START 9715505.2666

BOOVKI - TMA-143

TMA

0045817

WESTINGHOUSE HANFORD COMPANY

Results of Analyses For:

METALS
Case No. N2-02-098
(TMA/Skinner Work Order S2-02-147

TMA Master Work Order N2-02-098

MAY 4, 1992

MAY 1992
RECEIVED

NOV 1996
RECEIVED
EDMC

TMA
Thermo Analytical Inc.

Skinner & Sherman Laboratories Inc.
300 Second Avenue
Post Office Box 521
Waltham, MA 02254-0521
(617) 890-7200 • FAX (617) 890-3883

9713505.2667

March 26, 1992

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

Quality Control Narrative

Scope
Eight (8) soil samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on February 22, 1992 from Westinghouse/Hanford Company. The samples were analyzed for the USEPA CLP ICP metals only. The analysis was performed under Skinner and Sherman work order 9202147.

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 antimony digestion spike recovery exceeded the control limit requirements.

The copper duplicates exceeded the control limit requirements.

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

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.

David N. Peterson
Assistant Laboratory Manager

ii 8-16-94

9715505.2668

WESTINGHOUSE/HANFORD

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

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

Lab Code: SKINER Case No.: N2-02-098 SAS No.: SDG No.: B00VK1

SOW No.: 7/88

SAMPLE NUMBER:	Lab Sample ID.
B00VK1	02147-01S
B00VK1D	02147-01S2
B00VK2	02147-02S
B00VK2S	02147-02DS
B00VK3	02147-03S
B00VK4	02147-04S
B00VK6	02147-05S
B00VK7	02147-06S
B00VK8	02147-07S
B00VK9	02147-08S

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Kirk Johnson Name: Kirk D. Johnson

Date: 3/25/92 Title: USEPA Data Manager

9715505.2669

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B00VK1

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

Lab Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

Matrix (soil/water): SOIL Lab Sample ID: 02147-01S

Level (low/med): LOW Date Received: 02/22/92

% Solids: 99.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13600.00			P
7440-36-0	Antimony	1.60	U	N	P
7440-38-2	Arsenic				NR
7440-39-3	Barium	139.00			P
7440-41-7	Beryllium	0.20	B		P
7440-43-9	Cadmium	6.10			P
7440-70-2	Calcium	10400.00			P
7440-47-3	Chromium	29.40			P
7440-48-4	Cobalt	9.20	B		P
7440-50-8	Copper	84.40		*	P
7439-89-6	Iron	19200.00			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	6780.00			P
7439-96-5	Manganese	880.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	26.80			P
7440-09-7	Potassium	2680.00			P
7782-49-2	Selenium				NR
7440-22-4	Silver	0.39	U		P
7440-23-5	Sodium	384.00	B		P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	35.60			P
7440-66-6	Zinc	481.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713505.2670

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B00VK2

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

Lab Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

Matrix (soil/water): SOIL Lab Sample ID: 02147-02S

Level (low/med): LOW Date Received: 02/22/92

% Solids: 98.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11900.00			P
7440-36-0	Antimony	1.60	U	N	P
7440-38-2	Arsenic				NR
7440-39-3	Barium	123.00			P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	6.10			P
7440-70-2	Calcium	8950.00			P
7440-47-3	Chromium	23.70			P
7440-48-4	Cobalt	7.60	B		P
7440-50-8	Copper	70.40		*	P
7439-89-6	Iron	16400.00			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	5760.00			P
7439-96-5	Manganese	790.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	32.70			P
7440-09-7	Potassium	2890.00			P
7782-49-2	Selenium				NR
7440-22-4	Silver	0.39	U		P
7440-23-5	Sodium	712.00	B		P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	29.40			P
7440-66-6	Zinc	444.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713505.2671

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B00VK3

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

Lab Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

Matrix (soil/water): SOIL Lab Sample ID: 02147-03S

Level (low/med): LOW Date Received: 02/22/92

% Solids: 97.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9370.00			P
7440-36-0	Antimony	1.60	U	N	P
7440-38-2	Arsenic				NR
7440-39-3	Barium	114.00			P
7440-41-7	Beryllium	0.20	B		P
7440-43-9	Cadmium	6.40			P
7440-70-2	Calcium	9530.00			P
7440-47-3	Chromium	18.70			P
7440-48-4	Cobalt	7.00	B		P
7440-50-8	Copper	57.80		*	P
7439-89-6	Iron	13300.00			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	5200.00			P
7439-96-5	Manganese	817.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	23.40			P
7440-09-7	Potassium	4250.00			P
7782-49-2	Selenium				NR
7440-22-4	Silver	0.39	U		P
7440-23-5	Sodium	663.00	B		P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	23.90			P
7440-66-6	Zinc	401.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713505.2672

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B00VK4

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

Lab Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

Matrix (soil/water): SOIL Lab Sample ID: 02147-04S

Level (low/med): LOW Date Received: 02/22/92

% Solids: 98.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11000.00			P
7440-36-0	Antimony	1.50	U	N	P
7440-38-2	Arsenic				NR
7440-39-3	Barium	123.00			P
7440-41-7	Beryllium	0.19	U		P
7440-43-9	Cadmium	6.10			P
7440-70-2	Calcium	11600.00			P
7440-47-3	Chromium	22.00			P
7440-48-4	Cobalt	7.60	B		P
7440-50-8	Copper	57.70		*	P
7439-89-6	Iron	14900.00			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	5660.00			P
7439-96-5	Manganese	832.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	41.70			P
7440-09-7	Potassium	3300.00			P
7782-49-2	Selenium				NR
7440-22-4	Silver	0.38	U		P
7440-23-5	Sodium	484.00	B		P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	26.80			P
7440-66-6	Zinc	425.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713505.2673

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B00VK6

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

Lab Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

Matrix (soil/water): SOIL Lab Sample ID: 02147-05S

Level (low/med): LOW Date Received: 02/22/92

% Solids: 97.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11700.00			P
7440-36-0	Antimony	1.60	U	N	P
7440-38-2	Arsenic				NR
7440-39-3	Barium	104.00			P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	5.60			P
7440-70-2	Calcium	16400.00			P
7440-47-3	Chromium	16.90			P
7440-48-4	Cobalt	6.20	B		P
7440-50-8	Copper	47.10		*	P
7439-89-6	Iron	12800.00			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	4760.00			P
7439-96-5	Manganese	679.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	17.00			P
7440-09-7	Potassium	3280.00			P
7782-49-2	Selenium				NR
7440-22-4	Silver	0.39	U		P
7440-23-5	Sodium	408.00	B		P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	22.00			P
7440-66-6	Zinc	379.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9213505.2674

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B00VK7

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

Lab Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

Matrix (soil/water): SOIL Lab Sample ID: 02147-06S

Level (low/med): LOW Date Received: 02/22/92

% Solids: 97.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11800.00			P
7440-36-0	Antimony	1.60	U	N	P
7440-38-2	Arsenic				NR
7440-39-3	Barium	104.00			P
7440-41-7	Beryllium	0.30	B		P
7440-43-9	Cadmium	5.90			P
7440-70-2	Calcium	18300.00			P
7440-47-3	Chromium	16.10			P
7440-48-4	Cobalt	6.00	B		P
7440-50-8	Copper	50.30		*	P
7439-89-6	Iron	12700.00			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	4790.00			P
7439-96-5	Manganese	700.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	22.20			P
7440-09-7	Potassium	3160.00			P
7782-49-2	Selenium				NR
7440-22-4	Silver	0.39	U		P
7440-23-5	Sodium	632.00	B		P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	23.00			P
7440-66-6	Zinc	388.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

0 7

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WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B00VK8

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

Lab Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

Matrix (soil/water): SOIL Lab Sample ID: 02147-07S

Level (low/med): LOW Date Received: 02/22/92

% Solids: 97.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11800.00			P
7440-36-0	Antimony	1.60	U	N	P
7440-38-2	Arsenic				NR
7440-39-3	Barium	102.00			P
7440-41-7	Beryllium	0.20	B		P
7440-43-9	Cadmium	6.70			P
7440-70-2	Calcium	17000.00			P
7440-47-3	Chromium	16.50			P
7440-48-4	Cobalt	5.50	B		P
7440-50-8	Copper	52.70		*	P
7439-89-6	Iron	12000.00			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	4600.00			P
7439-96-5	Manganese	631.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	20.10			P
7440-09-7	Potassium	3540.00			P
7782-49-2	Selenium				NR
7440-22-4	Silver	0.40	U		P
7440-23-5	Sodium	461.00	B		P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	24.80			P
7440-66-6	Zinc	395.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713505.2676

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B00VK9

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

Lab Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

Matrix (soil/water): SOIL Lab Sample ID: 02147-08S

Level (low/med): LOW Date Received: 02/22/92

% Solids: 98.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14400.00			P
7440-36-0	Antimony	1.50	U	N	P
7440-38-2	Arsenic				NR
7440-39-3	Barium	124.00			P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	6.20			P
7440-70-2	Calcium	20600.00			P
7440-47-3	Chromium	20.60			P
7440-48-4	Cobalt	7.30	B		P
7440-50-8	Copper	49.10		*	P
7439-89-6	Iron	15800.00			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	5700.00			P
7439-96-5	Manganese	694.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	24.40			P
7440-09-7	Potassium	2960.00			P
7782-49-2	Selenium				NR
7440-22-4	Silver	0.38	U		P
7440-23-5	Sodium	456.00	B		P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	28.00			P
7440-66-6	Zinc	430.00			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9213505.2677

TMA/Skinner & Serman Labs **SAMPLE LOG-IN**

WORKORDER 92-02-147 CLIENT HANFORD NWR No. SAMPLES:

PROTCL CLP **TURNARND** 33 day 8

COOLER TEMP: 4 oC, or NA (Soil) (Water) (Specify Other)

CUSTODIAN Antonia Bennett SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N2-02-093

SHIPER & # Fedex # 1414452233 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 NONE

CLIENT COMMENT? YES/NO Sample contain radioactive material

SAMPLE LABELS AGREE WITH CHAIN OF CUSTODY INFO? YES/NO (COMMENT)

CLIENT PAPERWORK AGREES WITH SAMPLES & COC? YES /NO (COMMENT)

SHIPMENT DATES ~~02/24/92~~ 2/22/92 A.B. 2/24/92

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

N/A

	CLIENT ID	MATRIX	RECEIVED	QC	TEST(S)	HOLD TIME UP
1	B00VK1	SOIL	02/22/92	D,	ICP Metals	
2	K2			S		
3	K3					
4	K4					
5	K6					
6	K7					
7	K8					
8	K9					
9						
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16						
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19						
20						
21						
22						
23						
24						
25						
26						
27						

complete 2/24/92

SUBCONTRACT: YES/NO, TO: DATE:

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076

9713505.2678

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 1414452233

1275M 1414452233

RECIPIENT'S COPY

1 Date 2-21-92

From (Your Name) Please Print: Sample Control
Your Phone Number (Very Important): 510-235-2633
Company: T M A /NORCAL
Department/Floor No.:
Street Address: 2030 WRIGHT AVE
City: RICHMOND State: CA ZIP Required: 9 4 8 0 4

2 To (Recipient's Name) Please Print: Sample Control
Recipient's Phone Number (Very Important): 617 890-7200
Company: Skinner & Sherman Laboratories
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 300 Second AVE
City: Cambridge State: MA ZIP Required: 02254-0521

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.) 2320-6406

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City: State: ZIP Required:

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
11 ☒ YOUR PACKAGING
16 ☐ FEDEX LETTER *
12 ☐ FEDEX PAK *
13 ☐ FEDEX BOX
14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon†)
51 ☐ YOUR PACKAGING
56 ☐ FEDEX LETTER *
52 ☐ FEDEX PAK *
53 ☐ FEDEX BOX
54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day†)
30 ☐ ECONOMY

Government Overnight (Restricted to authorized users only)
46 ☐ GOVT LETTER
41 ☐ GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
70 ☐ OVERNIGHT FREIGHT ** (Confirmed reservation required)
80 ☐ TWO-DAY FREIGHT **
†Delivery commitment may be later in some areas.
*Declared Value Limit $100.
**Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 ☐ HOLD FOR PICK-UP (Fill in Block H)
2 ☐ DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) (Not available to all locations) ☒
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐
6 ☐ DRY ICE ____ Lbs.
7 ☐ OTHER SPECIAL SERVICE ____
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
11 ☐ DESTINATION
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6

Packages	Weight (Lbs.) Only	Your Declared Value
1	12	
Total 1	Total 12	Total

DIM SHIPMENT (Chargeable Weight) ☐ ____ lbs.
L x W x H = ____

Received At
1 ☒ Regular Stop 3 ☐ Drop Box
2 ☐ On-Call Stop 4 ☐ BSC 5 ☐ Station

7 Emp. No.: Date:
☐ Cash Received
☐ Return Shipment
☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold
Street Address:
City: State: Zip:
Received By: X
Date/Time Received: 2/22/92 FedEx Employee Number: 11:00
Release Signature:
FedEx Emp. No. Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 9/91
FORMAT #099
099
© 1990-91 F.E.C. PRINTED IN U.S.A.

077

Westinghouse Hanford Company 9713505.2679

CHAIN OF CUSTODY

Custody Form Initiator B.L. Tiller

Company Contact PNL C.A. BRANDT

Telephone 37 Le-3444

Project Designation/Sampling Locations "100 Area Biota"

Collection Date 1-24, 1-31 1992

Ice Chest No. P 92-523

Field Logbook No. BNW 54139

Bill of Lading/Airbill No. 2485218351

Offsite Property No. PNL 92-523

Method of Shipment EMERY OVERNIGHT

Shipped to TMA/NORCAL

Possible Sample Hazards/Remarks < detection - total activity analyzed/cleared

Sample Identification

BOOVK1
BOOVK2
BOOVK3
BOOVK4
~~BOOVK5~~ *
BOOVK6
BOOVK7
BOOVK8
BOOVK9

☐ Field Transfer of Custody

CHAIN OF POSSESSION

(Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Brett Tiller Brett Tiller	Kermit Blum	2-21-92 / 1200
Kermit Blum 2-21-92	[illegible]	2/22/92 11:00

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: * ~~BOO~~ 78VK5 did not arrive @ TMA/NORCAL

78

A-6000-407 (12/90)

9213505.2680

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector Bob Mueller Date Sampled 1/24/92 Time NA hours

Company Contact C. A. Brandt Telephone (509) 372-0504

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B00VK1	1-glass ~20g samples	plant matter algae	ICP Metals
B00VK2			
B00VK3			
B00VK4			
B00VK6			
B00VK7			
B00VK8			
B00VK9			

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 2-21-92

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)

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VALIDATION SUMMARY

Validation Narrative - SDG: B00VK1

1. INTRODUCTION

This report presents the results of inorganic data validation on the following sample delivery group and sample numbers which were analyzed by the Thermo Analytical, Inc. - Richmond, CA laboratory. The HEIS sample numbers associated with this group by SDG are listed below:

Data Package ID	HEIS Sample Numbers		Matrix
SDG: B00VK1	B00VK1	B00VK6	Soil
	B00VK2	B00VK7	Soil
	B00VK3	B00VK8	Soil
	B00VK4	B00VK9	Soil

Sample identifications, dates received, and analyte concentrations are provided in the enclosed analysis data sheets. Data validation was conducted in accordance with the Westinghouse Hanford Company statement of work (WHC 1991) and validation procedures (WHC 1992). The data validation procedure is a review of laboratory performance and implementation of applicable protocols. Subsequent technical data evaluation by project lead personnel should include a determination of the appropriateness of results from a standpoint of past history and present knowledge of the sample site.

2. DATA QUALITY OBJECTIVES

Completeness

The data package was complete for all requested analyses and met the data quality objectives of the work plan. Data quality objectives for the project specified the use of CLP methods for the TAL metals analytes.

Data Qualification

The data package contains antimony results which were qualified as rejected (R). The rest of the data is acceptable and useable given the attached qualifiers.

3. QUALIFIED DATA

This section presents a summary of the qualifications required based on validation of the subject data package (See Data Qualification Summary - Form B - 8).

3.1 Major Deficiencies

Matrix spike recoveries for antimony were out of control limits causing all results to be rejected.

3.2 Minor Deficiencies

The following qualifications were required as a result of the validation.

- Beryllium was detected in the laboratory and/or preparation blanks above its IDL. It was detected in various samples at concentrations less than five times the highest concentrations found in the blanks and these have been qualified as non-detects (U).

- Duplicates for aluminum, calcium, chromium, copper, iron, magnesium, manganese, and zinc were outside limits. All samples were qualified as estimated (J).

4. CONCLUSION

The results contained in this report are acceptable for use except for those which have been rejected.

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WHC-SD-EN-SPP-002, Rev. 1

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 100 AREA BIOTA	REVIEWER: RC SMITH	DATE: 12/4/92
LABORATORY: TMA/NORCAL	CASE: N2-02-058	SDG: B00VK1
SAMPLES/MATRIX: B00VK1, B00VK2, B00VK3, B00VK4, B00VK6, B00VK7, B00VK8, B00VK9 ALL SOIL		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

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

Were all instruments calibrated daily, each set-up time and were 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 < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries 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.

5. ICP INTERFERENCE CHECK SAMPLE

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

Are target analytes present in the laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample 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

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 valid field blank as nondetected (U). * No field blanks identified in data delivery group.

8. MATRIX SPIKE SAMPLE ANALYSIS

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

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 ANALYSES

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

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

* No performance audit analyses were identified in the sample delivery group.

11. DUPLICATE SAMPLE ANALYSIS

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

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 judgment to qualify the data.

No field split or field duplicate samples identified in data delivery group.

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.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

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

Are applicable duplicate injection RSD values within control? 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 $\geq$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 $\geq$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 correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? Yes No N/A

Are results within the calibrated 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

Has 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):

HOLDING TIME SUMMARY - FORM B-1

SDG: B00VK1 | REVIEWER: RC SMITH | DATE: 12/4/92 | PAGE 1 OF 1

FIELD SAMPLE IDENT.	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
ALL	ICP METALS	1-24, 31-92	2/27/92	3/18/92	34	54	NONE

COMMENTS: Recommended holding times were not exceeded.

ACTION: No action necessary.

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CALIBRATION DATA SUMMARY - FORM B-2

SDG: B00VK1	REVIEWER: RC SMITH	DATE: 12/4/92	PAGE 1 OF 1
INSTRUMENT:			

CALIB. TYPE	CALIB. DATE	ANALYTE/COMPOUND	RF	RSD/%D/%R	SAMPLE(S) AFFECTED	QUALIFIER

COMMENTS: Instruments were calibrated as required. The necessary blanks and standards were run. All percent recoveries were within control limits.

ACTION: No action required.

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BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: BOOVK1 | REVIEWER: RC SMITH | DATE: 12/4/92 | PAGE 1 OF 1

CALIB. TYPE/SAMPLE IDENT.	ANALYTE/COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLE(S) AFFECTED	QUALIFIER
CCB1	ALUMINUM	4.52	B	N/A	MG/KG	22.6	N/A	NONE	NONE
ICB	ANTIMONY	3.12				15.6			
CCB3	BERYLLIUM	.3				1.5		BOOVK1	U
								BOOVK3	
								BOOVK7	
								BOOVK8	
								BOOVK9	
PREP BLANK	CALCIUM	16.736				83.68		NONE	NONE
PREP BLANK	COPPER	1.142				5.71			
PREP BLANK	IRON	9.938				49.69			
CCB3	MANGANESE	.34				1.7			
PREP BLANK	SILVER	.586				2.93			
PREP BLANK	SODIUM	15.084				75.42			
CCB3	VANADIUM	.48				2.4			
PREP BLANK	ZINC	2.798				13.99			

COMMENTS: Contaminants detected in blanks above their IDL: aluminum, antimony, arsenic, calcium, iron, magnesium, manganese, & selenium

ACTION: Qualify all the above analytes > their IDL but less than 5 times the largest concentration in any blank as undetected.

9713505.2689

ACCURACY DATA SUMMARY - FORM B-4
MATRIX SPIKE RECOVERY AND LCS RECOVERY

SDG: B00VK1	REVIEWER: RC SMITH	DATE: 12/7/92	PAGE 1 OF 1	
SAMPLE IDENT.	**ANALYTE/COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER**
MATRIX SPIKE	ANTIMONY	27.3	~~B00VK1~~ RCS 12/7/92 ALL	R

COMMENTS: Antimony matrix spike recovery exceeded control limit.

ACTION: Qualify all results < 30% and < IDL as rejected (R).

9713505.2690

ACCURACY DATA SUMMARY - FORM B-4
MATRIX SPIKE RECOVERY AND LCS RECOVERY

SDG: BOOVK1	REVIEWER: RC SMITH	DATE: 12/7/92	PAGE 1 OF 1	
SAMPLE IDENT.	ANALYTE/COMPOUND	%RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
LCS				

COMMENTS: All LCS results fall within the published control limits.

ACTION: No action necessary.

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PRECISION DATA SUMMARY - FORM B-5

SDG: B00VK1	REVIEWER: RC SMITH	DATE: 12/7/92	PAGE 1 OF 1		
ANALYTE/COMPOUND	SAMPLE IDENT.	SAMPLE IDENT.	RPD	SAMPLE(S) AFFECTED	QUALIFIER
ALUMINUM	DUPLICATES		3.5	ALL	J
CALCIUM			4.4	ALL	J
CHROMIUM			69	ALL	J
COPPER			22.8	ALL	J
IRON			3.8	ALL	J
MAGNESIUM			5.4	ALL	J
MANGANESE			6.3	ALL	J
ZINC			4.8	ALL	J

COMMENTS: Duplicate analytes for aluminum, calcium, chromium, copper, iron, magnesium, manganese, + zinc were out of limits.

ACTION: Qualify all affected samples as estimated (J).

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PRECISION AND ACCURACY DATA SUMMARY - FORM B-6
GFAA ANALYTICAL SPIKE RECOVERY

SDG: B00VK1	REVIEWER: RC SMITH	DATE: 12/7/92	PAGE 1 OF 1	
SAMPLE IDENT.	**ANALYTE/COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER**

COMMENTS: Analysis not requested.

ACTION: No action required.

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9713505.2694

CALCULATION SUMMARY - FORM B-7

SDG: BOOVK 1	REVIEWER: RC SMITH	DATE: 12/7/92	PAGE 1 OF 1

COMMENTS:

ACTION:

9713505.2695

DATA QUALIFICATION SUMMARY - FORM B-8

SDG: B00VK1	REVIEWER: RCS	DATE: 12/7/92	PAGE 1 OF 1
ANALYTE/ COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
BERYLLIUM	U	B00VK1	CONTAMINANTS IN BLANKS
		B00VK3	
		B00VK7	
		B00VK8	
		B00VK9	
ANTIMONY	R	ALL	MATRIX SPIKE OUTSIDE LIMITS
ALUMINUM	J	ALL	DUPLICATES WERE OUTSIDE LIMITS
CALCIUM			
CHROMIUM			
COPPER			
IRON			
MAGNESIUM			
MANGANESE			
ZINC			

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B00VK1

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

o Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

trix (soil/water): SOIL Lab Sample ID: 02147-01S

vel (low/med): LOW Date Received: 02/22/92

Solids: 99.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	13600.00			P	J
7440-36-0	Antimony	1.60	~~U~~	N	P	R
7440-38-2	Arsenic				NR	
7440-39-3	Barium	139.00			P	
7440-41-7	Beryllium	0.20	~~B~~		P	u
7440-43-9	Cadmium	6.10			P	
7440-70-2	Calcium	10400.00			P	J
7440-47-3	Chromium	29.40			P	J
7440-48-4	Cobalt	9.20	B		P	
7440-50-8	Copper	84.40		*	P	J
7439-89-6	Iron	19200.00			P	J
7439-92-1	Lead				NR	
7439-95-4	Magnesium	6780.00			P	J
7439-96-5	Manganese	880.00			P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	26.80			P	
7440-09-7	Potassium	2680.00			P	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.39	U		P	
7440-23-5	Sodium	384.00	B		P	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium	35.60			P	
7440-66-6	Zinc	481.00			P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: FINE

lor After: BROWN Clarity After: Artifacts:

mments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B00VK2

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

Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

trix (soil/water): SOIL Lab Sample ID: 02147-02S

vel (low/med): LOW Date Received: 02/22/92

Solids: 98.1

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	11900.00			P	J
7440-36-0	Antimony	1.60	~~UJ~~	N	P	R
7440-38-2	Arsenic				NR	
7440-39-3	Barium	123.00			P	
7440-41-7	Beryllium	0.20	U		P	
7440-43-9	Cadmium	6.10			P	
7440-70-2	Calcium	8950.00			P	J
7440-47-3	Chromium	23.70			P	J
7440-48-4	Cobalt	7.60	B		P	
7440-50-8	Copper	70.40		*	P	J
7439-89-6	Iron	16400.00			P	J
7439-92-1	Lead				NR	
7439-95-4	Magnesium	5760.00			P	J
7439-96-5	Manganese	790.00			P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	32.70			P	
7440-09-7	Potassium	2890.00			P	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.39	U		P	
7440-23-5	Sodium	712.00	B		P	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium	29.40			P	
7440-66-6	Zinc	444.00			P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: FINE

lor After: BROWN Clarity After: Artifacts:

mments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B00VK3

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

o Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

trix (soil/water): SOIL Lab Sample ID: 02147-03S

vel (low/med): LOW Date Received: 02/22/92

Solids: 97.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	9370.00			P	J
7440-36-0	Antimony	1.60	U	N	P	R
7440-38-2	Arsenic				NR	
7440-39-3	Barium	114.00			P	
7440-41-7	Beryllium	0.20	B		P	U
7440-43-9	Cadmium	6.40			P	
7440-70-2	Calcium	9530.00			P	J
7440-47-3	Chromium	18.70			P	J
7440-48-4	Cobalt	7.00	B		P	
7440-50-8	Copper	57.80		*	P	J
7439-89-6	Iron	13300.00			P	J
7439-92-1	Lead				NR	
7439-95-4	Magnesium	5200.00			P	J
7439-96-5	Manganese	817.00			P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	23.40			P	
7440-09-7	Potassium	4250.00			P	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.39	U		P	
7440-23-5	Sodium	663.00	B		P	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium	23.90			P	
7440-66-6	Zinc	401.00			P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: FINE

lor After: BROWN Clarity After: Artifacts:

mments:

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WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B00VK4

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

o Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

trix (soil/water): SOIL Lab Sample ID: 02147-04S

vel (low/med): LOW Date Received: 02/22/92

Solids: 98.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	11000.00			P	J
7440-36-0	Antimony	1.50	~~U~~	N	P	R
7440-38-2	Arsenic				NR	
7440-39-3	Barium	123.00			P	
7440-41-7	Beryllium	0.19	U		P	
7440-43-9	Cadmium	6.10			P	
7440-70-2	Calcium	11600.00			P	J
7440-47-3	Chromium	22.00			P	J
7440-48-4	Cobalt	7.60	B		P	
7440-50-8	Copper	57.70		*	P	J
7439-89-6	Iron	14900.00			P	J
7439-92-1	Lead				NR	
7439-95-4	Magnesium	5660.00			P	J
7439-96-5	Manganese	832.00			P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	41.70			P	
7440-09-7	Potassium	3300.00			P	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.38	U		P	
7440-23-5	Sodium	484.00	B		P	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium	26.80			P	
7440-66-6	Zinc	425.00			P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: FINE

lor After: BROWN Clarity After: Artifacts:

mments:

9713505.2700

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B00VK6

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

b Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

trix (soil/water): SOIL Lab Sample ID: 02147-05S

vel (low/med): LOW Date Received: 02/22/92

Solids: 97.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	11700.00			P	J
7440-36-0	Antimony	1.60	UJ	N	P	R
7440-38-2	Arsenic				NR	
7440-39-3	Barium	104.00			P	
7440-41-7	Beryllium	0.20	U		P	
7440-43-9	Cadmium	5.60			P	
7440-70-2	Calcium	16400.00			P	J
7440-47-3	Chromium	16.90			P	J
7440-48-4	Cobalt	6.20	B		P	
7440-50-8	Copper	47.10		*	P	J
7439-89-6	Iron	12800.00			P	J
7439-92-1	Lead				NR	
7439-95-4	Magnesium	4760.00			P	J
7439-96-5	Manganese	679.00			P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	17.00			P	
7440-09-7	Potassium	3280.00			P	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.39	U		P	
7440-23-5	Sodium	408.00	B		P	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium	22.00			P	
7440-66-6	Zinc	379.00			P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: FINE

lor After: BROWN Clarity After: Artifacts:

mments:

9713505.2701

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B00VK7

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

b Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

trix (soil/water): SOIL Lab Sample ID: 02147-06S

vel (low/med): LOW Date Received: 02/22/92

Solids: 97.1

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	11800.00			P	J
7440-36-0	Antimony	1.60	~~U~~	N	P	R
7440-38-2	Arsenic				NR	
7440-39-3	Barium	104.00			P	
7440-41-7	Beryllium	0.30	~~B~~		P	U
7440-43-9	Cadmium	5.90			P	
7440-70-2	Calcium	18300.00			P	J
7440-47-3	Chromium	16.10			P	J
7440-48-4	Cobalt	6.00	B		P	
7440-50-8	Copper	50.30		*	P	J
7439-89-6	Iron	12700.00			P	J
7439-92-1	Lead				NR	
7439-95-4	Magnesium	4790.00			P	J
7439-96-5	Manganese	700.00			P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	22.20			P	
7440-09-7	Potassium	3160.00			P	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.39	U		P	
7440-23-5	Sodium	632.00	B		P	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium	23.00			P	
7440-66-6	Zinc	388.00			P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: FINE

lor After: BROWN Clarity After: Artifacts:

mments:

0 7

9713505.2702

WESTINGHOUSE/HANFORD

1.

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B00VK8

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

b Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

trix (soil/water): SOIL Lab Sample ID: 02147-07S

vel (low/med): LOW Date Received: 02/22/92

Solids: 97.5

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	11800.00			P	J
7440-36-0	Antimony	1.60	~~U~~	N	P	R
7440-38-2	Arsenic				NR	
7440-39-3	Barium	102.00			P	
7440-41-7	Beryllium	0.20	~~B~~		P	U
7440-43-9	Cadmium	6.70			P	
7440-70-2	Calcium	17000.00			P	J
7440-47-3	Chromium	16.50			P	J
7440-48-4	Cobalt	5.50	B		P	
7440-50-8	Copper	52.70		*	P	J
7439-89-6	Iron	12000.00			P	J
7439-92-1	Lead				NR	
7439-95-4	Magnesium	4600.00			P	J
7439-96-5	Manganese	631.00			P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	20.10			P	
7440-09-7	Potassium	3540.00			P	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.40	U		P	
7440-23-5	Sodium	461.00	B		P	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium	24.80			P	
7440-66-6	Zinc	395.00			P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: FINE

lor After: BROWN Clarity After: Artifacts:

mments:

9713505.2705

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B00VK9

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

b Code: SKINER Case No.: N2-02-098SAS No.: SDG No.: B00VK1

trix (soil/water): SOIL Lab Sample ID: 02147-08S

vel (low/med): LOW Date Received: 02/22/92

Solids: 98.3

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	14400.00			P	J
7440-36-0	Antimony	1.50	~~U~~	N	P	R
7440-38-2	Arsenic				NR	
7440-39-3	Barium	124.00			P	
7440-41-7	Beryllium	0.19	~~B~~		P	U
7440-43-9	Cadmium	6.20			P	
7440-70-2	Calcium	20600.00			P	J
7440-47-3	Chromium	20.60			P	J
7440-48-4	Cobalt	7.30	B		P	
7440-50-8	Copper	49.10		*	P	J
7439-89-6	Iron	15800.00			P	J
7439-92-1	Lead				NR	
7439-95-4	Magnesium	5700.00			P	J
7439-96-5	Manganese	694.00			P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	24.40			P	
7440-09-7	Potassium	2960.00			P	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.38	U		P	
7440-23-5	Sodium	456.00	B		P	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium	28.00			P	
7440-66-6	Zinc	430.00			P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: FINE

lor After: BROWN Clarity After: Artifacts:

mments:

9713505.2704

DATA PACKAGE FILE INDEX

File Location : File Cabinet 10
Drawer 1
Connex Box

Data Package I.D. - B00VK1-TMA-143

Delivery Group	Project	Sample Numbers
B00VK1	100A BIOTA	B00VK1
		B00VK2
		B00VK3
		B00VK4
		B00VK6
		B00VK7
		B00VK8
		B00VK9

Transmital # _____ Date Transmited _____