9613473.2236

START

B01818-TMA-181

TMA

0045174

JUL 1992
RECEIVED
OSM DMO

WESTINGHOUSE HANFORD COMPANY

Results of Analyses For:

METALS ANALYSIS

(TMA/Skinner Work Order S2-05-244)

TMA Master Work Order N2-04-122

2036

July 1, 1992

SEP 1996
RECEIVED
EDMC

2-29-96
MC

9613473.2237

TMA
Thermo Analytical Inc.

300 Second Avenue
Post Office Box 521
Waltham, MA 02254-0521
(617) 890-7200
FAX (617) 890-3883

June 26, 1992

TMA/NORCAL
2030 Wright Avenue
Richmond, CA 94804
Attention: Dan Stuermer

Quality Control Narrative

Scope
Nine (9) soil samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on May 21, 1992 from Westinghouse/ Hanford Company. The samples were analyzed for the USEPA CLP metals without mercury. The analysis were performed under Skinner and Sherman work order S205244.

Methodology
The samples were prepared, analyzed and reported in accordance with the USEPA Contract Laboratory Program Statement of Work 7/88 (CLP SOW788).

Discussion
All quality control requirements were met for the samples with the following exceptions:

The arsenic and antimony digestion spike recovery exceeded the control limit requirements.

The cadmium, chromium, and copper laboratory duplicates exceeded the control limit requirements.

Please feel free to call if there are any questions concerning this package.

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.

David N. Peterson
Assistant Laboratory Manager

ia 2-29-96 NC

9613473.2238

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01818

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-01S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

Qualifier G. Deal 11-7-9

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4940.00			P	
7440-36-0	Antimony	5.20	U	N	P	UJ
7440-38-2	Arsenic	6.50		N	F	J
7440-39-3	Barium	52.50			P	
7440-41-7	Beryllium	0.27	B		P	
7440-43-9	Cadmium	0.10		*	P	J
7440-70-2	Calcium	9420.00			P	
7440-47-3	Chromium	31.50		*	P	J
7440-48-4	Cobalt	5.80	B		P	
7440-50-8	Copper	19.10		*	P	J
7439-89-6	Iron	11700.00			P	
7439-92-1	Lead	18.50			F	
7439-95-4	Magnesium	3140.00			P	
7439-96-5	Manganese	284.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	17.20			P	J
7440-09-7	Potassium	970.00	B		P	
7782-49-2	Selenium	0.80	U	W	F	UJ
7440-22-4	Silver	0.75	B		P	
7440-23-5	Sodium	248.00	B		P	
7440-28-0	Thallium	0.80	U		F	
7440-62-2	Vanadium	27.30			P	
7440-66-6	Zinc	180.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN Rev.6/89

9613473.2239

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01820

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-02S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4820.00			P	
7440-36-0	Antimony	3.20	U	N	P	UJ
7440-38-2	Arsenic	7.00		SN	F	J
7440-39-3	Barium	58.20			P	
7440-41-7	Beryllium	0.34	B		P	
7440-43-9	Cadmium	4.90		*	P	J
7440-70-2	Calcium	5710.00			P	
7440-47-3	Chromium	11.20		*	P	J
7440-48-4	Cobalt	4.10	B		P	
7440-50-8	Copper	29.20		*	P	J
7439-89-6	Iron	8150.00			P	
7439-92-1	Lead	29.70			F	
7439-95-4	Magnesium	2640.00			P	
7439-96-5	Manganese	288.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	13.40			P	J
7440-09-7	Potassium	1510.00			P	
7782-49-2	Selenium	1.00			F	
7440-22-4	Silver	1.20	B		P	
7440-23-5	Sodium	563.00	B		P	
7440-28-0	Thallium	0.80	U		F	
7440-62-2	Vanadium	19.20			P	
7440-66-6	Zinc	297.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN Rev.6/89

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01821

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-03S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6620.00			P	
7440-36-0	Antimony	3.10	U	N	P	UJ
7440-38-2	Arsenic	15.60		SN	F	J
7440-39-3	Barium	73.00			P	
7440-41-7	Beryllium	0.22	B		P	
7440-43-9	Cadmium	5.30		*	P	J
7440-70-2	Calcium	4830.00			P	
7440-47-3	Chromium	14.00		*	P	J
7440-48-4	Cobalt	6.30	B		P	
7440-50-8	Copper	29.20		*	P	J
7439-89-6	Iron	11500.00			P	
7439-92-1	Lead	29.30			F	
7439-95-4	Magnesium	3640.00			P	
7439-96-5	Manganese	290.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	15.60			P	J
7440-09-7	Potassium	1650.00			P	
7782-49-2	Selenium	0.80	U		F	
7440-22-4	Silver	1.40	B		P	
7440-23-5	Sodium	340.00	B		P	
7440-28-0	Thallium	0.80	U		F	
7440-62-2	Vanadium	26.00			P	
7440-66-6	Zinc	345.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN Rev.6/89

9613473.2241

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01822

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-049

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6600.00			P	
7440-36-0	Antimony	3.10	U	N	P	UJ
7440-38-2	Arsenic	10.80		SN	F	J
7440-39-3	Barium	79.60			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	5.50		*	P	J
7440-70-2	Calcium	5340.00			P	
7440-47-3	Chromium	14.60		*	P	J
7440-48-4	Cobalt	5.40	B		P	
7440-50-8	Copper	29.90		*	P	J
7439-89-6	Iron	11500.00			P	
7439-92-1	Lead	35.50			F	
7439-95-4	Magnesium	3610.00			P	
7439-96-5	Manganese	303.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	17.80			P	J
7440-09-7	Potassium	1820.00			P	
7782-49-2	Selenium	0.77	U		F	
7440-22-4	Silver	1.20	B		P	
7440-23-5	Sodium	321.00	B		P	
7440-28-0	Thallium	0.77	U		F	
7440-62-2	Vanadium	25.90			P	
7440-66-6	Zinc	369.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01823

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-05S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4740.00			P	
7440-36-0	Antimony	3.10	U	N	P	UJ
7440-38-2	Arsenic	12.90		SN	F	J
7440-39-3	Barium	51.80			P	
7440-41-7	Beryllium	0.31	B		P	
7440-43-9	Cadmium	4.80		*	P	J
7440-70-2	Calcium	12100.00			P	
7440-47-3	Chromium	11.20		*	P	J
7440-48-4	Cobalt	4.00	B		P	
7440-50-8	Copper	22.30		*	P	J
7439-89-6	Iron	7980.00			P	
7439-92-1	Lead	21.80			F	
7439-95-4	Magnesium	2620.00			P	
7439-96-5	Manganese	208.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	13.40			P	J
7440-09-7	Potassium	1200.00			P	
7782-49-2	Selenium	0.78	U	+	F	UJ
7440-22-4	Silver	0.62	B		P	
7440-23-5	Sodium	436.00	B		P	
7440-28-0	Thallium	0.78	U		F	
7440-62-2	Vanadium	18.60			P	
7440-66-6	Zinc	291.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9613473.2243

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01824

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-06S

Level (low/med): LOW Date Received: 05/21/92

% lids 100.0

oncentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6630.00			P	
7440-36-0	Antimony	10	U	N	P	UJ
7440-38-2	Arsenic	16.20		SN	F	J
7440-39-3	Barium	68.90			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	3.90		*	P	J
7440-70-2	Calcium	5780.00			P	
7440-47-3	Chromium	13.70		*	P	J
7440-48-4	Cobalt	5.60	B		P	
7440-50-8	Copper	24.60		*	P	J
7439-89-6	Iron	11100.00			P	
7439-92-1	Lead	35.30			F	
7439-95-4	Magnesium	3330.00			P	
7439-96-5	Manganese	237.00			P	
439-97-6	Mercury				NR	
7440-02-0	Nickel	14.00			P	J
7440-09-7	Potassium	1380.00			P	
7782-49-2	Selenium	0.71	U		F	
7440-22-4	Silver	0.91	B		P	
7440-23-5	Sodium	278.00	B		P	
7440-28-0	Thallium	0.71	U		F	
7440-62-2	Vanadium	25.90			P	
7440-66-6	Zinc	321.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9613473.2244

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01825

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-07S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4750.00			P	
7440-36-0	Antimony	2.90	U	N	P	UJ
7440-38-2	Arsenic	11.40		SN	F	J
7440-39-3	Barium	60.20			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	5.80		*	P	J
7440-70-2	Calcium	7380.00			P	
7440-47-3	Chromium	13.00		*	P	J
7440-48-4	Cobalt	4.20	B		P	
7440-50-8	Copper	25.60		*	P	J
7439-89-6	Iron	8020.00			P	
7439-92-1	Lead	63.40			F	
7439-95-4	Magnesium	2610.00			P	
7439-96-5	Manganese	242.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	10.80			P	J
7440-09-7	Potassium	1070.00			P	
7782-49-2	Selenium	0.80	U		F	
7440-22-4	Silver	0.97	B		P	
7440-23-5	Sodium	694.00	B		P	
7440-28-0	Thallium	0.80	U		F	
7440-62-2	Vanadium	19.10			P	
7440-66-6	Zinc	331.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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9615473.2245

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01826

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-08S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5680.00			P	
7440-36-0	Antimony	3.10	U	N	P	J
7440-38-2	Arsenic	5.00		SN	F	J
7440-39-3	Barium	64.30			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	2.70		*	P	J
7440-70-2	Calcium	5260.00			P	
7440-47-3	Chromium	12.50		*	P	J
7440-48-4	Cobalt	5.50	B		P	
7440-50-8	Copper	22.70		*	P	J
7439-89-6	Iron	11800.00			P	
7439-92-1	Lead	20.30			F	
7439-95-4	Magnesium	3210.00			P	
7439-96-5	Manganese	346.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	14.40			P	J
7440-09-7	Potassium	1070.00			P	
7782-49-2	Selenium	0.71	U	W	F	UJ
7440-22-4	Silver	1.30	B		P	
7440-23-5	Sodium	310.00	B		P	
7440-28-0	Thallium	0.71	U		F	
7440-62-2	Vanadium	27.40			P	
7440-66-6	Zinc	232.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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9613473.2246

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01828

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-09S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5280.00			P	
7440-36-0	Antimony	3.10	U	N	P	UJ
7440-38-2	Arsenic	5.40		SN	F	J
7440-39-3	Barium	55.80			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	4.00		*	P	J
7440-70-2	Calcium	5350.00			P	
7440-47-3	Chromium	11.10		*	P	J
7440-48-4	Cobalt	5.20	B		P	
7440-50-8	Copper	24.40		*	P	J
7439-89-6	Iron	9680.00			P	
7439-92-1	Lead	21.50			F	
7439-95-4	Magnesium	2960.00			P	
7439-96-5	Manganese	288.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	14.30			P	J
7440-09-7	Potassium	1360.00			P	
7782-49-2	Selenium	0.75	U		F	
7440-22-4	Silver	0.95	B		P	
7440-23-5	Sodium	526.00	B		P	
7440-28-0	Thallium	0.75	U		F	
7440-62-2	Vanadium	23.50			P	
7440-66-6	Zinc	281.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN Rev.6/89

9613473.2247

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-92-00097
Record of Disposition No.

DATE: 4-27-92

LABORATORY: TMA

PROJECT TITLE/NO.: 300-FF-5

NCR NO.: B08333

SAMPLE IDENTIFICATION NUMBERS:

B01818	B01822	B01825
B01820	B01823	B01826
B01821	B01824	B01828

FEB. SAMPLE #'S

B017Z8 B01801
B017Z9
B01800

DESCRIPTION OF EVENT:

THE COC/SAR FORMS DID NOT LIST ALL ANALYSIS REQUIRED (ICP WAS THE ONLY ONE LISTED). HOWEVER THE LAB RECEIVED LABELED BOTTLE'S WITH ALL REQUIRED ANALYSIS ON THEM.

DISPOSITION OF SAMPLES:

PER LARRY HULSTROM THE LAB WAS INSTRUCTED TO PERFORM THE FOLLOWING ANALYSIS: ICP/GFAA METALS, MERCURY, AND TOTAL URANIUM BY LASER.THE PROCEEDING ANALYSIS WILL ALSO APPLY TO THE FOUR SAMPLES THAT ARRIVED IN FEBRUARY.

APPROVAL SIGNATURES:

Karl N. Pool / Karl N. Pool — 5/12/92
OSM Project Coordinator (Print/Sign Name) — Date

LC Hulstrom / L.C. Hulstrom — 6/8/92
Technical Representative (Print/Sign Name) — Date

Quality Assurance (Print/Sign Name) — Date

9613473.2248

OFFICE OF SAMPLE MANAGEMENT
RECORD OF DISPOSITION

ROD-92-00110
Record of Disposition No.

DATE: 5-20-92	LABORATORY: TMA
PROJECT TITLE/NO.: 300-FF-5	NCR NO.:

SAMPLE IDENTIFICATION NUMBERS:

B01818 B01822 B01824 B01828
B01820 B01823 B01825
B01821 B01824 B01826

DESCRIPTION OF EVENT:

THE HOLDING TIME FOR MERCURY WAS MISSED
PRIOR TO THE LAB RECEIVING THE ABOVE SAMPLE.

DISPOSITION OF SAMPLES:

THE MERCURY ANALYSIS WERE CANCELLED PER GEORGE HINCKEL.

-THE LAB HAS BEEN NOTIFIED.

APPROVAL SIGNATURES:

JEFF LERCH/ J Lerch — 5-20-92
OSM Project Coordinator (Print/Sign Name) — Date

LARRY HULSTROM PC Hulstrom — 6/8/92
Technical Representative (Print/Sign Name) — Date

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

9613473.2249

[12] From: George C Henckel at ~WHC193 5/19/92 5:21PM (682 bytes: 7 ln)
To: Theodore X Washington at ~WHC168
Receipt Requested
Subject: DSI to elininate Hg analysis for 300-FF-5
---------- Message Contents ----------

Per our phone conversation of 5/19/92 concering the holding times for Hg in sample numbers B01818, B01820,B01821, B01822,B01823,B01824,B01825,B01826,,B01828. Due to the fact that the holding time for Hg has already been exceeded by over one month, the analysis for Hg in the above samples should not be performed. Please prepare a ROD to reflect the change.

Window: 1 - 24 Lines: 12 Edit: Help: F1 End: ENTER

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P. O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 Fax No. (510) 235-0438

FACSIMILE COVER-SHEET

TO:

NAME: Ted Washington DATE: 5-18-92

COMPANY: WHC FAX NO:

ADDRESS: TELE. NO:

FROM:

NAME: DOLORES SANCHEZ COMPANY: TMA/NORCAL

FAX NO: (510) 235-0438 VERIFICATION NO: (510) 235-2633

NO. OF PAGES: (INCLUDING COVER SHEET)

COMMENTS:

Ted, I need clarifications on ROD (attached)

First I need to clarify:

(1) Per ROD, we will do ICP/AA METALS, MERCURY & TOTAL URANium (by LASER) — Correct?

Problem: The holding time for MERCURY is up (28 days from date of collection)

(2) We will not do GAMMA & SR-90?

(3) Pls. advise

9613473.2251

T

Thermo Analytical Inc.

CHAIN-OF-CUSTODY NON-CONFORMANCE NOTIFICATION FORM

WESTINGHOUSE HANFORD COMPANY
P.O.#: MBH-SVV-069262

Serial Number: 29 **Date:** 4-24-92

Samples Received: 4-23-92 **Fax #:** 11

Project/Location: 300-FF-5 Task 7

DESCRIPTION:

Biota samples received intact. Sample labels all list metals, gamma spec, and Sr 90. Analysis request sheet lists ICP metals only. Please clarify: which analyses are required?

RESOLUTION:

Spoke w/ Ted Washington on 4-27-92 regarding some disposition (follow-up). Was told to go ahead & analyze for what's in the labels (that is, MTLS, GAMMA & SR-90)

Hard copy to follow.

Response Required Yes [✓] No [ ]

TMA/Skinner & Sherman Labs SAMPLE LOG-IN
WORKORDER S2-05-244 CLIENT HANFORD-NOR No. SAMPLES:
PROTCL CLP TURNARND 33 days 9 (Soil) (Water) (Specify Other)
COOLER TEMP: 4 oC, or NA
CUSTODIAN Benney, A. SDG/BATCH N/A
CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N2-04-122
SHIPER & # Fedex # 2126897172 PO/CONTRACT# ↓
TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT Dolores Sanchez
CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: NONE

SAMPLE CONTAINERS INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO
SAMPLE LABELS AGREE WITH CHAIN OF CUSTODY INFO? YES/NO (COMMENT)
CLIENT PAPERWORK AGREES WITH SAMPLES & COC? YES/NO (COMMENT)

SHIPMENT DATES 5.21.92
LIST ANY DATE WITH PAPERWORK/SHIPMENT PROBLEMS & SPECIFY THE PROBLEM:

NO HG SEE ROD

	CLIENT ID	MATRIX	RECEIVED	QC	TEST(S)	HOLD TIME U
1	B01818	soil	5.21.92	D	TM → NO HG	3/49
2	20	↓	↓	S	↓	
3	21					
4	22					
5	23					
6	24					
7	25					
8	26					
9	28					
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						

Samples are from site known to have Rad-Contamination: YES X NO
Samples have detectable amounts of Radioactive Material: YES NO X
SUBCONTRACT: YES/NO, TO: DATE:
REVIEWED Rev. 1.4 PAGE

9613473.2253

Westinghouse Hanford Company

S & S CHAIN OF CUSTODY N2-04-138

Custody Form Initiator Bob Mueller

Company Contact C.A. Brandt Telephone 372-1344

Project Designation/Sampling Locations 300-FF-5 Task 7 Collection Date 3/29/92

Ice Chest No. NA Field Logbook No. BNW 54497

Bill of Lading/Airbill No. Offsite Property No.

Method of Shipment Air

Shipped to TMA / NORCAL

Possible Sample Hazards/Remarks None detected, ~20g Samples for metals analysis

Sample Identification

B01818
B01820
B01821
B01822
B01823
B01824
B01825
B01826
B01828

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Bob Mueller Bob Mueller	Kermit Blum	4-23-92 1030
Relinquished by: 5-20-92 Kermit Blum	Received by: [illegible]	Date/Time: 5/21/92 9:30
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: All sample labels ask for metals, gamma spec, & Sr90. Analysis request sheet asks for ICP metals only. KB 4-23-92

162

A-6000-407 (12/90)

9613473.2254

Westinghouse Hanford Company

Hanford Operations and Engineering Contractor for the US Department of Energy
P.O. Box 1970 Richland, Wa. 99352

NONCONFORMANCE REPORT

Page 1 of 5

No. B 0833

1. MFR/ORG: WHC
ITEM/MATERIAL NAME: Env. Samples
PART NO.: N/A
DRAWING/SPEC. NO.: N/A
REV.: N/A
PROGRAM/PROJECT: 300-FF-5
P.O./W.O. NO.: N/A
UNUSUAL OCCURRENCE REPORT REQUIRED: ☐ YES ☒ NO
SYSTEM/END USE: N/A
DATE: 5/12/92

2. DESCRIPTION OF NONCONFORMANCE

C01818 C01822 C01825
C01820 C01823 C01826
C01821 C01824 C01828

Feb. Sample #'s
C01728 C01801
C01729
C01800

The COC/SAR Forms did not list all analysis required (Icp was the only one listed). However the lab received labeled bottles with all required analysis on them.

3. REQUIREMENT VIOLATED | DOCUMENT | REV | ZONE/F

General: Incomplete information provided on the WHC COC/SAR & information is inconsistent with sample lables.

WHC, CM-7-7, EII 5.1, "Chain of Custody"

[illegible] 12200 5/12/92
ORIGINATOR | ORGANIZATION | DATE

4. ASME CODE ITEM(s)
☒ NO ☐ YES. NOTIFY AUTHORIZED INSPECTOR.

WHC QAR

5. CAUSE OF NONCONFORMANCE
☐ PROCEDURES ☒ PERSONNEL ☐ MATERIALS
☐ EQUIPMENT ☐ OTHERS

REMARKS:
Personnel failed to complete COC/SAR documentation

6. CORRECTIVE ACTION TO ELIMINATE CAUSE
Personnel to pay closer attention when filling out COC/SAR documentation.

INITIATION DATE | SERIAL NO.

N/A
RESPONSIBLE ORG. REP. | TITLE | DATE

7. RECOMMENDED DISPOSITION ☒ ACCEPT ☐ REJECT ☐ REPAIR ☐ REWORK ☐ OTHER

8A. DISPOSITION JUSTIFICATION AND INSTRUCTIONS

See attached ROD # 92-00097 for disposition

P/S = C3 SW-01 PN-003

9. ADDITIONAL REVIEWS REQUIRED (WHC ONLY) ☐ YES ☐ NO
IF YES, IDENTIFY:

8B. SUPPLIER ENG. | SUPPLIER QA

10. DISPOSITION APPROVAL (WHC ONLY)
☒ APPROVED ☐ DISAPPROVED
☐ OTHER (SEE CONTINUATION SHEET)

LC. Hulstrom LC Hulstrom 8/20/92
COGNIZANT ENGINEER | DATE

JR McCallum JR McCallum 8/20/92
COGNIZANT QA ENGINEER | DATE

AUTHORIZED INSPECTOR REVIEW | DATE

11. ADDITIONAL APPROVALS

NAME	TITLE	DATE	NAME	TITLE	DATE

12. DISPOSITION ACTION COMPLETE

N/A
NAME | DATE

QTY. ACCEPT | QTY. REJ.

FOLLOW ON NC

QA LOG NO.
EQA-92-095

The issuance and acceptance of this request in no way limits or affects the warranty provisions of the order. This request shall not establish a precedent or obligation to accept similar conditions in the future.

FOLLOW-UP LEVEL A E C

A-7310-104 (5-87)

9610475.2255

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector Bob Mueller Date Sampled 3/27/92 Time NA hours

Company Contact C. A. Brandt Telephone ( ) 372-1344

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B01818 ✓	1-glass ~ 10g samples	plant matter	ICP metals
[redacted]			
B01820 ✓			
B01821 ✓			
B01822 ✓			
B01823 ✓			
B01824 ✓			
B01825 ✓			
B01826 ✓			
[redacted]			
B01828 ✓			

Field Information** From 300-FF-5 Task 7

Special Handling and/or Storage NA

Possible Sample Hazards None detected

PART II: LABORATORY SECTION

4-23-92 KB

Received by Kermit Blum Title Sample Control Supervisor Date ~~4-24-92~~

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406 (05/90)

CHAIN-OF-CUSTODY NON-CONFORMANCE NOTIFICATION FORM

WESTINGHOUSE HANFORD COMPANY
P.O.#: MBH-SVV-069262

Serial Number: 29 **Date:** 4-24-92

Samples Received: 4-23-92 **Fax #:** 11

Project/Location: 300-FF-5 Task 7

DESCRIPTION:

Biota samples received intact. Sample labels all list metals, gamma spec, and Sr 90. Analysis request sheet lists ICP metals only. Please clarify: which analyses are required?

RESOLUTION:

Spoke w/ Ted Washington on 4-27-92 regarding some disposition (follow-up). Was told to go ahead & analyze for what's in the labels (that is, MTLS, GAMMA & SR-90)

Hard copy to follow.

Response Required Yes [✓] No [ ]

9613473.2257

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804-0040
(415) 235-2633 Fax No. (415) 235-0438

AUG 1992
RECEIVED
OSM DMO

August 18, 1992

Jeanette Duncan
Westinghouse Hanford Company
2355 Stevens Drive
Richland, WA 99352

Reference: Metals Case N2-02-106
WHC Samples B01751, B01752, B01753, B01754, B01755 and B01756

Dear Jeannette:

This is to confirm that the WHC sample identification numbers referenced above should read as follows: B017S1, B017S2, B017S3, B017S4, B017S5 and B017S6.

Sincerely,

Dolores Sanchez
Program Coordinator

9615473.2258

DEA 8-18-92

Organics Case 05-056 and Metals Case N2-05-108

Sample B0GCV0 should be B06CV0
Sample B0GCV6 should be B06CV6
Sample B0GCW4 should be B06CW4
Sample B0GCT9 should be B06CT9
Sample B0GCV5 should be B06CV5
Sample B0GCW3 should be B06CW3

Organics Case 06-025

pH was requested on the COC but was not reported

Metals Case 10/14 (Received by lab on 10-14-91)

Sample B015L4 should be B015C4

Metals Case N1-07-266

Sample B00NY1 should be B00YN1

Organics Case 06-005

Sample B06CK7 was reported as B06CK4 on page 33 of the Data Summary Report and also on page 492 of the data package.

Metals Case N2-02-106 and Radiochemistry Case N2-01-111-7024

Sample B01751 should be B017S1
Sample B01752 should be B017S2
Sample B01753 should be B017S3
Sample B01754 should be B017S4
Sample B01755 should be B017S5
Sample B01756 should be B017S6

Radiochemistry Case N2-01-056-7001

Sample B01CG4 is reported on both page 3 and page 4 of Attachment 1 Data Table. It is possible that the one on page 4 should be B01CG6.

Organics Case 04-072 and Metals Case N2-04-130

Sample B062D0 should be B06200

9613473.2259

TMA
Thermo Analytical Inc.

TMA/Norcal
2030 Wright Avenue
P. O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 Fax No. (510) 235-0438

JUL 1992
RECEIVED
OSM DMO

July 13, 1992

SENT BY FEDERAL EXPRESS

Ref. TMA/Norcal N2-05-029-7036

Mr. John Bourgeault
Westinghouse Hanford Company
2355 Stevens Drive
Richland, WA 99352

Dear Mr. Bourgeault:

Enclosed on Attachment 1, are the total uranium results of the plant matter samples from Hanford 300-FF-5 Location, we received 23 April 1992. The QA/QC results are shown on Attachments 2, 3, and 4.

Please call if you have any questions concerning this data.

Sincerely,

D. P. Kharkar

Dinkar P. Kharkar, Ph.D.
Manager, Nuclear Programs

Sections 1 through 7
Appendices

ATTACHMENT 1 DATA TABLE

Collection date: 27 March 1992

Customer I.D.	TMA/Norcal Group No. 7036	Analysis	Results $\mu g/g \pm 2\ \sigma$	
B01818 (vegetation)	1	Total Uranium	(0.129 ± 0.0336)	E+00
B01820 (vegetation)	2	Total Uranium	(0.165 ± 0.0429)	E+00
B01821 (vegetation)	3	Total Uranium	(0.161 ± 0.0417)	E+00
B01822 (vegetation)	4	Total Uranium	(0.189 ± 0.0490)	E+00
B01823 (vegetation)	5	Total Uranium	(0.233 ± 0.0606)	E+00
B01824 (vegetation)	6	Total Uranium	(0.182 ± 0.0473)	E+00
B01825 (vegetation)	7	Total Uranium	(0.131 ± 0.0340)	E+00
B01826 (vegetation)	8	Total Uranium	(0.145 ± 0.0377)	E+00
B01828 (vegetation)	9	Total Uranium	(0.201 ± 0.0521)	E+00

CASE NARRATIVE

1. Periphyton and vegetation samples from 300-FF-5 Location, (TMA/Norcal Group No. 7024 and 7036) were processed together and the results of the analyses are reported. The sample ID's are:

Customer Sample ID	TMA/Norcal Group No.	Customer Sample ID	TMA/Norcal Group No.
B017Z8 (periphyton)	7024-1	B01818 (vegetation)	7036-1
B017Z9 (periphyton)	7024-2	B01820 (vegetation)	7036-2
B01800 (periphyton)	7024-3	B01821 (vegetation)	7036-3
B01801 (periphyton)	7024-4	B01822 (vegetation)	7036-4
B017Y8 (periphyton)	7024-5	B01823 (vegetation)	7036-5
B017Y9 (periphyton)	7024-6	B01824 (vegetation)	7036-6
B017S2 (periphyton)	7024-7	B01825 (vegetation)	7036-7
B017S5 (periphyton)	7024-8	B01826 (vegetation)	7036-8
B017Z7 (periphyton)	7024-9	B01828 (vegetation)	7036-9

2. The analyses reported are:

PERIPHYTON & VEGETATION			
Analyte	Group # & Sample #	Analyte	Group # & Sample #
Total Uranium	7024-1 - 9	Total Uranium	7036-1 - 9

3. Results are reported μgm/gram dry material with 2 σ errors.

4. The QC samples consisting of a spike, a laboratory control, and a replicate were processed with this batch as shown on Table 1.

TABLE 1

Preparation Batch Samples Processed	Data Package
7024-1 through 9	Periphyton and Vegetation
7036-1 through 9	Vegetation

QC SAMPLES PROCESSED:

Sample I.D.	Type	Analyses	Reported with Data Package
7024-10 (QC 7695)	Spike	Total Uranium	X
7024-11 (QC 7696)	LCS	Total Uranium	X
7024-12 (QC 7697)	Replicate	Total Uranium	X
7036-10 (QC 7698)	Replicate	Total Uranium	X

6. Analyses, reanalyses, and reworks, etc.

Total Uranium Analyses: The results of the spike, the laboratory control sample, and the replicate were satisfactory. No abnormalties were encountered.

9613473.2262

Westinghouse Hanford Company

CHAIN OF CUSTODY N2-04-138

Custody Form Initiator: Bob Mueller

Company Contact: C.A. Brandt — Telephone: 372-1344

Project Designation/Sampling Locations: 300-FF-5 Task 7 — Collection Date: 3/29/92

Ice Chest No.: NA — Field Logbook No.: BNW 54497

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: Air

Shipped to: TMA / NORCAL

Possible Sample Hazards/Remarks: None detected, ~20g Samples for metals analysis

Sample Identification

B01818
B01820
B01821
B01822
B01823
B01824
B01825
B01826
B01828

☐ Field Transfer of Custody — CHAIN OF POSSESSION — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Bob Mueller Bob Mueller	Kermit Blum	4-23-92 1030
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: All sample labels ask for metals, gamma spec, & Sr90. Analysis request sheet asks for ICP metals only. KB 4-23-92

A-6000-407 (12/90)

9613473.2263

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector Bob Mueller Date Sampled 3/27/92 Time NA hours

Company Contact C. A. Brandt Telephone ( ) 372-1344

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B01818 ✓	1-glass ~ 10g samples	plant matter	ICP metals
[redacted]			
B01820 ✓			
B01821 ✓			
B01822 ✓			
B01823 ✓			
B01824 ✓			
B01825 ✓			
B01826 ✓			
[redacted]			
B01828 ✓			

Field Information** From 300-FF-5 Task 7

Special Handling and/or Storage NA

Possible Sample Hazards None detected

PART II: LABORATORY SECTION

4-23-92 KB

Received by Kermit Blum Title Sample Control Supervisor Date ~~4-24-92~~

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406 (05/90)

9613473.2264

Next Day Air

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
PNL		PNL 92-750

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Environmental Sciences	Ecological Resources & Assess.	Applied Ecology

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

Routing Air Emery Next Day ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
TMA/NORCAL 2030 Wright Avenue Richmond, CA 94804 Attn: Robert Fox	Robert Fox
	Full Title Project Coordinator

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 Weight 165 9.0	Cardboard box, contains plant samples that are double-bagged packed in vermiculite. Samples are non-hazardous. See attached sheet for sample numbers.	NA

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

Necessity for the Off-Site Use of this Property

To support 300-FF-5 Task 7.

Bill of Lading # 248521861 5

IMAC

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
JA Robinson	000150 120635	4-22-92

Location of Property (Area & Bldg.)	Contact	Phone
300 Area, LSL Room 1314	RJ Fellows	375-2247

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
April ~~December~~ 1992	~~XXXXXX~~ D7D83/PC 2FA	December, 1992

Originated By	Date	Authorized By	Date
RP Mueller Relinquished By R.P. Mueller		HE Westerdahl	4-22-92
Signature and Name of Property Control	Custodian Date	Property Management Approval	Date

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date 4-22-92 1112				

DISTRIBUTION

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

54-3000-479 (09/89)

FORM OF PAYMENT

Check ☐ GBL ☐ FCCOD ☐

Bill to Shipper ☒ Bill to Consignee ☐ Third Party Billing ☐

EMERY WORLDWIDE

A CF Company

SERVICES

UNITED STATES / CANADA: ☐ Same Day ☒ AM ☐ PM ☐ Second Day ☐ Saturday Delivery

INTERNATIONAL: Express ☐ Preferred ☐ Standard ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

E Shipper's Account Number: 850282294

Date: 04-22-92 | Origin: PSC | Shipment Number: 248521861 5

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
US DEPARTMENT OF ENERGY C/O
BATTELLE NORTHWEST
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA Canada ☐

To:
ROBERT FOX
TMA/NORCAL
2030 WRIGHT AVE
RICHMOND CA Canada ☐

Hold for Pick Up ☐

Tariff Dest. | Gateway

Check to Shipper $

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation.

Customer's Reference Numbers: D7D83 PC2FA PNL 92-750

Zip: 99352

E Consignee's Account Number

Zip: 94804

Description	Pcs.	L	W	H	Total Pieces	Total Weight (In Lbs.)
1 F/B CTN PLANT SAMPLES PNL 92-750	1	1/2	1/2	1/2	1	9

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

2 4 8 5 2 1 8 6 1 5

Remarks: OVERNIGHT DELIVERY

Shipper's Signature: X

Zip Ship ☐

For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply.

Mark if Emery Packaging is used

Urgent Letter 9X12 ☒ | Urgent Pack 12X15 ☒

International Shipments: Free Domicile ☐ | Commodity Code

Third Party Account Number mandatory for Third Party Billing.

Third Party Account Number: E

Base Charge

International Customs Value | International Insurance

Total Transportation Charges

Other Charges/Advance at Origin ☐ OC/AO- $

1-OAK-A

Terms and Conditions on Back

96134473 2265

9613473.2266

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc.
1201 Jadwin Avenue, Suite 204
Richland, Washington 99352
FAX 509.946.4203
509.946.4344

J-2978-50

July 22, 1993

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

Re: WHC Order No. MLW-SVV-037106
Task Order No. E-93-06
Return of Original Data for 300-FF-5 RI Samples

Dear Ms. Duncan:

Enclosed please find the 300-FF-5 Operable Unit Remedial Investigations (RI), Final Quality Assurance Reports (FQARs) listed on the attachment. Please contact me if you have any questions with regard to the materials being returned to you.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Task Manager

RECEIVED
JUL 22 1993
VALIDATION DOCUMENTATION
SDLA

cc: L. Hulstrom, Westinghouse Hanford
300-FF-5 Project File (HCRL-WHC/9306-L-93-148)
Attachment - Data Returned to Westinghouse Hanford, July 22, 1993

Data Returned to Westinghouse Hanford								
July 22, 1993								
			Work Completed		Data included with this transmittal:			
Sample Delivery Group Number	Case Numbers	Project	Verified	Validated	ODP	VCL	PQAR	FQAR
B01842-TMA-299	N2-10--044-7100	300-FF-5	X	X				X
B07G70-TMA-300	N2-10-042-7098	300-FF-5	X	X				X
B012N5-TMA-115	N1-12-057-9575	300-FF-5	X	X				X
B012P5-TMA-114	N1-12-032-9571	300-FF-5	X	X				X
B01DT7-TMA-073	N1-12-031-9572	300-FF-5	X	X				X
B012N5-TMA-115	N1-12-056-9574	300-FF-5	X	X				X
B017X7-TMA-119	N2-01-111-7024	300-FF-5	X	X				X
B017Z1-TMA-236	N2-07-076-7058	300-FF-5	X	X				X
B01818-TMA-181	N2-05-029-7036	300-FF-5	X	X				X
B01370-TMA-149	N1-10-010-9546	300-FF-5	X	X				X
Notes:								
ODP = Original Data Package								
VCL = Verification Checklist								
PQAR = Preliminary Quality Assurance Report								
FQAR = Final Quality Assurance Record								

RECEIVED
JUL 22 1993
VALIDATION DOCUMENTATION
SDLA

9513142.2267

9613473.2268

Biota

TMA/Norcal N2-05-029-7036

Sample Number	Gross Alpha/Beta				Tritium				Strontium 90				Technetium 99				Iodine 129			
	Ck	Ent	Ver	Val	Ck	Ent	Ver	Val	Ck	Ent	Ver	Val	Ck	Ent	Ver	Val	Ck	Ent	Ver	Val
B01818																				
B01820																				
B01821																				
B01822																				
B01823																				
B01824																				
B01825																				
B01826																				
B01828																				

Sample Number	Total Uranium				Isotopic Uranium				Plutonium 241				Isotopic Plutonium				Gamma Scan			
	Ck	Ent	Ver	Val	Ck	Ent	Ver	Val	Ck	Ent	Ver	Val	Ck	Ent	Ver	Val	Ck	Ent	Ver	Val
B01818																				
B01820																				
B01821																				
B01822																				
B01823																				
B01824																				
B01825																				
B01826																				
B01828																				

THIS APPENDIX CONSISTS OF FIVE ATTACHMENTS

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports.

Attachment 3 - Summary of Data Qualifications

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

9613473.2270

ATTACHMENT 1

Glossary of Data Qualifiers

9613473.2271

ATTACHMENT 1

Glossary of Data Qualifiers

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

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

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

9615473.2272

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

9613473.2273

N205 029-7036

TMA

ATTACHMENT 1 DATA TABLE

Collection date: 27 March 1992

Customer I.D.	TMA/Norcal Group No. 7036	Analysis	Results µg/g ± 2 σ	
B01818 (vegetation)	1	Total Uranium	(0.129 ± 0.0336)	E+00
B01820 (vegetation)	2	Total Uranium	(0.165 ± 0.0429)	E+00
B01821 (vegetation)	3	Total Uranium	(0.161 ± 0.0417)	E+00
B01822 (vegetation)	4	Total Uranium	(0.189 ± 0.0490)	E+00
B01823 (vegetation)	5	Total Uranium	(0.233 ± 0.0606)	E+00
B01824 (vegetation)	6	Total Uranium	(0.182 ± 0.0473)	E+00
B01825 (vegetation)	7	Total Uranium	(0.131 ± 0.0340)	E+00
B01826 (vegetation)	8	Total Uranium	(0.145 ± 0.0377)	E+00
B01828 (vegetation)	9	Total Uranium	(0.201 ± 0.0521)	E+00

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ATTACHMENT 3

Summary of Data Qualifications

TMA/Norcal N2-05-029-7036

Biota Samples

Total U (CRDL=1ug/g)

Customer I.D. #	Reported Results	Q
BO1818	0.129	
BO1820	0.165	
BO1821	0.161	
BO1822	0.189	
BO1823	0.233	
BO1824	0.182	
BO1825	0.131	
BO1826	0.145	
BO1828	0.201	

96154973.2275

9613473.2276

ATTACHMENT 4

As Qualified Data Summary

9615473.2277

Holding times ok
CRDL OK
Accuracy, Precision, Blanks ok

TMA

ATTACHMENT 1 DATA TABLE

Collection date: 27 March 1992

Customer I.D.	TMA/Norcal Group No. 7036	Analysis	Results µg/g ± 2 σ	
B01818 (vegetation)	1	Total Uranium	(0.129 ± 0.0336)	E+00
B01820 (vegetation)	2	Total Uranium	(0.165 ± 0.0429)	E+00
B01821 (vegetation)	3	Total Uranium	(0.161 ± 0.0417)	E+00
B01822 (vegetation)	4	Total Uranium	(0.189 ± 0.0490)	E+00
B01823 (vegetation)	5	Total Uranium	(0.233 ± 0.0606)	E+00
B01824 (vegetation)	6	Total Uranium	(0.182 ± 0.0473)	E+00
B01825 (vegetation)	7	Total Uranium	(0.131 ± 0.0340)	E+00
B01826 (vegetation)	8	Total Uranium	(0.145 ± 0.0377)	E+00
B01828 (vegetation)	9	Total Uranium	(0.201 ± 0.0521)	E+00

9613473.2278

ATTACHMENT 5

Data Review Supporting Documentation

9613473.2279

N2-05-029-7036

Total Uranium by kPA

Supplemental Requirements for Analyses Using kPA for Total Uranium

Analysis Results

- ✓ Results Reported for Sample Analyses
- ✓ Raw Data (including Prep Volume, Aliquot Volume, kPA output)
- ✓ Calculation Sheets
- ✓ Sample Identifications
- ✓ Detector Identification
- ✓ Analysis Date and Initials of Analyst

Initial and Continuing Calibration

- ✓ Detector Identification
- ✓ Calibration Date(s) and Initials of Analyst
- ✓ Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
- ✓ Amount of Standard Used
- ✓ Raw count/Activity data
- ✓ Determination of Calibration Equation

Blanks/Backgrounds

- ✓ Detector Identification
- ✓ Date of Analysis
- ✓ MDA of Method
- ✓ Amount of Reagent Used (Prep Volume)
- ✓ Count Durations

Duplicates

- ✓ Detector Identification
- ✓ Date of Analysis
- ✓ Amounts of Samples
- ✓ Count Durations
- ✓ Sample Identifications
- ✓ Results of Analysis and Calculated Precision
- ✓ Raw Data

Matrix Spikes

- ✓ Detector Identification
- ✓ Date of Analysis
- ✓ Amounts of Samples
- ✓ Count Durations
- ✓ Sample Identifications
- ✓ Results of Analysis and Calculated Precision
- ✓ Identification of Matrix Spike Radionuclide, Certification, Expiration Date, and Activity
- ✓ Amount of Matrix Spike Used
- ✓ Raw Data
- ✓ Results of Analysis and Comparison to Amount Added

9613473.2281

SECTION 2 CASE NARRATIVE

CASE NARRATIVE

1. Periphyton and vegetation samples from 300-FF-5 Location, (TMA/Norcal Group No. 7024 and 7036) were processed together and the results of the analyses are reported. The sample ID's are:

Customer Sample ID	TMA/Norcal Group No.	Customer Sample ID	TMA/Norcal Group No.
B017Z8 (periphyton)	7024-1	B01818 (vegetation)	7036-1
B017Z9 (periphyton)	7024-2	B01820 (vegetation)	7036-2
B01800 (periphyton)	7024-3	B01821 (vegetation)	7036-3
B01801 (periphyton)	7024-4	B01822 (vegetation)	7036-4
B017Y8 (periphyton)	7024-5	B01823 (vegetation)	7036-5
B017Y9 (periphyton)	7024-6	B01824 (vegetation)	7036-6
B017S2 (periphyton)	7024-7	B01825 (vegetation)	7036-7
B017S5 (periphyton)	7024-8	B01826 (vegetation)	7036-8
B017Z7 (periphyton)	7024-9	B01828 (vegetation)	7036-9

2. The analyses reported are:

PERIPHYTON & VEGETATION

Analyte	Group # & Sample #	Analyte	Group # & Sample #
Total Uranium	7024-1 - 9	Total Uranium	7036-1 - 9

3. Results are reported μgm/gram dry material with 2 σ errors.

4. The QC samples consisting of a spike, a laboratory control, and a replicate were processed with this batch as shown on Table 1.

TABLE 1

Preparation Batch Samples Processed	Data Package
7024-1 through 9	Periphyton and Vegetation
7036-1 through 9	Vegetation

QC SAMPLES PROCESSED:

Sample I.D.	Type	Analyses	Reported with Data Package
7024-10 (QC 7695)	Spike	Total Uranium	X
7024-11 (QC 7696)	LCS	Total Uranium	X
7024-12 (QC 7697)	Replicate	Total Uranium	X
7036-10 (QC 7698)	Replicate	Total Uranium	X

6. Analyses, reanalyses, and reworks, etc.

Total Uranium Analyses: The results of the spike, the laboratory control sample, and the replicate were satisfactory. No abnormalties were encountered.

9613473.2283

SECTION 3: QC SUMMARY

9613473.2284

QUALITY CONTROL SUMMARY

Attachment 2, 3, and 4 gives the results of the QC samples. The recovery ratios were determined by the QC Officer based upon the final data obtained for each. The laboratory control samples were calculated with an aliquot of 1.00 and, therefore, the presented data cannot be compared directly with the sample data. To compare them directly, the laboratory control sample data would need to be divided by sample aliquots.

The results of the spike, the laboratory control sample, and the replicate for total uranium were satisfactory.

D. P. Kharkar

Dinkar P. Kharkar, Ph.D.
TMA/Norcal Program Manager

ATTACHMENT 2 QUALITY CONTROL SAMPLE RESULTS, SPIKES AND BLANKS

TMA/Norcal Group No.	Nuclide	µg/Sample ± Error 2 σ Found	Added	Recovery Ratio Found/Added ± 2 σ
Spikes for Periphyton:				
7024-10 QC-7695	Total U	(0.4484 ± 0.1704) E+00	(0.4067 ± 0.01626) E+00	1.10 ± 0.42

ATTACHMENT 3 QUALITY CONTROL SAMPLE RESULTS, LABORATORY CONTROL SAMPLES

TMA/Norcal Group No.	Nuclide	μg/Sample ± Error 2 σ Found	Added	Recovery Ratio Found/Added ± 2 σ
Laboratory Control Samples for Periphyton and Vegetation:				
7024-11 QC-7696	Total U	(0.00882 ± 0.00229) E+00	0	Satisfactory

ATTACHMENT 4 QUALITY CONTROL RESULTS, REPLICATES

Nuclide	Results µg/g	
	No. 7024-12 Replicate	No. 7024-2 Original
QC 7697 Total U	(2.754 ± 1.047) E+00	(2.915 ± 0.758) E+00
	No. 7036-10 Replicate	No. 7036-2 Original
QC 7698 Total U	(0.178 ± 0.0710) E+00	(0.165 ± 0.0429) E+00

9613473.2288

SECTION 4 Chains-of-Custody Copies

9613473.2209

Westinghouse Hanford Company

CHAIN OF CUSTODY N2-04-138

Custody Form Initiator: Bob Mueller

Company Contact: C.A. Brandt — Telephone: 372-1344

Project Designation/Sampling Locations: 300-FF-5 Task 7 — Collection Date: 3/29/92

Ice Chest No.: NA — Field Logbook No.: BNW 54497

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: Air

Shipped to: TMA / NORCAL

Possible Sample Hazards/Remarks: None detected, ~20g Samples for metals analysis

Sample Identification

B01818
B01820
B01821
B01822
B01823
B01824
B01825
B01826
B01828

] Field Transfer of Custody	CHAIN OF POSSESSION	(Sign and Print Names)
elinquished by: Bob Mueller Bob Mueller	Received by: Kermit Blum	Date/Time: 4-23-92 1030
elinquished by:	Received by:	Date/Time:
eiinquished by:	Received by:	Date/Time:
elinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: All sample labels ask for metals, gamma spec, & Sr90. Analysis request sheet asks for ICP metals only. KB 4-23-92

A-6000-407 (12/90)

9615473.2290

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector Bob Mueller Date Sampled 3/27/92 Time NA hours

Company Contact C. A. Brandt Telephone ( ) 372-1344

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B01818 ✓	1-glass ~ 10g samples	plant matter	ICP metals
[redacted]			
B01820 ✓			
B01821 ✓			
B01822 ✓			
B01823 ✓			
B01824 ✓			
B01825 ✓			
B01826 ✓			
[redacted]			
B01828 ✓			

Field Information** From 300-FF-5 Task 7

Special Handling and/or Storage NA

Possible Sample Hazards None detected

PART II: LABORATORY SECTION

4-23-92 KB

Received by Kermit Blum Title Sample Control Supervisor Date ~~4-24-92~~

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406 (05/90)

9613473.2291

Next Day Air

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
PNL		PNL 92-750

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Environmental Sciences	Ecological Resources & Assess.	Applied Ecology

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

Routing Air Emery Next Day ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
TMA/NORCAL 2030 Wright Avenue Richmond, CA 94804 Attn: Robert Fox	Robert Fox
	Full Title
	Project Coordinator

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 Weight 165 9.0	Cardboard box, contains plant samples that are double-bagged packed in vermiculite. Samples are non-hazardous. See attached sheet for sample numbers.	NA

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

Necessity for the Off-Site Use of this Property

To support 300-FF-5 Task 7

Bill of Lading # 248521861 5

IMAC

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
JA Robinson	000150	4-22-92

Location of Property (Area & Bldg.)	Contact	Phone
300 Area LSL Room 1314	RJ Fellows	375-2247

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
~~December~~ April 1992	~~XXXXXX~~ D7D83/PC 2FA	December 1992

Originated By	Date	Authorized By	Date
RP Mueller Relinquished By RP Mueller		HE Westerdahl	4-22-92
Signature and Name of Property Control	**Custodian Date**	**Property Management Approval**	**Date**

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date 4-22-92 1112				

DISTRIBUTION

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

54-3000-479 (09/89)

FORM OF PAYMENT

Check ☐ GBL ☐ FCCOD ☐

Bill to Shipper ☒ Bill to Consignee ☐ Third Party Billing ☐

EMERY WORLDWIDE

A CF Company

SERVICES

UNITED STATES / CANADA: ☐ Same Day ☒ AM ☐ PM ☐ Second Day ☐ Saturday Delivery

INTERNATIONAL: Express ☐ Preferred ☐ Standard ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

E Shipper's Account Number: 850282294

Date: 04-22-92 | Origin: PSC | Shipment Number: 2485218615

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
US DEPARTMENT OF ENERGY C/O
BATTELLE NORTHWEST
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA Canada ☐

To:
ROBERT FOX
TMA/NORCAL
2030 WRIGHT AVE
RICHMOND CA Canada ☐

Hold for Pick Up ☐

Tariff Dest. | Gateway

Check to Shipper $

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation.

Customer's Reference Numbers: D7D83 PC2FA PNL 92-750

Zip: 99352

E Consignee's Account Number

Zip: 94804

Description	Pcs.	L	W	H	Total Pieces	Total Weight (In Lbs.)
1 F/B CTN PLANT SAMPLES PNL 92-750	1	1/2	1/2	1/2	1	9

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

2 4 8 5 2 1 8 6 1 5

Remarks: OVERNIGHT DELIVERY

Shipper's Signature X

Zip Ship ☐ For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply.

Mark if Emery Packaging is used: Urgent Letter 9X12 ☒ Urgent Pack 12X15 ☒

International Shipments: Free Domicile ☐ Commodity Code

Third Party Account Number mandatory for Third Party Billing. E Third Party Account Number

Base Charge

International Customs Value | International Insurance

Total Transportation Charges | Other Charges/Advance at Origin ☐ OC/AO- $

1-DAK-A

Terms and Conditions on Back

96134762

9613473.2293

SECTION 5 Analytical Methods Used

9613473.2294

ANALYTICAL METHODS USED - SOIL AND VEGETATION

1. Gross Alpha and Gross Beta: Approximately a 0.200 gram was uniformly deposited on a stainless steel planchet and counted on a low background proportional counter for gross alpha and gross beta determination.

2. Strontium-90: ^{90}Sr was determined on a 1 gram aliquot. Approximately 3 gram dry soil was dissolved completely by HF-HNO_3-HCl treatment and made to a known volume. One gram aliquot was taken for ^{90}Sr determination. Yttrium carrier was added Yttrium was extracted by HDEHP extraction. Yttrium was converted to yttrium oxide and beta counted.

3. Isotopic Uranium: Uranium was determined on a 1 gram aliquot. Approximately 3 gram dry soil was dissolved completely by HF-HNO_3-HCl treatment and made to a known volume. A one gram aliquot was taken for isotopic uranium determination. An appropriate uranium tracer was added and uranium purified by selective ion exchange procedures. The purified extract was electroplated on a stainless steel disc for alpha pulse analysis.

4. Technetium-99: Approximately 2 gram was ashed at 500°C with ^{99m}Tc tracer and ammonia. The ash was leached with H_2SO_4 and $K_2S_2O_8$. The leached sample is filtered. H_2SO4 and $K_2S_2O_8$ was added to a 10 mL aliquot of water. The water and the leached samaple of soil was extracted with TBP and purified by coprecipitation and anion exchange procedure. The purified Tc was electroplated on a stainless steel disc and counted on a gamma detector to determine yield. After decay of ^{99m}Tc, the disc was counted on a low background beta counter.

5. Gamma-Scan: Approximately 200 to 750 gram dry soil was placed in an appropriate geometry and counted on a Ge(Li) detector.

6. Total Uranium: 0.250 gram dry material was dissolved in 20 mL 1N HNO_3. An aliquot was taken for laser phosphorometric determination of uranium.

7. Tritium: Tritium was azeotropically distilled from ≈ 20 gram vegetation and the distillate was counted by liquid scintillation.

TMA/Norcal N2-05-029-7036

Biota

Sample #	7036-1	7036-2	7036-3	7036-4	7036-5	7036-6	7036-7	7036-8	7036-9
Cust. I.D. #	BO1818	BO1820	BO1821	BO1822	BO1823	BO1824	BO1825	BO1826	BO1828
Type	Vegetation	Vegetation	vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation
Final Result (ug/l)	25.86900	33.01300	32.10100	37.73900	46.61400	36.38600	26.12200	29.07000	40.11100
Prep Volume (l)	0.02000	0.02000	0.02000	0.02000	0.02000	0.02000	0.02000	0.02000	0.02000
Aliquot (g or l)	0.25000	0.25000	0.25000	0.25000	0.25000	0.25000	0.25000	0.25000	0.25000
Reported Results (ug/unit aliquot)	0.12930	0.16500	0.16050	0.18860	0.23300	0.18190	0.13060	0.14530	0.20050
Calculated Results (ug/unit aliquot)	2.06952 *	2.64104 *	2.56808 *	3.01912 *	3.72912 *	2.91088 *	2.08976 *	2.32560 *	3.20888 *
MDA	0.01100	0.01100	0.01100	0.01100	0.01100	0.01100	0.01100	0.01100	0.01100
Results > MDA ?	YES	YES	YES	YES	YES	YES	YES	YES	YES

96 1347 2295

TMA/Norcal N2-01-111-7024

Total U

MDA	2xMDA	5xMDA
0.011	0.022	0.055

Customer I.D. #	Original S	Duplicate D	RPD	Q
7024-12	3.915	2.754	34.818	
7036-10	0.165	0.178	7.580	

96173.6296

SAMPLE NUMBER:	7036-1	7036-2	7036-3	7036-4	7036-5	7036-6	7036-7	7036-8
CUST ID NUMBER:	B01818	B01820	B01821	B01822	B01823	B01824	B01825	B01826
SAMPLE TYPE:	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation	Vegetation
COLLECTION DATE:	03/29/92	03/29/92	03/29/92	03/29/92	03/29/92	03/29/92	03/29/92	03/29/92
CHAIN OF CUSTODY:	04/23/92	04/23/92	04/23/92	04/23/92	04/23/92	04/23/92	04/23/92	04/23/92
TOTAL URANIUM:								
DATE RUN:	07/07/92	07/07/92	07/07/92	07/07/92	07/07/92	07/07/92	07/07/92	07/07/92

SAMPLE NUMBER:	7036-9	7024-10	7024-11	7024-12	7036-10
CUST ID NUMBER:	B01828	QC7695	QC7696	QC7697	QC7698
SAMPLE TYPE:	Vegetation	Spike	Blank	Duplicate of	Duplicate of
COLLECTION DATE:	03/29/92				
CHAIN OF CUSTODY:	04/23/92				
TOTAL URANIUM:					
DATE RUN:	07/07/92	07/07/92	07/07/92	07/07/92	07/07/92

9615972.2298

HCRL-WHC/9306-1-92 [illegible] E-93-06/2978-50 Tr. # X01322

R

WESTINGHOUSE HANFORD COMPANY
300-FF-5 RI DATA VALIDATION
DISTRIBUTION FORM

Document Title: Prelim. QA Records TMA Case # N2-05-029-7036

Document Number: HCRL-WHC/9306-L-92-058 Date: 12/17/92

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Project Files (1=Adm; 2=Corres; 3=Source Information; 4=Technical Data & Products)

1.1 File Index		2.1 Incoming Correspondence		4.4.5 Biota/Small Mammals	X
1.2 Distribution Lists		2.2 Outgoing Correspondence	X	4.4.6 Surface Water Sediments	
1.3 Project Procedures		2.3 Internal Correspondence		4.5 Data Val. & Qual. Summary Rpts.	
1.4 Project Modifications				4.5.1 Round 1 Groundwater	
1.5.1 Staff Resumes		3.1 Task Order		4.5.1.1 Internal Drafts/Comments/Resol.	
1.5.2 Staff Training		3.2 Sample Lists		4.5.1.2 WHC Review Draft/Comments/Resol.	
1.5.3 Auth.-Former Site Employee		3.3 Data Validation Procedures		4.5.1.3 Final Report	
1.6.1 QA Manual		3.4 Original Chemical Data		4.5.2 Round 2 Groundater	
1.6.2 QA Implementation		3.5 Original Radiochem Data		4.5.2.1 Internal Drafts/Comments/Resol.	
1.6.3.1 QA Audits-Deliverables				4.5.2.2 WHC Review Draft/Comments/Resol.	
1.6.3.2 QA Audits-Files		4.1 Task Plan		4.5.2.3 Final Report	
1.6.4.1 Audit Resps-Deliverables		4.2 Data Pkg. Completeness Verif.		4.5.3 Round 3 Groundwater	
1.6.4.2 Audit Resps-Files		4.2.1 Checklists - Round 1 GW		4.5.3.1 Internal Drafts/Comments/Resol.	
1.6.5 Training		4.2.2 Checklists - Round 2 GW		4.5.3.2 WHC Review Draft/Comments/Resol.	
1.6.6.1 QA Manual Doc Log		4.2.3 Checklists - Round 3 GW		4.5.3.3 Final Report	
1.6.6.2 Procedures Doc Log		4.2.4 Checklists - Round 4 GW		4.5.4 Round 4 Groundwater	
1.6.6.3 Plans Document Log		4.2.5 Checklists - Biota/Small Mam.		4.5.4.1 Internal Drafts/Comments/Resol.	
1.6.6.4 Deliverables Doc Log		4.2.6 Checklists - Surface Wtr./Sed.		4.5.4.2 WHC Review Draft/Comments/Resol.	
1.7.1 Downloads		4.3 Data Val. Calcs./Annotated DP		4.5.4.3 Final Report	
1.7.2 M-113s		4.3.1 Round 1 Groundwater		4.5.5 Biota/Small Mammals	
1.7.3 A-208s		4.3.2 Round 2 Groundwater		4.5.5.1 Internal Drafts/Comments/Resol.	
1.7.4 Budget Status		4.3.3 Round 3 Groundwater		4.5.5.2 WHC Review Draft/Comments/Resol.	
1.7.5 Invoices		4.3.4 Round 4 Groundwater		4.5.5.3 Final Report	
1.8.1 Requisitions		4.3.5 Biota/Small Mammals		4.5.6 Surface Water/Sediments	
1.9 Meeting Minutes		4.3.6 Surface Water/Sediments		4.5.6.1 Internal Drafts/Comments/Resol.	
1.10 Record of Telecons		4.4 Preliminary QA Records		4.5.6.2 WHC Review Draft/Comments/Resol.	
1.11 Progress Reports		4.4.1 Round 1 Groundwater		4.5.6.3 Final Report	
1.12 Subcontractor (HC)		4.4.2 Round 2 Groundwater		4.6 Weekly Status Reports	
		4.4.3 Round 3 Groundwater		4.7 Weekly Management Reports	
		4.4.4 Round 4 Groundwater			

9613473.2300

HARTCROWSER

Hart Crowser, Inc.
1201 Jadwin Avenue, Suite 204
Richland, WA 99352
FAX 509.946.4203
509.946.4344

Earth and Environmental Technologies

2978-50

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

Subject: WHC Order No. MLW-SVV-037106
Task Order No. E-93-06
Preliminary Quality Assurance Record - 300-FF-5 RI/FS
TMA Case Number N2-05-029-7036

Dear Mr. Hulstrom:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the 300-FF-5 Operable Unit Remedial Investigation/Feasibility Study (RI/FS). The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated November 6, 1992. The subject data package consisted of nine vegetation samples submitted for total uranium analysis. The samples were analyzed by Thermo Analytical, Inc. according to requirements specified in the Analytical Laboratory Statement of Work issued by WHC. All sample results were selected for validation. These results, together with the data qualifiers assigned are presented in Attachment 4.

DATA QUALITY OBJECTIVES SUMMARY

The data quality objectives were achieved for these results. Holding times were met for all samples and the contract required detection limit was achieved. Precision and accuracy as determined with spiked and replicate sample result, respectively was acceptable. No evidence of blank contamination was discovered.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected in this data delivery group.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

No analytical results were qualified in this data delivery group.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report for this sampling round is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the 300-FF-5 RI/FS. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
(HC#130:RL1547.DOC)

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL/WHC-9306-L-92-058

9613473.2302

APPENDIX A1D
DATA VALIDATION DOCUMENTATION

Additional Biota Metals Analyses

Thermo Analytical Laboratories

Case Number N2-04-122

ATTACHMENT 1

Glossary of Data Qualifiers

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

UJ - Indicates that the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value may not accurately the sample quantitation limit.

J - Indicates that the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates that the compound or analyte was analyzed for and due to an identified quality control deficiency the data was unusable.

NJ - Indicates presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

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ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01818

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-01S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4940.00			P
7440-36-0	Antimony	3.20	U	N	P
7440-38-2	Arsenic	6.50		N	F
7440-39-3	Barium	52.60			P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	2.10		*	P
7440-70-2	Calcium	9420.00			P
7440-47-3	Chromium	31.50		*	P
7440-48-4	Cobalt	5.80	B		P
7440-50-8	Copper	19.10		*	P
7439-89-6	Iron	11700.00			P
7439-92-1	Lead	18.50			F
7439-95-4	Magnesium	3140.00			P
7439-96-5	Manganese	284.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	17.20			P
7440-09-7	Potassium	970.00	B		P
7782-49-2	Selenium	0.80	U	W	F
7440-22-4	Silver	0.75	B		P
7440-23-5	Sodium	248.00	B		P
7440-28-0	Thallium	0.80	U		F
7440-62-2	Vanadium	27.30			P
7440-66-6	Zinc	180.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01820

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-02S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4820.00			P
7440-36-0	Antimony	3.20	U	N	P
7440-38-2	Arsenic	7.00		SN	F
7440-39-3	Barium	58.20			P
7440-41-7	Beryllium	0.34	B		P
7440-43-9	Cadmium	4.90		*	P
7440-70-2	Calcium	5710.00			P
7440-47-3	Chromium	11.20		*	P
7440-48-4	Cobalt	4.10	B		P
7440-50-8	Copper	29.20		*	P
7439-89-6	Iron	3150.00			P
7439-92-1	Lead	29.70			F
7439-95-4	Magnesium	2640.00			P
7439-96-5	Manganese	288.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	13.40			P
7440-09-7	Potassium	1510.00			P
7782-49-2	Selenium	1.00			F
7440-22-4	Silver	1.20	B		P
7440-23-5	Sodium	563.00	B		P
7440-28-0	Thallium	0.80	U		F
7440-62-2	Vanadium	19.20			P
7440-66-6	Zinc	297.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01821

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-03S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6620.00			P
7440-36-0	Antimony	3.10	U	N	P
7440-38-2	Arsenic	15.60		SN	F
7440-39-3	Barium	73.00			P
7440-41-7	Beryllium	0.28	B		P
7440-43-9	Cadmium	5.30		*	P
7440-70-2	Calcium	4830.00			P
7440-47-3	Chromium	14.00		*	P
7440-48-4	Cobalt	6.30	B		P
7440-50-8	Copper	29.20		*	P
7439-89-6	Iron	11500.00			P
7439-92-1	Lead	29.30			F
7439-95-4	Magnesium	3640.00			P
7439-96-5	Manganese	290.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	15.60			P
7440-09-7	Potassium	1650.00			P
7782-49-2	Selenium	0.80	U		F
7440-22-4	Silver	1.40	B		P
7440-23-5	Sodium	340.00	B		P
7440-28-0	Thallium	0.80	U		F
7440-62-2	Vanadium	26.00			P
7440-66-6	Zinc	345.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01822

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-04S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6600.00			P
7440-36-0	Antimony	3.10	U	N	P
7440-38-2	Arsenic	10.80		SN	F
7440-39-3	Barium	79.60			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	5.50		*	P
7440-70-2	Calcium	5340.00			P
7440-47-3	Chromium	14.60		*	P
7440-48-4	Cobalt	5.40	B		P
7440-50-8	Copper	29.90		*	P
7439-89-6	Iron	11500.00			P
7439-92-1	Lead	35.50			F
7439-95-4	Magnesium	3610.00			P
7439-96-5	Manganese	303.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	17.80			P
7440-09-7	Potassium	1820.00			P
7782-49-2	Selenium	0.77	U		F
7440-22-4	Silver	1.20	B		P
7440-23-5	Sodium	321.00	B		P
7440-28-0	Thallium	0.77	U		F
7440-62-2	Vanadium	25.90			P
7440-66-6	Zinc	369.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B01823

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-05S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4740.00			P
7440-36-0	Antimony	3.10	U	N	P
7440-38-2	Arsenic	12.90		SN	F
7440-39-3	Barium	51.80			P
7440-41-7	Beryllium	0.31	B		P
7440-43-9	Cadmium	4.80		*	P
7440-70-2	Calcium	12100.00			P
7440-47-3	Chromium	11.20		*	P
7440-48-4	Cobalt	4.00	B		P
7440-50-8	Copper	22.30		*	P
7439-89-6	Iron	7980.00			P
7439-92-1	Lead	21.80			F
7439-95-4	Magnesium	2620.00			P
7439-96-5	Manganese	208.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	13.40			P
7440-09-7	Potassium	1200.00			P
7782-49-2	Selenium	0.78	U	+	F
7440-22-4	Silver	0.62	B		P
7440-23-5	Sodium	436.00	B		P
7440-28-0	Thallium	0.78	U		F
7440-62-2	Vanadium	18.60			P
7440-66-6	Zinc	291.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01824

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-06S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6630.00			P
7440-36-0	Antimony	3.10	U	N	P
7440-38-2	Arsenic	16.20		SN	F
7440-39-3	Barium	68.90			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	3.90		*	P
7440-70-2	Calcium	5780.00			P
7440-47-3	Chromium	13.70		*	P
7440-48-4	Cobalt	5.60	B		P
7440-50-8	Copper	24.60		*	P
7439-89-6	Iron	11100.00			P
7439-92-1	Lead	35.30			F
7439-95-4	Magnesium	3330.00			P
7439-96-5	Manganese	237.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	14.00			P
7440-09-7	Potassium	1380.00			P
7782-49-2	Selenium	0.71	U		F
7440-22-4	Silver	0.91	B		P
7440-23-5	Sodium	278.00	B		P
7440-28-0	Thallium	0.71	U		F
7440-62-2	Vanadium	25.90			P
7440-66-6	Zinc	321.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01825

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-07S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4750.00			P
7440-36-0	Antimony	2.90	U	N	P
7440-38-2	Arsenic	11.40		SN	F
7440-39-3	Barium	60.20			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	5.80		*	P
7440-70-2	Calcium	7380.00			P
7440-47-3	Chromium	13.00		*	P
7440-48-4	Cobalt	4.20	B		P
7440-50-8	Copper	25.60		*	P
7439-89-6	Iron	8020.00			P
7439-92-1	Lead	63.40			F
7439-95-4	Magnesium	2610.00			P
7439-96-5	Manganese	242.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	10.80			P
7440-09-7	Potassium	1070.00			P
7782-49-2	Selenium	0.80	U		F
7440-22-4	Silver	0.97	B		P
7440-23-5	Sodium	694.00	B		P
7440-28-0	Thallium	0.80	U		F
7440-62-2	Vanadium	19.10			P
7440-66-6	Zinc	331.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01826

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-08S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5680.00			P
7440-36-0	Antimony	3.10	U	N	P
7440-38-2	Arsenic	5.00		SN	F
7440-39-3	Barium	64.30			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	2.70		*	P
7440-70-2	Calcium	5260.00			P
7440-47-3	Chromium	12.50		*	P
7440-48-4	Cobalt	5.50	B		P
7440-50-8	Copper	22.70		*	P
7439-89-6	Iron	11800.00			P
7439-92-1	Lead	20.30			F
7439-95-4	Magnesium	3210.00			P
7439-96-5	Manganese	346.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	14.40			P
7440-09-7	Potassium	1070.00			P
7782-49-2	Selenium	0.71	U	W	F
7440-22-4	Silver	1.30	B		P
7440-23-5	Sodium	310.00	B		P
7440-28-0	Thallium	0.71	U		F
7440-62-2	Vanadium	27.40			P
7440-66-6	Zinc	232.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01828

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-09S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5280.00			P
7440-36-0	Antimony	3.10	U	N	P
7440-38-2	Arsenic	5.40		SN	F
7440-39-3	Barium	55.80			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	4.00		*	P
7440-70-2	Calcium	5350.00			P
7440-47-3	Chromium	11.10		*	P
7440-48-4	Cobalt	5.20	B		P
7440-50-8	Copper	24.40		*	P
7439-89-6	Iron	9680.00			P
7439-92-1	Lead	21.50			F
7439-95-4	Magnesium	2960.00			P
7439-96-5	Manganese	288.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	14.30			P
7440-09-7	Potassium	1360.00			P
7782-49-2	Selenium	0.75	U		F
7440-22-4	Silver	0.95	B		P
7440-23-5	Sodium	526.00	B		P
7440-28-0	Thallium	0.75	U		F
7440-62-2	Vanadium	23.50			P
7440-66-6	Zinc	281.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: B01818	REVIEWER: G. Deol	DATE: 11-7-92	PAGE 7 OF 8
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Selenium	UJ	B01826, B01818	Post digest spike %R < 8
"	UJ	B01823	MSA correlation coefficie
"			< 0.995
Antimony	UJ	All samples	Matrix spike recovery
			>30% but < 70%
Arsenic	J	" "	Matrix spike recove
			< 75%
Cadmium	J	" "	RPD out of control
Chromium	J	" "	" " " "
Copper	J	" "	" " " "
Nickel	J	" "	" " " "

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ATTACHMENT 4

As Qualified Data Summary

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WESTINGHOUSE/HANFORD

-1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 801818

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: 801818

Matrix (soil/water): SOIL Lab Sample ID: 05244-01S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

Qualifier G.Deol 11-7-92

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4940.00			P	
7440-36-0	Antimony	3.20	U	N	P	UJ
7440-38-2	Arsenic	6.50		N	F	J
7440-39-3	Barium	52.60			P	
7440-41-7	Beryllium	0.27	B		P	
7440-43-9	Cadmium	2.10		*	P	J
7440-70-2	Calcium	9420.00			P	
7440-47-3	Chromium	31.50		*	P	J
7440-48-4	Cobalt	5.80	B		P	
7440-50-8	Copper	19.10		*	P	J
7439-89-6	Iron	11700.00			P	
7439-92-1	Lead	18.50			F	
7439-95-4	Magnesium	3140.00			P	
7439-96-5	Manganese	284.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	17.20			P	J
7440-09-7	Potassium	970.00	B		P	
7782-49-2	Selenium	0.80	U	W	F	UJ
7440-22-4	Silver	0.75	B		P	
7440-23-5	Sodium	248.00	B		P	
7440-28-0	Thallium	0.80	U		F	
7440-62-2	Vanadium	27.30			P	
7440-66-6	Zinc	180.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01820

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-025

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4820.00			P	
7440-36-0	Antimony	3.20	U	N	P	UJ
7440-38-2	Arsenic	7.00		SN	F	J
7440-39-3	Barium	58.20			P	
7440-41-7	Beryllium	0.34	B		P	
7440-43-9	Cadmium	4.90		*	P	J
7440-70-2	Calcium	5710.00			P	
7440-47-3	Chromium	11.20		*	P	J
7440-48-4	Cobalt	4.10	B		P	
7440-50-8	Copper	29.20		*	P	J
7439-89-6	Iron	8150.00			P	
7439-92-1	Lead	29.70			F	
7439-95-4	Magnesium	2640.00			P	
7439-96-5	Manganese	288.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	13.40			P	J
7440-09-7	Potassium	1510.00			P	
7782-49-2	Selenium	1.00			F	
7440-22-4	Silver	1.20	B		P	
7440-23-5	Sodium	563.00	B		P	
7440-28-0	Thallium	0.80	U		F	
7440-62-2	Vanadium	19.20			P	
7440-66-6	Zinc	297.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01821

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-03S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6620.00			P	
7440-36-0	Antimony	3.10	U	N	P	UJ
7440-38-2	Arsenic	15.60		SN	F	J
7440-39-3	Barium	73.00			P	
7440-41-7	Beryllium	0.28	B		P	
7440-43-9	Cadmium	5.30		*	P	J
7440-70-2	Calcium	4830.00			P	
7440-47-3	Chromium	14.00		*	P	J
7440-48-4	Cobalt	6.30	B		P	
7440-50-8	Copper	29.20		*	P	J
7439-89-6	Iron	11500.00			P	
7439-92-1	Lead	29.30			F	
7439-95-4	Magnesium	3640.00			P	
7439-96-5	Manganese	290.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	15.60			P	J
7440-09-7	Potassium	1650.00			P	
7782-49-2	Selenium	0.80	U		F	
7440-22-4	Silver	1.40	B		P	
7440-23-5	Sodium	340.00	B		P	
7440-28-0	Thallium	0.80	U		F	
7440-62-2	Vanadium	26.00			P	
7440-66-6	Zinc	345.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01822

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-04S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6600.00			P	
7440-36-0	Antimony	3.10	U	N	P	UJ
7440-38-2	Arsenic	10.80		SN	F	J
7440-39-3	Barium	79.60			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	5.50		*	P	J
7440-70-2	Calcium	5340.00			P	
7440-47-3	Chromium	14.60		*	P	J
7440-48-4	Cobalt	5.40	B		P	
7440-50-8	Copper	29.90		*	P	J
7439-89-6	Iron	11500.00			P	
7439-92-1	Lead	35.50			F	
7439-95-4	Magnesium	3610.00			P	
7439-96-5	Manganese	303.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	17.80			P	J
7440-09-7	Potassium	1820.00			P	
7782-49-2	Selenium	0.77	U		F	
7440-22-4	Silver	1.20	B		P	
7440-23-5	Sodium	321.00	B		P	
7440-28-0	Thallium	0.77	U		F	
7440-62-2	Vanadium	25.90			P	
7440-66-6	Zinc	369.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01823

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-05S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4740.00			P	
7440-36-0	Antimony	3.10	U	N	P	UJ
7440-38-2	Arsenic	12.90		SN	F	J
7440-39-3	Barium	51.80			P	
7440-41-7	Beryllium	0.31	B		P	
7440-43-9	Cadmium	4.80		*	P	J
7440-70-2	Calcium	12100.00			P	
7440-47-3	Chromium	11.20		*	P	J
7440-48-4	Cobalt	4.00	B		P	
7440-50-8	Copper	22.30		*	P	J
7439-89-6	Iron	7980.00			P	
7439-92-1	Lead	21.80			F	
7439-95-4	Magnesium	2620.00			P	
7439-96-5	Manganese	208.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	13.40			P	J
7440-09-7	Potassium	1200.00			P	
7782-49-2	Selenium	0.78	U	+	F	UJ
7440-22-4	Silver	0.62	B		P	
7440-23-5	Sodium	436.00	B		P	
7440-28-0	Thallium	0.78	U		F	
7440-62-2	Vanadium	18.60			P	
7440-66-6	Zinc	291.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01824

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-06S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6630.00			P	
7440-36-0	Antimony	3.10	U	N	P	UJ
7440-38-2	Arsenic	16.20		SN	F	J
7440-39-3	Barium	68.90			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	3.90		*	P	J
7440-70-2	Calcium	5780.00			P	
7440-47-3	Chromium	13.70		*	P	J
7440-48-4	Cobalt	5.60	B		P	
7440-50-8	Copper	24.60		*	P	J
7439-89-6	Iron	11100.00			P	
7439-92-1	Lead	35.30			F	
7439-95-4	Magnesium	3330.00			P	
7439-96-5	Manganese	237.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	14.00			P	J
7440-09-7	Potassium	1380.00			P	
7782-49-2	Selenium	0.71	U		F	
7440-22-4	Silver	0.91	B		P	
7440-23-5	Sodium	278.00	B		P	
7440-28-0	Thallium	0.71	U		F	
7440-62-2	Vanadium	25.90			P	
7440-66-6	Zinc	321.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01825

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-07S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4750.00			P	
7440-36-0	Antimony	2.90	U	N	P	UJ
7440-38-2	Arsenic	11.40		SN	F	J
7440-39-3	Barium	60.20			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	5.30		*	P	J
7440-70-2	Calcium	7380.00			P	
7440-47-3	Chromium	13.00		*	P	J
7440-48-4	Cobalt	4.20	B		P	
7440-50-8	Copper	25.60		*	P	J
7439-89-6	Iron	8020.00			P	
7439-92-1	Lead	63.40			F	
7439-95-4	Magnesium	2610.00			P	
7439-96-5	Manganese	242.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	10.80			P	J
7440-09-7	Potassium	1070.00			P	
7782-49-2	Selenium	0.80	U		F	
7440-22-4	Silver	0.97	B		P	
7440-23-5	Sodium	694.00	B		P	
7440-28-0	Thallium	0.80	U		F	
7440-62-2	Vanadium	19.10			P	
7440-66-6	Zinc	331.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B01826

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: B01818

Matrix (soil/water): SOIL Lab Sample ID: 05244-08S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5680.00			P	
7440-36-0	Antimony	3.10	U	N	P	J
7440-38-2	Arsenic	5.00		SN	F	J
7440-39-3	Barium	64.30			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	2.70		*	P	J
7440-70-2	Calcium	5260.00			P	
7440-47-3	Chromium	12.50		*	P	J
7440-48-4	Cobalt	5.50	B		P	
7440-50-8	Copper	22.70		*	P	J
7439-89-6	Iron	11800.00			P	
7439-92-1	Lead	20.30			F	
7439-95-4	Magnesium	3210.00			P	
7439-96-5	Manganese	346.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	14.40			P	J
7440-09-7	Potassium	1070.00			P	
7782-49-2	Selenium	0.71	U	W	F	UJ
7440-22-4	Silver	1.30	B		P	
7440-23-5	Sodium	310.00	B		P	
7440-28-0	Thallium	0.71	U		F	
7440-62-2	Vanadium	27.40			P	
7440-66-6	Zinc	232.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: 801828

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N2-04-122SAS No.: SDG No.: 801818

Matrix (soil/water): SOIL Lab Sample ID: 05244-09S

Level (low/med): LOW Date Received: 05/21/92

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5280.00			P	
7440-36-0	Antimony	3.10	U	N	P	UJ
7440-38-2	Arsenic	5.40		SN	F	J
7440-39-3	Barium	55.80			P	
7440-41-7	Beryllium	0.26	B		P	
7440-43-9	Cadmium	4.00		*	P	J
7440-70-2	Calcium	5350.00			P	
7440-47-3	Chromium	11.10		*	P	J
7440-48-4	Cobalt	5.20	B		P	
7440-50-8	Copper	24.40		*	P	J
7439-89-6	Iron	9680.00			P	
7439-92-1	Lead	21.50			F	
7439-95-4	Magnesium	2960.00			P	
7439-96-5	Manganese	288.00			P	
7439-97-6	Mercury				NR	
7440-02-0	Nickel	14.30			P	J
7440-09-7	Potassium	1360.00			P	
7782-49-2	Selenium	0.75	U		F	
7440-22-4	Silver	0.95	B		P	
7440-23-5	Sodium	526.00	B		P	
7440-28-0	Thallium	0.75	U		F	
7440-62-2	Vanadium	23.50			P	
7440-66-6	Zinc	281.00			P	
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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ATTACHMENT 5

Data Review Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: Westinghouse Hanford	REVIEWER: G. Dool	DATE: 11-7-92
LABORATORY: TMA / Skinner + Sherman	CASE: N2-04-122	SDG: B01818
SAMPLE/MATRIX: a - Soil		
(Attachment - pages B-1 to B-8)		
Analysis per SOW 7/88		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	☑	☐	☐
Cover Page	☑	☐	☐
Traffic Reports	☑	☐	☐
Sample Data			
Inorganic Analysis Data Sheets	☑	☐	☐
Standards Data			
Initial and Continuing Calibration Verification	☑	☐	☐
CRDL Standard for AA and ICP	☑	☐	☐
QC Summary			
Blanks	☑	☐	☐
ICP Interference Check Summary	☑	☐	☐
Spike Sample Recovery	☑	☐	☐
Post-Digestion Spike Sample Recovery	☑	☐	☐
Duplicate	☑	☐	☐
Laboratory Control Sample	☑	☐	☐
Standard Addition Results	☑	☐	☐
ICP Serial Dilutions	☑	☐	☐
Instrument Detection Limits	☑	☐	☐
ICP Interelement Correction Factors	☑	☐	☐
ICP Linear Ranges	☑	☐	☐
Preparation Log	☑	☐	☐
Analysis Run Log	☑	☐	☐
Raw Data			
ICP Raw Data	☑	☐	☐
Furnace AA Raw Data	☑	☐	☐
Mercury Raw Data	☐	☐	☑
Cyanide Raw Data	☐	☐	☑
Additional Data			
Internal laboratory chain-of-custody	☑	☐	☐
Laboratory Sample Preparation Records	☑	☐	☐

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records	☑	☐	☐
Reduction Formulae	☑	☐	☐
Instrument Run Logs	☑	☐	☐
Chemist notebook pages	☑	☐	☐

2. HOLDING TIMES (Form B-1)

Have all samples been analyzed within holding times?	Yes	No	N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for\ detects and UJ for nondetects).

3. INITIAL CALIBRATIONS (Form B-2)

Were all instruments calibrated daily, each set-up time and was the proper number of standards used?	Yes	No	N/A
Are the correlation coefficients ≥0.995?	Yes	No	N/A
Was a midrange cyanide standard distilled?	Yes	No	N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results >IDL as estimated (J) and results <IDL as estimated (UJ), if the correlation coefficient is <0.0995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION (Form B-2)

Are ICV and CCV percent recoveries within control limits?	Yes	No	N/A
Are there calculation errors?	Yes	No	N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE (Form B-2)

Has an ICS sample been analyzed at the proper frequency?	Yes	No	N/A
Are the AB solution %R values within control?	Yes	No	N/A
Are there calculation errors?	Yes	No	N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS (Form B-3)

Are target compounds present in the blanks? Yes (No) N/A

ACTION: Qualify all associated positive results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS (Form B-3)

Are target analytes present in the field blanks? Yes No (N/A)

ACTION: Qualify all sample results for any analyte <5 times the amount in any field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS (Form B-4)

Are spike recoveries within the control limits? Yes (No) N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE (Form B-4)

Are percent recoveries within the acceptance limits? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

✓SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSIS

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample analysis in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS (Form B-5)

Are RPD values acceptable? Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION (Form B-6)

Are the serial dilution results acceptable? Yes No N/A

Is there evidence of negative interference? Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgement to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

15/16. FURNACE ATOMIC ABSORPTION QUALITY CONTROL (Form B-6)

Do all applicable analyses have duplicate injections? Yes No N/A

Are applicable duplicate injection RSD values within control limits? Yes No N/A

If no, were samples rerun once as required? Yes No N/A

Does the RSD for the rerun fall within the control limits? Yes No N/A

Were analytical spike recoveries within the control limits? Yes No N/A

If no, were MSA analyses performed when required?	Yes	No	N/A
Are MSA correlation coefficients ≥0.995?	Yes	No	N/A
If no, was a second MSA analysis performed?	Yes	No	N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is ≥10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correlation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS (Form B-6)

Have results been reported and calculated correctly?	Yes	No	N/A
Are results within the calibration range of the instruments and within the linear range of the ICP?	Yes	No	N/A
Are all detection limits below the CRQL?	Yes	No	N/A

ACTION: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY (Form B-7)

Have the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

The overall data quality and data package completeness is acceptable. Due to complex nature of samples some qualifications were used to qualify the data. The data is useable with DV qualifications.
(See page B-6 + B-7 for DV qualifiers and detailed comments)

HOLDING TIME SUMMARY - FORM B-1

SDG: B01818	REVIEWER: G. Deol	DATE: 11-07-92	PAGE 1 OF 8
COMMENTS: Duplicate + spike analysis performed on B01818 + B01820 respectively.			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B01818	CLP-metals	3/27/92	6/22/92	P 6/22/92	56	P 0, F 2	None
B01820	" "	"	"	F-(As/Se) 6/24/92			
B01821	" "	"	"	F-(Tl+Pb) 6/22/92			
B01822	" "	"	"				
B01823	" "	"	"				
B01824	" "	"	"				
B01825	" "	"	"				
B01826	" "	"	"				
B01828	" "	"	"				

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CALIBRATION DATA SUMMARY - FORM B-2

SDG: B01818	REVIEWER: G. Deol	DATE: 11-7-92	PAGE 2 OF 8
COMMENTS: All ICVs/CCVs are acceptable and per requirements.			
CALIB.TYPE: INITIAL CONTINUING		INSTRUMENT:	

CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER

91347524

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: B01818	REVIEWER: G. Deol	DATE: 11-7-92	PAGE ___ OF ___
COMMENTS: No analytes detected above CRDL in any of the blanks.			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER

9613472.2355

ACCURACY DATA SUMMARY - FORM B-4

SDG: B01818	REVIEWER: G. Deol	DATE: 11-7-92	PAGE 4 OF 8	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B018205	Antimony (Sb)	48.7	All samples	UJ
	Arsenic (As)	43.3	All samples	J

96134732 6

PRECISION DATA SUMMARY - FORM B-5

SDG: B01818	REVIEWER: G. Dool	DATE: 11-7-92	PAGE 5 OF 8		
COMMENTS:					
COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Cadmium (Cd)	B01818	B01818D	125.0	All samples	J
Chromium (Cr)	"	"	100.7	" "	J
Copper (Cu)	"	"	66.6	" "	J
Nickel (Ni)	"	"	55.3	" "	J

96 13473 2337

OVERALL ASSESSMENT - FORM B-6

SDG: B01818	REVIEWER: G. Deol	DATE: 11-8-92	PAGE 6 OF 8

COMMENTS: The overall data quality is acceptable and data is useable with DU qualifications listed on page B-7.

Observations:

- The duplicate and spike analysis was performed at a frequency of 11.1 %.
- The data is qualified for antimony and arsenic due to low matrix spike recovery.
- The Cadmium, Chromium, Copper and Nickel results are qualified due to out of control RPD on duplicate analysis.
- Selenium results for sample # B01823 ~~due~~ are qualified because coefficient of L.R. < 0.995 on rerun.
- Selenium results for sample # B01818 and B01826 are qualified as post digest spike recovery was < 85 % and sample absorbance was < 50% of spiked sample absorbance.
- Strong matrix effect noted for As analysis. All samples except B01818 were analyzed by MSA.
- All lead samples analyzed using 5, 10 or 20 dilution factor ~~to~~ to bring initial concentrati within calibration range.
- All CLP deliverables and complete raw data + prep. logs etc. were included in the data package.
- All samples prepared and analyzed within holding time requirements.

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: B01818	REVIEWER: G. Deol	DATE: 11-7-92	PAGE 7 OF 8
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Selenium	UJ	B01826, B01818	Post digest spike %R < 8
"	UJ	B01823	MSA correlation coefficien
"			< 0.995
Antimony	UJ	All samples	matrix spike recovery
			>30% but < 70%
Arsenic	J	" "	matrix spike recover
			< 75%
Cadmium	J	" "	RPD out of control
Chromium	J	" "	" " " "
Copper	J	" "	" " " "
Nickel	J	" "	" " " "

TELEPHONE CONTACT SUMMARY - FORM B-8

REVIEWER: C. Dool	DATE:	TIME:	PAGE 8 OF 8
COMPANY:			
ADDRESS:			
PERSON CONTACTED:			
TELEPHONE:		FAX:	
PROJECT/CASE/SDG:			
REMARKS:			
ACTION:			

N/A