL
ICB	Manganese	1.8	B	–	ug/l	9.0	NA	BCD4P4, BCD4H5	UL
↓	↓	↓	↓	–	↓	↓	↓	BCD4P5, BCD4L7	↓
CCB2	Manganese	3.1	B	–	ug/l	15.5	NA	BCD4H4, BCD4P4	UL
↓	↓	↓	↓	–	↓	↓	↓	BCD4L6, BCD4H5	↓
↓	↓	↓	↓	–	↓	↓	↓	BCD4P5, BCD4L7	↓
CCB3	Manganese	4.3	B	–	ug/l	~~15.5~~ DKK 1/24/95 21.5	NA	BCD4H4, BCD4P4	UL
↓	↓	↓	↓	–	↓	↓	↓	BCD4L6, BCD4H5	↓
↓	↓	↓	↓	–	↓	↓	↓	BCD4P5, BCD4L7	↓
CCB4	Manganese	5.4	B	–	ug/l	27.0	NA	BCD4P5, BCD4L7	UL
Prep Blank 50133	Manganese	1.56	B	–	ug/l	7.8	NA	BCD4P4, BCD4H5	UL
↓	↓	↓	↓	–	↓	↓	↓	BCD4P5	↓
CCB3	Sodium	262.9	B	–	ug/l	1314.5	NA	BCD4P4, BCD4P5	UL
CCB4	Sodium	309.8	B	–	ug/l	1549.	NA	BCD4P5	UL

WHC-SD-EN--SPP-002, Rev. 2

DKK 1/24/95

BLANK AND SAMPLE DATA SUMMARY

SDG: W0247	VALIDATOR: D Robinson	DATE: 1/24/95	PAGE 2 OF 3

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
ICB2	Aluminum	-25.0	B	-	ug/l	2x 550 ~~125.0~~	NA	BOD4N8	KJ
CCB#1	Bismuth	73.1	B	-	ug/l	365.5	NA	BOD4K4	U
↓	↓	↓	↓	-	↓	↓	↓	BOD4N8 BOD4H1	U
				-				BOD4K7 BOD4N9	↓
				-				BOD4L8 BOD4M2	
				-				BOD4P2 BOD4L9	
				-				BOD4M3 BOD4P3	
↓	↓	↓	↓	-	↓	↓	↓	BOD4MC BOD4M1	↓
CCB#2	Bismuth	54.0	B	-	ug/l	270.	NA	BOD4M2 BOD4P2	U
↓	↓	↓	↓	-	↓	↓	↓	BOD4L9 BOD4M3	↓
				-				BOD4P3 BOD4MC	
↓	↓	↓	↓	-	↓	↓	↓	BOD4M1	↓
CCB#	Manganese	1.0	B	-	ug/l	5.0	NA	BOD4L8	U
Prep Blank 52180	Manganese	2.0	B	-	ug/l	10.0	NA	BOD4N8 BOD4H1	U
↓	↓	↓	↓	-	↓	↓	↓	BOD4K7 BOD4N9	↓
				-				BOD4L8 BOD4M2	
				-				BOD4P2 BOD4L9	
↓	↓	↓	↓	-	↓	↓	↓	BOD4M3 BOD4P3	↓
CCB#	Manganese	1.8	B	-	ug/l	9.0	NA	BOD4K7 BOD4N9	U
↓	↓	↓	↓	-	↓	↓	↓	BOD4L8 BOD4M2	↓

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WHC-SD-EN--SPP-002, Rev. 2

BLANK AND SAMPLE DATA SUMMARY

SDG: 41024-7	VALIDATOR: D. Robinson	DATE: 1/24/95	PAGE 3 OF 3

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CC-B7	Manganese	1.8	B	NA	ug/L	9.0	NA	BCD4P2 BCD4L9	U
↓	↓	↓	↓		↓	↓	↓	BCD4M3 BCD4P3	↓
CCB8	Manganese	1.5	B		ug/L	7.5	NA	BCD4M2 BCD4P3	U
↓	↓	↓	↓		↓	↓	↓	BCD4L9 BCD4M3	↓
								BCD4P3	
CCB6	Cyanide	2.9	B		ug/L	14.5	NA	BCD4H6 BCD4L5	U
↓	↓	↓	↓		↓	↓	↓	BCD4M2 BCD4P2	↓
C.									

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5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B0D4H4S

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): 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	2153.1800		38.1800	B	2000.00	105.8		P
Calcium									NR
Iron	75-125	1310.5300		556.4800		1000.00	75.4		P
Magnesium									NR
Manganese	75-125	556.1500		9.4700	B	500.00	109.3		P
Potassium									NR
Selenium	75-125	4.6500	B	6.5000	U	10.00	46.5	N	F
Sodium									NR
Cyanide	75-125	91.1300		1.2000	U	100.00	91.1		AS
Silicon		20705.2600		20027.5600		1000.00	67.8		P
Bismuth	75-125	1084.4300		38.0000	U	1000.00	108.4		P

Comments:

FORM V (Part 1) - IN ILM03.0

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B0D4H5S

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

Matrix (soil/water): 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	2139.0100		24.9000	U	2000.00	107.0		P
Calcium									NR
Iron	75-125	1170.2400		225.5300		1000.00	94.5		P
Magnesium									NR
Manganese	75-125	561.0200		7.6600	B	500.00	110.7		P
Potassium									NR
Selenium	75-125	4.5600	B	1.3000	U	10.00	45.6	N	F
Sodium									NR
Cyanide									NR
Silicon		20908.8200		20011.9900		1000.00	89.7		P
Bismuth	75-125	1068.0400		38.0000	U	1000.00	106.8		P

Comments:

FORM V (Part 1) - IN ILM03.0

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B0D4H4D

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

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

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		38.1800	B	24.9000	U	200.0		P
Calcium		42639.3100		43918.3900		3.0		P
Iron	100.0	556.4800		165.0800		108.5	*	P
Magnesium	5000.0	12457.7100		12269.5300		1.5		P
Manganese		9.4700	B	8.7200	B	8.2		P
Potassium	5000.0	6879.6600		6050.9100		12.8		P
Selenium		6.5000	U	1.3000	U			F
Sodium	5000.0	23381.6700		23277.4700		0.4		P
Cyanide		1.2000	U	2.4000	U			AS
Silicon		20027.5600		19760.5500		1.3		P
Bismuth		38.0000	U	38.0000	U			P

FORM VI - IN ILM03.0

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B0D4H5D

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

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

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		24.9000	U	29.1000	B	200.0		P
Calcium		44045.1000		41446.1500		6.1		P
Iron	100.0	225.5300		55.3200	B	121.2	*	P
Magnesium	5000.0	12469.5500		12740.2200		2.1		P
Manganese		7.6600	B	8.7000	B	12.7		P
Potassium	5000.0	6489.6000		8414.4600		25.8		P
Selenium		1.3000	U	1.3000	U			F
Sodium	5000.0	23533.7900		23704.6400		0.7		P
Cyanide								NR
Silicon		20011.9900		20417.8700		2.0		P
Bismuth		38.0000	U	38.0000	U			P

FORM VI - IN ILM03.0

U.S. EPA - CLP

9
ICP SERIAL DILUTION

EPA SAMPLE NO.

B0D4H4L

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	38.18	B	124.50	U	100.0		P
Calcium	42639.31		44293.85		3.9		P
Iron	556.48		643.84		15.7		P
Magnesium	12457.71		14147.57	B	13.6	E	P
Manganese	9.47	B	22.76	B	140.3		P
Potassium	6879.66		9720.00	U	100.0		P
Selenium							NR
Sodium	23381.67		24653.77	B	5.4		P
Cyanide							NR
Silicon	20027.56		20008.34		0.1		P
Bismuth	38.00	U	190.00	U			P

FORM IX - IN ILM03.0

068

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U.S. EPA - CLP

9
ICP SERIAL DILUTION

EPA SAMPLE NO.

B0D4H5L

Lab Name: ITAS_ST._LOUIS_____ Contract: 550.23____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0267_

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	24.90	U	124.50	U			P
Calcium	44045.10		46207.21		4.9		P
Iron	225.53		332.28	B	47.3		P
Magnesium	12469.55		14893.88	B	19.4	E	P
Manganese	7.66	B	26.01	B	239.6		P
Potassium	6489.60		9720.00	U	100.0		P
Selenium							NR
Sodium	23533.79		25564.41		8.6		P
Cyanide							NR
Silicon	20011.99		20763.97		3.8		P
Bismuth	38.00	U	190.00	U			P

FORM IX - IN ILM03.0

RECORD COPY

MEMORANDUM

JAN 1995
RECEIVED
Validation
Log in

TO: 200-BP-5 Round 2 Groundwater Project QA Record January 23, 1995

FR: Anne Jensen, Golder Associates Inc. aj

RE: RADIOCHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE W0267-QES (943-1610.064 267RAD.BP5)

INTRODUCTION

This memo presents the results of data validation on data package W0267-QES prepared by Quanterra Environmental Services. Sample information is provided in the following table.

SAMPLE ID	COMMENTS	ANALYSIS	MEDIA
BOD4H4*		RADIOCHEMISTRY	WATER
BOD4P4	FIELD BLANK		WATER
BOD4L6		SEE ATTACHMENT 4	WATER
BOD4H0			WATER
BOD4K6			WATER
BOD4N8	FIELD DUPLICATE		WATER
BOD4L8			WATER
BOD4M2*			WATER
BOD4P2	FIELD BLANK		WATER
BOD4M0			WATER
* - Indicates sample results which were 100% recalculated.			

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

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

DATA QUALITY OBJECTIVES

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

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met, with the exception of the deficiencies identified below.

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

Detection Limits. Detection limit goals were met for all sample results. The laboratory has stated that the required detection limit (RDL) for Fe-59 has been exceeded for samples BOD4K6 and BOD4N8, however there are no detection limit requirements for Fe-59. Data qualification is not applied. Attachment 5 provides supporting documentation.

Completeness. The data package was complete for all requested analyses. A total of ten samples were validated in this data package with a total of 160 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets the 90% objective of the work plan.

MAJOR DEFICIENCIES

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

MINOR DEFICIENCIES

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

Laboratory Blanks

- Technetium-99 was detected in the laboratory blank. Attachments 2 and 5 provide a summary of samples affected, data qualifications applied and supporting documentation.

Matrix Spike

- A matrix spike was not analyzed for tritium. Attachments 2 and 5 provide a summary of samples affected and data qualifications applied.

FIELD QC

- Sample BOD4N8 was identified as the field duplicate of sample BOD4K6. All relative percent differences (RPD) were within control limits, with the exception of gross beta and cobalt-60 which exceeded the criteria. Qualification is not required for field QC. Attachments 3 and 5 provide a summary of the results and supporting documentation.

- Samples BOD4P4 and BOD4P2 were identified as field blanks. Technetium-99 was detected in sample BOD4P2. Qualification is not required for field QC. Attachment 3 provides a summary of the results.

DATA REPORTING

- Reported sample results which are less than the minimum detectable activity (MDA) have been qualified as undetected (U) on the laboratory results form (see Attachment 3).

REFERENCES

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

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

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

ATTACHMENT 1

GLOSSARY OF RADIOCHEMISTRY DATA REPORTING QUALIFIERS

U - Indicates the constituent was analyzed for, but was not detected at a concentration above the minimum detectable activity (MDA). The concentration reported is the MDA corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and was not detected at a concentration above the MDA. Due to a quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample MDA. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. The concentration reported is qualified as estimated due to a quality control deficiency identified during data validation. The associated data should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

WHC-SD-EN-SPP-002, REV.2

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: W0267-QES	REVIEWER: A. JENSEN	DATE: 1-23-95	PAGE 1 OF 1
COMMENTS: RADIOCHEMISTRY			
COMPOUND/ANALYTE	QUALIFIER	SAMPLES AFFECTED	REASON
TECHNETIUM-99	J	BOD4P2	TECHNETIUM-99 DETECTED IN LAB BLANK
TRITIUM	J/UJ	ALL	NO MATRIX SPIKE RUN

ATTACHMENT 3

QUALIFIED DATA SUMMARY and ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0267-QES

	Samp#	BOD4H0		BOD4H4		BOD4K6		BOD4L6		BOD4L8		BOD4M0	
	Date	10-21-94		10-20-94		10-21-94		10-20-94		10-24-94		10-25-94	
	Location	299-E33-26		299-E33-39		699-52-54		699-54-57		699-55-55		699-55-57	
	Depth	---		---		---		---		---		---	
	Type	WATER		WATER		WATER		WATER		WATER		WATER	
	Comments												
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PLUTONIUM-238	pCi/L	0.058	U	-0.011	U	-0.011	U	0.365	U	-0.007	U	-0.023	U
PLUTONIUM-239/240	pCi/L	-0.006	U	0.047	U	-0.008	U	-0.015	U	0.056	U	0.102	U
COBALT-58	pCi/L	1.770	U	-1.850	U	-11.800	U	2.770	U	2.320	U	2.720	U
COBALT-60	pCi/L	8.350	U	2.910	U	62.600		1.370	U	4.760	U	45.300	
CESIUM-137	pCi/L	1.140	U	5.320	U	0.632	U	0.319	U	-4.610	U	-8.210	U
EUROPIUM-152	pCi/L	4.110	U	8.780	U	5.160	U	15.800	U	-3.760	U	-6.500	U
EUROPIUM-154	pCi/L	5.630	U	-2.080	U	-10.500	U	-12.000	U	8.040	U	2.410	U
EUROPIUM-155	pCi/L	7.960	U	1.470	U	2.950	U	2.130	U	-6.580	U	-1.460	U
IRON-59	pCi/L	2.190	U	-14.500	U	-1.350	U	3.410	U	10.400	U	4.810	U
RUTHENIUM-106	pCi/L	46.800	U	-26.700	U	-11.500	U	-8.420	U	10.400	U	-31.200	U
GROSS ALPHA	pCi/L	5.060		2.020	U	4.920	U	2.310		0.287	U	2.510	U
GROSS BETA	pCi/L	160.000		14.200		1820.000		6.590		65.600		472.000	
STRONTIUM	pCi/L	0.178	U	0.002	U	-0.103	U	0.118	U	0.339	U	0.426	U
TECHNETIUM-99	pCi/L	636.000		21.100		4250.000		0.097	U	217.000		2030.000	
TRITIUM	pCi/L	6610.000	J	3330.000	J	4290.000	J	13.700	UJ	8980.000	J	5740.000	J
TOTAL URANIUM	UG/L	10.600		2.470		6.820		2.400		1.470		5.090	

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

verified
aj 1/23/95

Validated Data Summary, Data Package: W0267-QES

	Samp#	B0D4M2		B0D4N8		B0D4P2		B0D4P4	
	Date	10-23-94		10-21-94		10-24-94		10-20-94	
	Location	699-57-59		699-52-54		699-55-55		699-54-57	
	Depth	---		---		---		---	
	Type	WATER		WATER		WATER		WATER	
	Comments			DUPLICATE		FIELD BLANK		FIELD BLANK	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q
PLUTONIUM-238	pCi/L	0.000	U	-0.003	U	0.000	U	-0.003	U
PLUTONIUM-239/240	pCi/L	0.000	U	-0.010	U	0.000	U	-0.010	U
COBALT-58	pCi/L	6.510	U	-0.458	U	-2.450	U	-4.900	U
COBALT-60	pCi/L	2.310	U	49.300		0.257	U	1.200	U
CESIUM-137	pCi/L	-2.120	U	1.860	U	-0.266	U	-2.410	U
EUROPIUM-152	pCi/L	-2.730	U	2.000	U	-8.080	U	4.560	U
EUROPIUM-154	pCi/L	5.970	U	-14.800	U	3.930	U	3.730	U
EUROPIUM-155	pCi/L	1.270	U	-1.400	U	3.750	U	-1.070	U
IRON-59	pCi/L	-9.810	U	12.000	U	-1.610	U	-0.684	U
RUTHENIUM-106	pCi/L	-17.900	U	-55.100	U	-52.900	U	-8.510	U
GROSS ALPHA	pCi/L	2.430		4.670	U	0.413	U	0.272	U
GROSS BETA	pCi/L	17.300		1310.000		1.800	U	0.791	U
STRONTIUM	pCi/L	0.261	U	0.213	U	-0.023	U	0.090	U
TECHNETIUM-99	pCi/L	44.200		4250.000		2.680	J	0.419	U
TRITIUM	pCi/L	60000.000	J	4080.000	J	35.200	UJ	108.000	UJ
TOTAL URANIUM	UG/L	4.200		6.990		0.026		0.019	

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

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010

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Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41048303	MATRIX:	WATER
CLIENT ID:	B0D4N8	DATE RECEIVED:	10/24/94

ISOTOPE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-3.45E-03	U	6.9E-03	6.9E-03	2.58E-01	pCi/L	60.50%	RD3209
PU239/40	-1.03E-02		1.2E-02	1.2E-02	3.11E-01	pCi/L	60.50%	RD3209
CO-58	-4.58E-01		6.8E+00	6.8E+00	1.15E+01	pCi/L	N/A	RD3219
CO-60	4.93E+01		1.5E+01	1.6E+01	N/A	pCi/L	N/A	RD3219
CS-137DA	1.86E+00	U	4.5E+00	4.5E+00	8.66E+00	pCi/L	N/A	RD3219
EU-152	2.00E+00		1.1E+01	1.1E+01	1.88E+01	pCi/L	N/A	RD3219
EU-154	-1.48E+01		1.3E+01	1.3E+01	1.75E+01	pCi/L	N/A	RD3219
EU-155	-1.40E+00		1.0E+01	1.0E+01	1.57E+01	pCi/L	N/A	RD3219
FE-59	1.20E+01		1.4E+01	1.5E+01	3.02E+01	pCi/L	N/A	RD3219
RU-106DA	-5.51E+01		5.1E+01	5.1E+01	7.77E+01	pCi/L	N/A	RD3219
ALPHA	4.67E+00		3.6E+00	3.7E+00	5.61E+00	pCi/L	100.00%	RD3214
BETA	1.31E+03		5.5E+01	1.1E+02	2.70E+01	pCi/L	100.00%	RD3214
STRONTIUM	2.13E-01	U	3.0E-01	3.0E-01	9.30E-01	pCi/L	74.10%	RD3204
TC-99	4.25E+03		1.2E+01	4.7E+02	~~2.20E-01~~ 2.20E+00 gj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	4.08E+03	J	2.1E+02	4.7E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	6.99E+00		N/A	1.1E+00	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified
gj 1/23/95

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Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41054001	MATRIX:	WATER
CLIENT ID:	B0D4M0	DATE RECEIVED:	10/26/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-2.28E-02 U	3.2E-02	3.2E-02	3.21E-01	pCi/L	73.40%	RD3209
PU239/40	1.02E-01	1.6E-01	1.6E-01	2.72E-01	pCi/L	73.40%	RD3209
CO-58	2.72E+00	5.7E+00	5.7E+00	1.12E+01	pCi/L	N/A	RD3219
CO-60	4.53E+01	1.1E+01	1.2E+01	N/A	pCi/L	N/A	RD3219
CS-137DA	-8.21E+00 U	5.8E+00	5.8E+00	8.17E+00	pCi/L	N/A	RD3219
EU-152	-6.50E+00	1.1E+01	1.1E+01	1.81E+01	pCi/L	N/A	RD3219
EU-154	2.41E+00	9.4E+00	9.4E+00	2.11E+01	pCi/L	N/A	RD3219
EU-155	-1.46E+00	1.1E+01	1.1E+01	1.65E+01	pCi/L	N/A	RD3219
FE-59	4.81E+00	1.4E+01	1.4E+01	2.72E+01	pCi/L	N/A	RD3219
RU-106DA	-3.12E+01	4.2E+01	4.2E+01	6.96E+01	pCi/L	N/A	RD3219
ALPHA	2.51E+00	2.8E+00	2.8E+00	5.05E+00	pCi/L	100.00%	RD3214
BETA	4.72E+02	3.5E+01	4.8E+01	2.88E+01	pCi/L	100.00%	RD3214
STRONTIUM	4.26E-01 U	3.4E-01	3.6E-01	1.01E+00	pCi/L	69.10%	RD3204
TC-99	2.03E+03	8.3E+00	2.2E+02	~~2.20E-01~~ 2.20E+00 aj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	5.74E+03 J	2.4E+02	5.8E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	5.09E+00	N/A	7.6E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified aj 1/23/95

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Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41050201	MATRIX:	WATER
CLIENT ID:	B0D4L8	DATE RECEIVED:	10/25/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-6.54E-03 U	9.2E-03	9.3E-03	2.73E-01	pCi/L	63.90%	RD3209
PU239/40	5.55E-02	1.3E-01	1.3E-01	2.94E-01	pCi/L	63.90%	RD3209
CO-58	2.32E+00	5.0E+00	5.0E+00	1.01E+01	pCi/L	N/A	RD3219
CO-60	4.76E+00	3.4E+00	3.4E+00	9.44E+00	pCi/L	N/A	RD3219
CS-137DA	-4.61E+00	5.4E+00	5.4E+00	8.52E+00	pCi/L	N/A	RD3219
EU-152	-3.76E+00	1.1E+01	1.1E+01	1.73E+01	pCi/L	N/A	RD3219
EU-154	8.04E+00	7.2E+00	7.2E+00	2.11E+01	pCi/L	N/A	RD3219
EU-155	-6.58E+00	9.6E+00	9.6E+00	1.46E+01	pCi/L	N/A	RD3219
FE-59	1.04E+01	1.1E+01	1.1E+01	2.52E+01	pCi/L	N/A	RD3219
RU-106DA	1.04E+01	4.3E+01	4.3E+01	7.84E+01	pCi/L	N/A	RD3219
ALPHA	2.87E-01	6.4E-01	6.4E-01	1.48E+00	pCi/L	100.00%	RD3214
BETA	6.56E+01	4.1E+00	6.2E+00	2.79E+00	pCi/L	100.00%	RD3214
STRONTIUM	3.39E-01 U	2.6E-01	2.7E-01	7.48E-01	pCi/L	95.90%	RD3204
TC-99	2.17E+02	2.8E+00	2.7E+01	~~2.20E-01~~ 2.20E+00 aj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	8.98E+03 J	2.9E+02	8.1E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	1.47E+00	N/A	2.2E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified aj 1/23/95

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Quanterra Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41048301	MATRIX:	WATER
CLIENT ID:	B0D4H0	DATE RECEIVED:	10/24/94

ISOTOPE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	5.83E-02	U	1.2E-01	1.2E-01	1.58E-01	pCi/L	71.60%	RD3209
PU239/40	-5.82E-03		8.2E-03	8.3E-03	2.43E-01	pCi/L	71.60%	RD3209
CO-58	1.77E+00		5.7E+00	5.7E+00	1.13E+01	pCi/L	N/A	RD3219
CO-60	8.35E+00		4.5E+00	4.5E+00	1.20E+01	pCi/L	N/A	RD3219
CS-137DA	1.14E+00		4.6E+00	4.6E+00	8.72E+00	pCi/L	N/A	RD3219
EU-152	4.11E+00		1.2E+01	1.2E+01	2.08E+01	pCi/L	N/A	RD3219
EU-154	5.63E+00		1.0E+01	1.0E+01	2.42E+01	pCi/L	N/A	RD3219
EU-155	7.96E+00		1.1E+01	1.1E+01	1.92E+01	pCi/L	N/A	RD3219
FE-59	2.19E+00		1.4E+01	1.4E+01	2.70E+01	pCi/L	N/A	RD3219
RU-106DA	4.68E+01		2.9E+01	3.0E+01	7.23E+01	pCi/L	N/A	RD3219
ALPHA	5.06E+00		2.0E+00	2.1E+00	1.55E+00	pCi/L	100.00%	RD3214
BETA	1.60E+02		6.3E+00	1.3E+01	3.03E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.78E-01	U	2.4E-01	2.4E-01	7.56E-01	pCi/L	99.80%	RD3204
TC-99	6.36E+02		4.7E+00	7.2E+01	~~2.20E-01~~ 2.20E+00 aj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	6.61E+03	J	2.5E+02	6.4E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	1.06E+01		N/A	1.6E+00	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified aj 1/23/95

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Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41050203	MATRIX:	WATER
CLIENT ID:	B0D4P2	DATE RECEIVED:	10/25/94

ISOTOPE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	0.00E+00	U	0.0E+00	2.5E-01	2.21E-01	pCi/L	51.10%	RD3209
PU239/40	0.00E+00		0.0E+00	2.5E-01	2.21E-01	pCi/L	51.10%	RD3209
CO-58	-2.45E+00		4.8E+00	4.8E+00	8.03E+00	pCi/L	N/A	RD3219
CO-60	2.57E-01		5.2E+00	5.2E+00	9.59E+00	pCi/L	N/A	RD3219
CS-137DA	-2.66E-01		3.5E+00	3.5E+00	6.58E+00	pCi/L	N/A	RD3219
EU-152	-8.08E+00		1.0E+01	1.0E+01	1.61E+01	pCi/L	N/A	RD3219
EU-154	3.93E+00		9.3E+00	9.3E+00	2.08E+01	pCi/L	N/A	RD3219
EU-155	3.75E+00		9.9E+00	9.9E+00	1.67E+01	pCi/L	N/A	RD3219
FE-59	-1.61E+00		1.3E+01	1.3E+01	2.30E+01	pCi/L	N/A	RD3219
RU-106DA	-5.29E+01		4.2E+01	4.2E+01	6.30E+01	pCi/L	N/A	RD3219
ALPHA	4.13E-01		5.2E-01	5.3E-01	8.85E-01	pCi/L	100.00%	RD3214
BETA	1.80E+00		1.4E+00	1.4E+00	2.70E+00	pCi/L	100.00%	RD3214
STRONTIUM	-2.29E-02		2.1E-01	2.1E-01	7.55E-01	pCi/L	97.90%	RD3204
TC-99	2.68E+00	J	1.0E+00	4.6E+00	~~2.20E-01~~ 2.20E+00 aj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	3.52E+01	UJ	1.1E+02	2.1E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	2.60E-02		N/A	4.0E-03	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified aj 1/23/95

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Quanterra Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41045103	MATRIX:	WATER
CLIENT ID:	B0D4L6	DATE RECEIVED:	10/21/94

ISOTOPE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	3.65E-01	U	3.9E-01	4.0E-01	4.90E-01	pCi/L	42.90%	RD3209
PU239/40	-1.46E-02		1.7E-02	1.7E-02	4.38E-01	pCi/L	42.90%	RD3209
CO-58	2.77E+00		4.1E+00	4.1E+00	8.92E+00	pCi/L	N/A	RD3219
CO-60	1.37E+00		4.5E+00	4.5E+00	8.63E+00	pCi/L	N/A	RD3219
CS-137DA	3.19E-01		4.0E+00	4.0E+00	7.48E+00	pCi/L	N/A	RD3219
EU-152	1.58E+01		1.0E+01	1.0E+01	2.03E+01	pCi/L	N/A	RD3219
EU-154	-1.20E+01		1.4E+01	1.4E+01	2.15E+01	pCi/L	N/A	RD3219
EU-155	2.13E+00		1.0E+01	1.0E+01	1.72E+01	pCi/L	N/A	RD3219
FE-59	3.41E+00		1.5E+01	1.5E+01	2.85E+01	pCi/L	N/A	RD3219
RU-106DA	-8.42E+00		3.3E+01	3.3E+01	5.98E+01	pCi/L	N/A	RD3219
ALPHA	2.31E+00		1.4E+00	1.4E+00	1.41E+00	pCi/L	100.00%	RD3214
BETA	6.59E+00		1.8E+00	1.8E+00	2.81E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.18E-01	U	2.3E-01	2.3E-01	7.49E-01	pCi/L	98.30%	RD3204
TC-99	9.69E-02	U	9.6E-01	4.4E+00	~~2.20E-01~~ 2.20E+00 aj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	1.37E+01	UJ	1.1E+02	2.1E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	2.40E+00		N/A	3.6E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified aj 1/23/95

~~0011~~

Quanterra Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41045101	MATRIX:	WATER
CLIENT ID:	B0D4H4	DATE RECEIVED:	10/21/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-1.10E-02 U	1.1E-02	1.1E-02	2.64E-01	pCi/L	75.60%	RD3209
PU239/40	4.69E-02	1.1E-01	1.1E-01	2.49E-01	pCi/L	75.60%	RD3209
CO-58	-1.85E+00	5.7E+00	5.7E+00	1.01E+01	pCi/L	N/A	RD3219
CO-60	2.91E+00	4.9E+00	4.9E+00	9.94E+00	pCi/L	N/A	RD3219
CS-137DA	5.32E+00	3.5E+00	3.5E+00	7.98E+00	pCi/L	N/A	RD3219
EU-152	8.78E+00	1.0E+01	1.0E+01	1.89E+01	pCi/L	N/A	RD3219
EU-154	-2.08E+00	1.4E+01	1.4E+01	2.46E+01	pCi/L	N/A	RD3219
EU-155	1.47E+00	9.9E+00	9.9E+00	1.64E+01	pCi/L	N/A	RD3219
FE-59	-1.45E+01	1.1E+01	1.1E+01	1.52E+01	pCi/L	N/A	RD3219
RU-106DA	-2.67E+01	3.9E+01	3.9E+01	6.34E+01	pCi/L	N/A	RD3219
ALPHA	2.02E+00	1.3E+00	1.3E+00	1.36E+00	pCi/L	100.00%	RD3214
BETA	1.42E+01	2.2E+00	2.4E+00	2.84E+00	pCi/L	100.00%	RD3214
STRONTIUM	1.51E-03 U	2.3E-01	2.3E-01	7.91E-01	pCi/L	91.70%	RD3204
TC-99	2.11E+01	1.3E+00	6.2E+00	~~2.20E-01~~ 2.20E+00 gj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	3.33E+03 J	2.0E+02	4.2E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	2.47E+00	N/A	3.7E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified gj 1/23/95

~~0009~~

017

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41048302	MATRIX:	WATER
CLIENT ID:	B0D4K6	DATE RECEIVED:	10/24/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-1.11E-02 U	1.1E-02	1.1E-02	2.64E-01	pCi/L	75.60%	RD3209
PU239/40	-8.28E-03	9.6E-03	9.7E-03	2.49E-01	pCi/L	75.60%	RD3209
CO-58	-1.18E+01	7.8E+00	7.9E+00	1.09E+01	pCi/L	N/A	RD3219
CO-60	6.26E+01	1.3E+01	1.4E+01	N/A	pCi/L	N/A	RD3219
CS-137DA	6.32E-01 U	3.8E+00	3.8E+00	7.34E+00	pCi/L	N/A	RD3219
EU-152	5.16E+00	8.9E+00	8.9E+00	1.69E+01	pCi/L	N/A	RD3219
EU-154	-1.05E+01	1.8E+01	1.8E+01	2.95E+01	pCi/L	N/A	RD3219
EU-155	2.95E+00	7.1E+00	7.1E+00	1.27E+01	pCi/L	N/A	RD3219
FE-59	-1.35E+00	1.7E+01	1.7E+01	3.08E+01	pCi/L	N/A	RD3219
RU-106DA	-1.15E+01	3.6E+01	3.6E+01	6.33E+01	pCi/L	N/A	RD3219
ALPHA	4.92E+00	3.7E+00	3.8E+00	5.69E+00	pCi/L	100.00%	RD3214
BETA	1.82E+03	6.5E+01	1.4E+02	2.72E+01	pCi/L	100.00%	RD3214
STRONTIUM	-1.03E-01 U	2.5E-01	2.5E-01	9.03E-01	pCi/L	78.40%	RD3204
TC-99	4.25E+03	1.2E+01	4.7E+02	~~2.20E-01~~ 2.20E+00 aj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	4.29E+03 J	2.1E+02	4.8E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	6.82E+00	N/A	1.0E+00	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified
aj 1/23/95

~~0013~~

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41050202	MATRIX:	WATER
CLIENT ID:	B0D4M2	DATE RECEIVED:	10/25/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	0.00E+00 U	0.0E+00	2.5E-01	2.21E-01	pCi/L	51.20%	RD3209
PU239/40	0.00E+00	0.0E+00	2.4E-01	2.20E-01	pCi/L	51.20%	RD3209
CO-58	6.51E+00	4.9E+00	4.9E+00	1.12E+01	pCi/L	N/A	RD3219
CO-60	2.31E+00	3.8E+00	3.8E+00	8.33E+00	pCi/L	N/A	RD3219
CS-137DA	-2.12E+00	3.2E+00	3.3E+00	5.60E+00	pCi/L	N/A	RD3219
EU-152	-2.73E+00	9.4E+00	9.4E+00	1.58E+01	pCi/L	N/A	RD3219
EU-154	5.97E+00	1.3E+01	1.3E+01	2.71E+01	pCi/L	N/A	RD3219
EU-155	1.27E+00	8.2E+00	8.2E+00	1.30E+01	pCi/L	N/A	RD3219
FE-59	-9.81E+00	1.4E+01	1.4E+01	2.16E+01	pCi/L	N/A	RD3219
RU-106DA	-1.79E+01	3.2E+01	3.2E+01	5.39E+01	pCi/L	N/A	RD3219
ALPHA	2.43E+00	1.4E+00	1.5E+00	1.48E+00	pCi/L	100.00%	RD3214
BETA	1.73E+01	2.4E+00	2.7E+00	2.90E+00	pCi/L	100.00%	RD3214
STRONTIUM	2.61E-01 U	2.5E-01	2.6E-01	7.55E-01	pCi/L	97.30%	RD3204
TC-99	4.42E+01	1.6E+00	8.5E+00	~~2.20E-01~~ 2.20E+00 aj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	6.00E+04 J	7.0E+02	4.5E+03	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	4.20E+00	N/A	6.3E-01	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified aj 1/23/95

~~0016~~

Quanterra
Environmental Services

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	41045102	MATRIX:	WATER
CLIENT ID:	B0D4P4	DATE RECEIVED:	10/21/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	-3.23E-03 U	6.5E-03	6.5E-03	2.42E-01	pCi/L	64.70%	RD3209
PU239/40	-9.67E-03	1.1E-02	1.1E-02	2.91E-01	pCi/L	64.70%	RD3209
CO-58	-4.90E+00	5.2E+00	5.2E+00	7.91E+00	pCi/L	N/A	RD3219
CO-60	1.20E+00	3.5E+00	3.5E+00	7.29E+00	pCi/L	N/A	RD3219
CS-137DA	-2.41E+00	3.6E+00	3.6E+00	6.05E+00	pCi/L	N/A	RD3219
EU-152	4.56E+00	9.6E+00	9.6E+00	1.78E+01	pCi/L	N/A	RD3219
EU-154	3.73E+00	9.2E+00	9.2E+00	2.05E+01	pCi/L	N/A	RD3219
EU-155	-1.07E+00	6.6E+00	6.6E+00	1.07E+01	pCi/L	N/A	RD3219
FE-59	-6.84E-01	1.2E+01	1.2E+01	2.38E+01	pCi/L	N/A	RD3219
RU-106DA	-8.51E+00	3.7E+01	3.7E+01	6.48E+01	pCi/L	N/A	RD3219
ALPHA	2.72E-01	4.3E-01	4.3E-01	8.60E-01	pCi/L	100.00%	RD3214
BETA	7.91E-01	1.2E+00	1.2E+00	2.64E+00	pCi/L	100.00%	RD3214
STRONTIUM	8.98E-02	2.3E-01	2.3E-01	7.65E-01	pCi/L	100.00%	RD3204
TC-99	4.19E-01	9.8E-01	4.4E+00	~~2.20E-01~~ 2.20E+00 aj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001
TRITIUM	1.08E+02 UJ	1.1E+02	2.1E+02	2.57E+02	pCi/L	92.50%	RD3205
TOTAL-URANIUM	1.90E-02	N/A	3.0E-03	3.54E-03	ug/L	100.00%	RD4200

Number of Results: 16

verified aj 1/23/95

~~0010~~

020

ATTACHMENT 4

LABORATORY NARRATIVE and CHAIN-OF-CUSTODY DOCUMENTATION

Quanterra Environmental Services

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

CERTIFICATE OF ANALYSIS

DEC 1994
RECEIVED
Data
Log In

Bechtel Hanford, Inc.
345 Hills
Richland, WA 99352

December 12, 1994

Attention: Joan Kessner

SAF Number	:	B94-036
Date SDG Closed	:	October 26, 1994
Number of Samples	:	Ten (10)
Sample Type	:	Water
SDG Number	:	W0267
Data Deliverable	:	Stand Alone

RECORD COPY

I. Introduction

On October 21, 24, 25, and 26, 1994, a total of ten water samples were received by the Quanterra Environmental Services Richland Laboratory (QTESRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

QTESRL ID	BHI ID	Matrix	Date of Receipt
41045101	B0D4H4	Water	10/21/94
41045102	B0D4P4	Water	10/21/94
41045103	B0D4L6	Water	10/21/94
41048301	B0D4H0	Water	10/24/94
41048302	B0D4K6	Water	10/24/94
41048303	B0D4N8	Water	10/24/94
41050201	B0D4L8	Water	10/25/94
41050202	B0D4M2	Water	10/25/94
41050203	B0D4P2	Water	10/25/94
41054001	B0D4M0	Water	10/26/94

~~recd~~

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 W0267 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 B0D4P4) results are within contractual limits.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
The Fe-59 RDL was exceeded for samples B0D4K6 and B0D4N8. The batch blank met all required RDLs, therefore, the sample results are accepted. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4H4) results are within contractual limits, except as noted.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The analysis sizes for samples B0D4K6, B0D4N8, and B0D4M0 were reduced due to high beta screening activities. As a result, the RDL was exceeded for those samples. The samples were recounted for 100 minutes to improve the achieved detection limits, however, the RDL was not met on the recount. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4H4) results are within contractual limits, except as noted.

Gross Beta by method ITAS-RD-3222
The analysis sizes for samples B0D4K6, B0D4N8, and B0D4M0 were reduced due to high beta screening activities. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4H4) results are within contractual limits.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4H4) results are within contractual requirements.

Liquid Scintillation Counting

Technetium-99 by method ITAS-IT-RS-0001
The matrix spike recovery for sample B0D4M0 is outside of acceptable limits. The sample activity is more than 20 times greater than the activity of spike that was added, therefore, the batch sample results are accepted. The, LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4P2) results are within contractual requirements.

Tritium by method ITAS-RD-3205
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4L6) results are within contractual requirements.

Total Uranium

Total Uranium by method ITAS-RD-4200
During the calibration check, the 100 ng/ml spike yield did not fall within the required limits, however, five additional spike checks were within acceptable limits. A technician noted possible contaminants in the questionable spike and it was discarded. The matrix spike, LCS, batch blank, sample and sample duplicate (duplicate of sample B0D4L6) results are within contractual requirements.

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

Reviewed and approved:

Suzanne Gaines
Project Manager

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: A. J. Simpson	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: CR-26	Field Logbook No.: FFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-29	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks: pump producing lots of gas in sample.

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

SAMPLE ANALYSIS: 410450

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G
No. of Container(s)	1	1	1	1	1	8	2	2	1		1
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml
	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) 4	TRITIUM 1045101	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A

Sample No.	Matrix*	Date Sampled	Time Sampled														
BO D4H4 01	W	10/20/94	1015	X	X	X	X	X	X	X	X	X					
BO D4H5 02	W	10/20/94	1015											X			

0050

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kathy Kocer	10/20/94 1114	Gail Butler	1114 10-20-94
Gail Butler	1015 10-21-94	Quantera / Karen Butterburg	10:15 10-21-94

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
Lanham 10 CPN
NOTE: DATA DELIVERABLE-STANDALONE

SDW W0267

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)

020

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: L. Seltzer	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: POKEY	Field Logbook No.: SFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-28	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks:		

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 41045102	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				
Preservative				HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container				P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)				1	1	1	1	1	8	2	2	1		1				
Volume				1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
BO D4P4 03	W	10-20-94	0940	X	X	X	X	X	X	X	X	X						
BO D4P5 04	W	10-20-94	0940											X				

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

SAMPLE ANALYSIS: 410450

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
AG Rose	10/21/94 0725	B.Whitten	0725 10-21-94
B.Whitten	1015 10-21-94	Quantera	10:15 10-21-94

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
Less than 100 cpm
NOTE: 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)

027

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: A Rizzo	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: 894-036
Ice Chest No.: Rusty Dusty	Field Logbook No.: EFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-028	Bill of Lading/Air Bill No.: N/A

Possible Sample Hazards/Remarks

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

SAMPLE ANALYSIS: 410450

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCL <2			HNO3<2
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G
No. of Container(s)	1	1	1	1	1	8	2	2	1		1
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml
	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) H1	TRITIUM 045103	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A

Sample No.	Matrix*	Date Sampled	Time Sampled															
BO D4L6 05	W	10-20-94	1415	X	X	X	X	X	X	X	X	X						
BO D4L7 06	W	10-20-94	1415											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
A Rizzo	10-21-94 0725	B.Whitten	10-21-94 0725
B.Whitten	10-21-94 1015	quanterra	10-21-94 10:15

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)
NOTE: 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)

028

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: KO	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: 972	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-32	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410482	METALS (see S. I. #1) UNFILTERED A	IC ANIONS-F,Cl, SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S. I. #2) 4104830	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
B0D4H0 01	W	10/21/94	0900	X	X	X	X	X	X	X	X	X						
B0D4H1 2	W	10/21/94	0900											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
CHZIMMER AJSIMPSON	10/21/94 1050	B. Whitten	10-21-94 1050
B.Whitten	10-24-94 1350	2100 CPM	10/24/94 1350

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Hg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Hg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG-W0267

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)

029

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priorty [X] Normal

Collector: A Rizzu	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: SML-73	Field Logbook No.: SFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-31	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS 410482	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 41048302	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A				

Sample No.	Matrix*	Date Sampled	Time Sampled																
BO D4K6 03	W	102194	0920	X	X	X	X	X	X	X	X	X							
BO D4K7 4	W	10·21·94	0920											X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: A Rizzu	Date/Time: 1025 10-21-94	Received By: Buchanan	Date/Time: 1015 10-21-94
Relinquished By: Buchanan	Date/Time: 1350 10-24-94	Received By: Quantera	Date/Time: 10/24/94 1350
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG-W0267

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

030

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: A Rizzo	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: GWS-013	Field Logbook No.: EFL-7020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-31	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

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

SAMPLE ANALYSIS	METALS (see S.I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALI-NITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S.I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED				
Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
410482	A	B	C	D	E	4104830	3	—			A				

Sample No.	Matrix*	Date Sampled	Time Sampled	METALS (UNFILTERED)	IC ANIONS	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (FILTERED)				
BO D4N8 05	W	10-21-94	0920	X	X	X	X	X	X	X	X	X						
BO D4N9 6	W	10-21-94	0920											X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: A Rizzo		10-21-94 1095
Received By: Bill Whitten Butcher		10-21-94 1045
Relinquished By: Bill Whitten Butcher		10-21-94 1350
Received By: Tom Pourtner		10/21/94 1350
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDGW0267

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)

0064

031

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K.D. LEE	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-26	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: 1N95-0-0001-34	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS	METALS (see S.I. #1) UNFILTERED	IC ANIONS-F,Cl,SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S.I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED				
410501	A	B	C	D	E	41050201					A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
BO D428 01	W	10/25/94	1026	X	X	X	X	X	X	X	X	X						
BO D429 2	W	10/25/94	1026										X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
K.D. Lee	10/25/94 0730	B. Whitten	10-25-94
Relinquished By	Date/Time	Received By	Date/Time
B. Whitten	10-25-94 1100	Quantera	10/25/94 1100
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

032

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priorty [X] Normal

Collector: W. Setzer	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: ER-1B	Field Logbook No.: EFL-1020	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-33	Bill of Lading/Air Bill No.: NIA

Possible Sample Hazards/Remarks:

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

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCL <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS	METALS (see S.I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S.I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED				
410501	A	B	C	D	E	41050202					A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
BD D4M2 3	W	10-23-94	1030	X	X	X	X	X	X	X	X	X						
BD D4M3 4	W	10-23-94	1030											X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: A.G. Rizzo	Date/Time: 1230 10-23-94	Received By: B. Whitten	Date/Time: 10-24-94
Relinquished By: B. Whitten	Date/Time: 1100 10-25-94	Received By: [illegible]	Date/Time: 10-25-94 1100
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG-W0267

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)

033

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: K.D. LEE	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: 894-036
Ice Chest No.: ER-8	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-0-0001-33	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCL <2			HNO3<2				
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G				
No. of Container(s)	1	1	1	1	1	8	2	2	1		1				
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml				
SAMPLE ANALYSIS	METALS (see S. I. #1) UNFILTERED	IC ANIONS-F,Cl, SO4,NO2 PO4	ALKALINITY	TDS	CLP-CYANIDE	GROSS ALPHA/BETA, (see S. I. #2)	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S. I. #3) FILTERED				
410501	A	B	C	D	E	41050203	—				A				

Sample No.	Matrix*	Date Sampled	Time Sampled															
BD D4P2 5	W	10/25/94	1000	X	X	X	X	X	X	X	X	X						
BD D4P3 6	W	10/25/94	1000											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kirby Lee K.D. Lee	10/25/94 0730	B. Butcher	10-25-94
B. Butcher	10-25-94 1100	[illegible]	10/25/94 1100

SPECIAL INSTRUCTIONS
#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

034

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K.D. Lee	Company Contact: PH BUTCHER	Telephone No.: 509-376-4388
Project Designation: 200-BP-5	Sampling Location: 200 Areas	SAF No.: B94-036
Ice Chest No.: EK26	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVER
Shipped To: QUANTERRA	Offsite Property No.: W95-D-0001-37	Bill of Lading/Air Bill No.: N/A
Possible Sample Hazards/Remarks:		
Special Handling and/or Storage: COOL TO 4 DEGREES CENTIGRADE		

Preservative	HNO3<2	COOL 4	COOL 4	COOL 4	NaOH>12	HNO3 <2		HCl <2			HNO3<2					
Type of Container	P/G	G	P/G	P	P	G/P	Gs	G/P	G/P		P/G					
No. of Container(s)	1	1	1	1	1	8	2	2	1		1					
Volume	1000ml	500ml	250ml	250ml	1000ml	1000ml	1000ml	1000ml	40ml		1000ml					
SAMPLE ANALYSIS 410539	METALS (see S.I. #1) UNFILTERED A	IC ANIONS-F,Cl,SO4,NO2 PO4 B	ALKALINITY C	TDS D	CLP-CYANIDE E	GROSS ALPHA/BETA, (see S.I. #2) 410540	TRITIUM	Tc-99	ACTIVITY SCAN		METALS (see S.I. #3) FILTERED A					

Sample No.	Matrix*	Date Sampled	Time Sampled															
BD D4M0 01	W	10/25/94	~~1140~~ 0905	X	X	X	X	X	X	X	X	X						
BD D4M1 2	W	10/25/94	~~1140~~ 0905											X				

0088

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: K.D. Lee		10/25/94 1145
Received By: B.W. Butcher		10-25-94 1145
Relinquished By: B.W. Butcher		10-26-94 1130
Received By: Q. Bayd Quantera		10-26-94 1130
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS

#1: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(UNFILTERED)
#2: GROSS ALPHA/BETA;GAMMA SCAN-Cs-137,Co-60,Ru-106;Pu238/239/240, Sr-90,TOTAL URANIUM
#3: METALS-Ca,Mg,Na,K,Fe,Mn,Si,Al,Bi; AA METALS-Selenium(FILTERED)

NOTE: DATA DELIVERABLE-STANDALONE

SDG W0267

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)

035

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-BP-5	DATA PACKAGE: W0267-QES
VALIDATOR: A. Jensen / LAB: Quanterra	DATE: 1/23/95
CASE:	SDG:

ANALYSES PERFORMED

☒ Gross Alpha/Beta	☒ Strontium-90	☒ Technetium-99	☒ Alpha Spectroscopy	☒ Gamma Spectroscopy	
☒ Total Uranium	☐ Radium-22	☒ Tritium	☐		

SAMPLES/MATRIX

B0D4H4	B0D4N8
B0D4P4	B0D4L8
B0D4L6	B0D4M2
B0D4H0	B0D4P2
B0D4K6	B0D4M0 / ALL WATER

1. Completeness . . . . . ☐ N/A

Technical verification forms present? . . . . . (Yes) No N/A

Comments:

2. Initial Calibration . . . . . ☐ N/A

Instruments/detectors calibrated within one year of sample analysis? . . . . . (Yes) No N/A

Initial calibration acceptable? . . . . . (Yes) No N/A

Standards NIST traceable? . . . . . (Yes) No N/A

Standards Expired? . . . . . Yes (No) N/A

Comments:

3. Continuing Calibration . . . . . ☐ N/A

Calibration checked within one week of sample analysis? . . . (Yes) No N/A
Calibration check acceptable? . . . . . (Yes) No N/A
Calibration check standards NIST traceable? . . . . . (Yes) No N/A
Calibration check standards expired? . . . . . Yes (No) N/A

Comments:

4. Blanks . . . . . ☐ N/A

Method blank analyzed? . . . . . (Yes) No N/A
Method blank results acceptable? . See note ① . . . . . Yes (No) N/A
Analytes detected in method blank? . . . . . (Yes) No N/A
Field blank(s) analyzed? . . . . . (Yes) No N/A
Field blank results acceptable? . . . . . ~~(Yes)~~ (No) N/A aj 2/9/95
Analytes detected in field blank(s)? . . . See note ② . . (Yes) No N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: ① Technetium-99 was detected in the laboratory blank. Data qualification applied to sample B0N4P2: "J". See attached Blank results form.
② Technetium-99 was detected in sample B0D4P2. Qualification of data is not required for field QC.

5. Matrix Spikes . . . . . ☐ N/A

Matrix spike analyzed? . . . . . See note ③ . . . . Yes (No) N/A
Spike recoveries acceptable? . . . . . (Yes) No N/A
Spike source traceable? . . . . . (Yes) No N/A
Spike source expired? . . . . . Yes (No) N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: ③ No matrix spike was run for tritium. Data qualification applied: "J/UJ".

038

revised 2/9/95

6. Laboratory Control Samples . . . . . ☐ N/A

LCS analyzed? . . . . . Yes No N/A
LCS recoveries acceptable? . . . . . Yes No N/A
LCS traceable? . . . . . Yes No N/A
Transcription/Calculation Errors? . . . . . Yes No N/A

Comments:_____

7. Chemical Recovery . . . . . ☐ N/A

Chemical carrier added? . . . . . Yes No N/A
Chemical recovery acceptable? . . . . . Yes No N/A
Chemical carrier traceable? . . . . . Yes No N/A
Chemical carrier expired? . . . . . Yes No N/A
Transcription/Calculation errors? . . . . . Yes No N/A

Comments:_____

8. Duplicates . . . . . ☐ N/A

Duplicates Analyzed? . . . . . Yes No N/A
RPD Values Acceptable? . . . . . Yes No N/A
Transcription/Calculation Errors? . . . . . Yes No N/A

Comments:_____

039

9. Field QC Samples . . . . . ☐ N/A

Field duplicate sample(s) analyzed? . . . . . Yes No N/A
Field duplicate RPD values acceptable? see note 4 . . . . . Yes No N/A
Field split sample(s) analyzed? . . . . . Yes No N/A
Field split RPD values acceptable? . . . . . Yes No N/A
Performance audit sample(s) analyzed? . . . . . Yes No N/A
Performance audit sample results acceptable? . . . . . Yes No N/A

Comments: 4 RPD values for gross beta and cobalt-60 exceed the control limits, however, data qualification is not required for field QC.

10. Holding Times

Are sample holding times acceptable? . . . . . Yes No N/A

Comments: see attached Holding Time Summary

11. Results and Detection Limits (Levels D & E) . . . . . ☐ N/A

Results reported for all required sample analyses? . . . . . Yes No N/A
Results supported in raw data? . . . . . Yes No N/A
Results Acceptable? . . . . . Yes No N/A
Transcription/Calculation errors? . . . . . Yes No N/A
MDA's meet required detection limits? . . see note 5 . . . Yes No N/A
Transcription/calculation errors? . . . . see note 6 . . . Yes No N/A

Comments: 5 The laboratory has stated that the RDL for Fe-59 was exceeded for samples BOD4K6 and BOD4N8, however there are no detection limit requirements for Fe-59. Data qualification is not required.
6 The MDA for technetium-99 was incorrectly reported on the sample results forms. It was corrected on all of these forms, based on the raw data and recalculation. Data qualification is not required.

revised 2/9/95

040

Gross Alpha		
HEIS No.:	BOD4H4	BOD4M2
Lab ID:	41045101	41050202
Aliquot:	2.00E-01	2.00E-01
Net counts:	0.204	0.256
Bkg counts:	0.016	0.024
Spl count time:	50	50
Bkg count time:	500	500
d/c:	4.387	4.222
Calc.:	2.02E+00	2.43E+00
Rptd:	2.02E+00	2.43E+00
MDA calc:	1.36E+00	1.49E+00
MDA rptd:	1.36E+00	1.48E+00
Gross Beta		
HEIS No.:	BOD4H4	BOD4M2
Lab ID:	41045101	41050202
Aliquot:	2.00E-01	2.00E-01
Net counts:	2.426	2.968
Bkg counts:	0.964	1.022
Spl count time:	100	100
Bkg count time:	500	500
d/c:	2.607	2.585
Calc.:	1.42E+01	1.73E+01
Rptd:	1.42E+01	1.73E+01
MDA calc:	2.86E+00	2.92E+00
MDA rptd:	2.84E+00	2.90E+00

Technetium-99		
HEIS No.:	BOD4H4	BOD4M2
Sample:	41045101	41050202
Bkg cpm:	27.54	27.54
Spl, amt:	5.00E-01	5.00E-01
Spl cpm:	48.1	69.63
Count time:	125	125
Spl dpm:	52.42	76.84
d/c:	1.052	1.052
Yield:	0.951	0.951
Blk, dpm:	3.14E+01	3.14E+01
Calc:	2.14E+01	4.45E+01
Rptd:	2.11E+01	4.42E+01
MDA, calc:	2.20E+00	2.20E+00
MDA, rptd:	2.20E+00	2.20E+00

TRITIUM		
HEIS NO.:	BOD4H4	BOD4M2
Sample:	41045101	41050202
BLANK Bkg cpm:	6.09	6.09
Spl,amt:	5.00E-03	5.00E-03
Spl,cpm:	19.7	249.15
Count time:	125	125.00
Spl, dpm:	49.39	629.57
d/c:	2.507	2.527
Yield:	0.925	0.925
BLANK,dpm:	16.3	16.30
Calc:	3.34E+03	5.98E+04
Rptd:	3.33E+03	6.00E+04
MDA, calc:	2.51E+02	2.53E+02
MDA, rptd:	2.57E+02	2.57E+02

Plutonium		
HEIS No.:	BOD4H4	BOD4M2
Lab ID:	41045101	41050202
Aliquot:	2.00E-01	2.00E-01
Pu238 net cpm:	-0.001	0
Pu238 bkg cpm:	0.001	0
Spl count time:	200	200
Bkg count time:	4000	1000
Pu238 Eff d/c:	3.703	3.703
Decay:	1.001	1.001
Yield:	0.756	0.512
Pu238 calc:	-1.10E-02	0.00E+00
Pu238 rptd:	-1.10E-02	0.00E+00
Pu238 MDA calc:	2.64E-01	2.21E-01
Pu238 MDA rptd:	2.64E-01	2.21E-01
Pu239 net cpm:	0.0042	0
Pu239 bkg cpm:	0.0008	0
Pu239 d/c:	3.703	3.703
Pu239 decay:	1	1
Pu239 calc:	4.63E-02	0.00E+00
Pu239 rptd:	4.69E-02	0.00E+00
Pu239 MDA calc:	2.52E-01	2.21E-01
Pu239 MDA rptd:	2.49E-01	2.20E-01

Total Uranium		
HEIS No.:	BOD4H4	BOD4M2
Lab ID:	41045101	41050202
ng, raw:	2.47E+01	4.20E+01
L, sample:	1.00E-01	1.00E-01
Dil. vol:	10	10
Yield, corr:	1	1
Calc.:	2.47E+00	4.20E+00
Rptd:	2.47E+00	4.20E+00

Strontium 90		
HEIS No.:	BOD4H4	BOD4M2
Sample:	41045101	41050202
Sep date:	11/10/94	11/10/94
Sep time:	13:25	13:25
Count date:	11/12/94	11/12/94
Count time:	11:05	12:15
Hours:	45.666666	46.833333
Sample amt:	1.02E+00	1.03E+00
Net, cpm:	0.002	0.366
Count time:	50	50
Bkg, cpm:	1.058	1.054
Count time:	500	500
D/C 1:	2.257	2.304
D/C 2:	1.865	1.883
D/C 3:	2.017	2.02
Yield:	0.917	0.973
Calc:	1.51E-03	2.60E-01
Rptd:	1.51E-03	2.61E-01
MDA, Calc:	7.90E-01	7.55E-01
MDA, rptd:	7.90E-01	7.55E-01

HOLDING TIME SUMMARY

SDG: W0267-QES | VALIDATOR: A Jensen | DATE: 1/19/95 | PAGE 1 OF 4

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOD4H4	Gross α/β	10/20/94	N/A	11/18/94	N/A	≤ 180	NONE
BOD4P4	↓	10/20/94	↓	11/18/94	↓	↓	↓
BOD4L6	↓	10/20/94	↓	11/18/94	↓	↓	↓
BOD4H0	↓	10/21/94	↓	11/18/94	↓	↓	↓
BOD4K6	↓	10/21/94	↓	11/18/94	↓	↓	↓
BOD4N8	↓	10/21/94	↓	11/18/94	↓	↓	↓
BOD4L8	↓	10/24/94	↓	11/18/94	↓	↓	↓
BOD4M2	↓	10/23/94	↓	11/18/94	↓	↓	↓
BOD4P2	↓	10/24/94	↓	11/18/94	↓	↓	↓
BOD4M0	↓	10/25/94	↓	11/18/94	↓	↓	↓
BOD4H4	Strontium-90	10/20/94	N/A	11/12/94	N/A	≤ 180	NONE
BOD4P4	↓	10/20/94	↓	↓	↓	↓	↓
BOD4L6	↓	10/20/94	↓	↓	↓	↓	↓
BOD4H0	↓	10/21/94	↓	↓	↓	↓	↓
BOD4K6	↓	10/21/94	↓	↓	↓	↓	↓
BOD4N8	↓	10/21/94	↓	↓	↓	↓	↓
BOD4L8	↓	10/24/94	↓	↓	↓	↓	↓

HOLDING TIME SUMMARY

SDG: W0267-QES | VALIDATOR: A. Jensen | DATE: 1/19/95 | PAGE 2 OF 4

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOD4M2	Strontium90	10/23/94	N/A	11/12/94	N/A	≤180	NONE
BOD4P2	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M0	↓	10/25/94	↓	↓	↓	↓	↓
BOD4H4	Tritium	10/20/94	11/10/94	11/15/94	≤ 7	≤180	NONE
BOD4P4	↓	10/20/94	↓	↓	↓	↓	↓
BOD4L6	↓	10/20/94	↓	↓	↓	↓	↓
BOD4H0	↓	10/21/94	↓	↓	↓	↓	↓
BOD4K6	↓	10/21/94	↓	↓	↓	↓	↓
BOD4N8	↓	10/21/94	↓	↓	↓	↓	↓
BOD4L8	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M2	↓	10/23/94	↓	↓	↓	↓	↓
BOD4P2	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M0	↓	10/25/94	↓	↓	↓	↓	↓
BOD4H4	Technetium-99	10/20/94	N/A	11/16/94	N/A	≤180	NONE
BOD4P4	↓	10/20/94	↓	↓	↓	↓	↓
BOD4L6	↓	10/20/94	↓	↓	↓	↓	↓
BOD4H0	↓	10/21/94	↓	↓	↓	↓	↓

HOLDING TIME SUMMARY

SDG: W0267-QES | VALIDATOR: A. Jensen | DATE: 1/19/95 | PAGE 3 OF 4

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOD4K6	Technetium99	10/21/94	N/A	11/16/94	N/A	≤180	NONE
BOD4N8	↓	10/21/94	↓	↓	↓	↓	↓
BOD4L8	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M2	↓	10/23/94	↓	↓	↓	↓	↓
BOD4P2	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M0	↓	10/25/94	↓	↓	↓	↓	↓
BOD4H4	Total Uranium	10/20/94	N/A	11/21/94	N/A	≤180	NONE
BOD4P4	↓	10/20/94	↓	↓	↓	↓	↓
BOD4L6	↓	10/20/94	↓	↓	↓	↓	↓
BOD4H0	↓	10/21/94	↓	↓	↓	↓	↓
BOD4K6	↓	10/21/94	↓	↓	↓	↓	↓
BOD4N8	↓	10/21/94	↓	↓	↓	↓	↓
BOD4L8	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M2	↓	10/23/94	↓	↓	↓	↓	↓
BOD4P2	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M0	↓	10/25/94	↓	↓	↓	↓	↓

HOLDING TIME SUMMARY

SDG: W0267-QES | VALIDATOR: A Jensen | DATE: 1/19/95 | PAGE 4 OF 4

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOD4H4	Alpha Spec	10/20/94	N/A	12/5/94	N/A	≤ 180	NONE
BOD4P4	↓	10/20/94	↓	↓	↓	↓	↓
BOD4L6	↓	10/20/94	↓	↓	↓	↓	↓
BOD4H0	↓	10/21/94	↓	↓	↓	↓	↓
BOD4K6	↓	10/21/94	↓	↓	↓	↓	↓
BOD4N8	↓	10/21/94	↓	↓	↓	↓	↓
BOD4L8	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M2	↓	10/23/94	↓	↓	↓	↓	↓
BOD4P2	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M0	↓	10/25/94	↓	↓	↓	↓	↓
BOD4H4	Gamma Spec	10/20/94	N/A	11/22/94	N/A	≤ 180	NONE
BOD4P4	↓	10/20/94	↓	↓	↓	↓	↓
BOD4L6	↓	10/20/94	↓	↓	↓	↓	↓
BOD4H0	↓	10/21/94	↓	↓	↓	↓	↓
BOD4K6	↓	10/21/94	↓	↓	↓	↓	↓
BOD4N8	↓	10/21/94	↓	↓	↓	↓	↓
BOD4L8	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M2	↓	10/23/94	↓	↓	↓	↓	↓
BOD4P2	↓	10/24/94	↓	↓	↓	↓	↓
BOD4M0	↓	10/25/94	↓	↓	↓	↓	↓

Quanterra
Environmental Services

BLANK RESULTS

LAB NAME:	ITAS-RICHLAND	SDG:	W0267
LAB SAMPLE ID:	L105401B	MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	3.13E+00	1.1E+00	4.7E+00	~~2.20E-01~~ 2.20E+00 aj 1/20/95	pCi/L	95.10%	ITAS-IT-RS-0001

Number of Results: 1

Tc-99 detected in laboratory blank. Data qualification applied to sample BOD4P2: "J"

aj 1/23/95

~~0025~~ HG 1/25/95