START

9613445.2572

B01460-DAT-293

0044328

DATACHEM LABORATORIES
960 WEST LEVOY DRIVE
SALT LAKE CITY, UTAH 84123

WESTINGHOUSE HANFORD

****

CASE No. WHC26 SDG No. WHCM26 SF-0925-AD,BD,CD

CLIENT SAMPLE #	EPA SAMPLE #	LAB SAMPLE #
B01460	MC8779	CLP8779
B01480	MC8780	CLP8780
B01465	MC8781	CLP8781
B014H6	MC8782	CLP8782
MATRIX DUPLICATE (GFAA,HG)	MC8779D	CLP8779
MATRIX DUPLICATE (ICP)	MC8780D	CLP8780
MATRIX SPIKE (GFAA,HG)	MC8779S	CLP8779
MATRIX SPIKE (ICP)	MC8780S	CLP8780

PLEASE READ THIS CASE NARRATIVE BEFORE SCREENING THIS CASE.

SDG.:WHCM26 Case: WHC26

Sample MC8782 was actually a Preparation Blank for soil, but it was requested, by the client that it be documented and reported as a regular sample. Therefore the values reported on Form III for PBS are the values for Sample MC8782.

The additional analytes Molybdenum, Titanium, and Zirconium are not EPA/CLP analytes, therefore they were analyzed using alternative methods. QC was performed according to EPA SW846 protocol.

FEB 1996
RECEIVED
EDMC

9613446.2573

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MC8779

Lab Name: DATACHEM LABORATORIES Contract:

Lab Code: DATAC Case No.: WHC26 SAS No.: SDG No.: WHCM26

Matrix (soil/water): SOIL Lab Sample ID: CLP8779

Level (low/med): LOW Date Received: 10/09/91

% Solids: 90.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15900			P
7440-36-0	Antimony	5.5	U	N	P
7440-38-2	Arsenic	4.1			F
7440-39-3	Barium	146		*	P
7440-41-7	Beryllium	0.22	U		P
7440-43-9	Cadmium	0.66	U		P
7440-70-2	Calcium	6480			P
7440-47-3	Chromium	33.2			P
7440-48-4	Cobalt	12.5			P
7440-50-8	Copper	22.6			P
	Cyanide				NR
7439-89-6	Iron	26300			P
7439-92-1	Lead	10.8		NS	F
7439-95-4	Magnesium	7610			P
7439-96-5	Manganese	426			P
7439-97-6	Mercury	0.11	U		CV
	Molybdenu	0.44	U		F
7440-02-0	Nickel	28.4			P
7440-09-7	Potassium	1410			P
7782-49-2	Selenium	0.22	U	W	F
7440-22-4	Silver	0.66	U		P
7440-23-5	Sodium	297	B	E	P
7440-28-0	Thallium	0.27	B		F
	Titanium	1330			P
7440-62-2	Vanadium	54.3			P
7440-66-6	Zinc	69.1			P
	Zirconium	15.3		N	P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: Clarity After: Artifacts:

3

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

9613446.2574

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MC8780

Lab Name: DATACHEM LABORATORIES Contract:

Lab Code: DATAC Case No.: WHC26 SAS No.: SDG No.: WHCM26

Matrix (soil/water): SOIL Lab Sample ID: CLP8780

Level (low/med): LOW Date Received: 10/09/91

% Solids: 96.7

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6580			P
7440-36-0	Antimony	5.2	U	N	P
7440-38-2	Arsenic	1.7	B		F
7440-39-3	Barium	156		*	P
7440-41-7	Beryllium	0.21	U		P
7440-43-9	Cadmium	0.62	U		P
7440-70-2	Calcium	11100			P
7440-47-3	Chromium	5.0			P
7440-48-4	Cobalt	17.4			P
7440-50-8	Copper	13.6			P
	Cyanide				NR
7439-89-6	Iron	34200			P
7439-92-1	Lead	2.5		N	F
7439-95-4	Magnesium	4110			P
7439-96-5	Manganese	491			P
7439-97-6	Mercury	0.10	U		CV
	Molybdenu	0.41	U	W	F
7440-02-0	Nickel	7.2	B		P
7440-09-7	Potassium	851	B		P
7782-49-2	Selenium	0.21	U		F
7440-22-4	Silver	0.62	U		P
7440-23-5	Sodium	237	B	E	P
7440-28-0	Thallium	0.21	U		F
	Titanium	3180			P
7440-62-2	Vanadium	105			P
7440-66-6	Zinc	51.4			P
	Zirconium	39.3		N	P

Color Before: BLACK Clarity Before: Texture: COARSE

Color After: Clarity After: Artifacts:

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

FORM I - IN

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MC8781

Lab Name: DATACHEM LABORATORIES Contract:

Lab Code: DATAC Case No.: WHC26 SAS No.: SDG No.: WHCM26

Matrix (soil/water): SOIL Lab Sample ID: CLP8781

Level (low/med): LOW Date Received: 10/09/91

% Solids: 96.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14800			P
7440-36-0	Antimony	5.2	U	N	P
7440-38-2	Arsenic	3.3			F
7440-39-3	Barium	105		*	P
7440-41-7	Beryllium	0.21	U		P
7440-43-9	Cadmium	0.62	U		P
7440-70-2	Calcium	13100			P
7440-47-3	Chromium	20.8			P
7440-48-4	Cobalt	17.3			P
7440-50-8	Copper	26.5			P
	Cyanide				NR
7439-89-6	Iron	34500			P
7439-92-1	Lead	8.1		NS	F
7439-95-4	Magnesium	8370			P
7439-96-5	Manganese	518			P
7439-97-6	Mercury	0.10	U		CV
	Molybdenu	0.54	B	W	F
7440-02-0	Nickel	24.4			P
7440-09-7	Potassium	2370			P
7782-49-2	Selenium	0.21	U	W	F
7440-22-4	Silver	0.62	U		P
7440-23-5	Sodium	664	B	E	P
7440-28-0	Thallium	0.21	U		F
	Titanium	1850			P
7440-62-2	Vanadium	77.0			P
7440-66-6	Zinc	62.4			P
	Zirconium	53.7		N	P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: Clarity After: Artifacts:

5

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

9613446.2576

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

MC8782

Lab Name: DATACHEM LABORATORIES Contract:

Lab Code: DATAC Case No.: WHC26 SAS No.: SDG No.: WHCM26

Matrix (soil/water): SOIL Lab Sample ID: CLP8782

Level (low/med): LOW Date Received: 10/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4.3	B		P
7440-36-0	Antimony	5.0	U	N	P
7440-38-2	Arsenic	0.20	U		F
7440-39-3	Barium	0.20	U	*	P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.60	U		P
7440-70-2	Calcium	4.0	U		P
7440-47-3	Chromium	1.6	U		P
7440-48-4	Cobalt	1.2	U		P
7440-50-8	Copper	0.80	U		P
	Cyanide				NR
7439-89-6	Iron	1.3	B		P
7439-92-1	Lead	0.20	U	N	F
7439-95-4	Magnesium	5.2	U		P
7439-96-5	Manganese	0.40	U		P
7439-97-6	Mercury	0.10	U		CV
	Molybdenu	0.40	U	W	F
7440-02-0	Nickel	3.2	U		P
7440-09-7	Potassium	88.4	U		P
7782-49-2	Selenium	0.20	U		F
7440-22-4	Silver	0.60	U		P
7440-23-5	Sodium	4.7	B	E	P
7440-28-0	Thallium	0.20	U		F
	Titanium	2.0	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	1.3	B		P
	Zirconium	2.0	U	N	P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

6

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.
THIS SAMPLE IS A PREP BLANK AND IS REPORTED ON FORM III AS SUCH.

9613445.2577

DATA CHEM LABORATORIES

ENVIRONMENTAL SOIL REPORT

Form EPRS-A
Page 1 of 2
Part 1 of 1

Date _____
Agency Identification Number SF-0925-DD
Account No. 3534C

Westinghouse Hanford Company
2355 Stevens Drive
MSIN T6-08
Richland,, WA 99352
Attention: Jeanette Duncan

NOV 1991 RECEIVED OSM DMO

Telephone (509) 373-3225

Sampling Collection and Shipment

Sampling Site _____ Date of Collection October 03, 1991

Date Samples Received at DataChem October 12, 1991

Analytical Results

Parameter Name / Analysis Date / Method / Prep Method	Units	Field Number / Lab Number	B01 460 CLP 8779	B01 480 CLP 8780	B01 465 CLP 8781	B01 4H6 CLP 8782				Limit of Detection *
Fluoride (F) 10/17/1991 300.0 [1]	µg/g		2.	ND*	1.	ND*				1.
Chloride (Cl) 10/17/1991 300.0 [1]	µg/g		2.	1.	30.	ND*				1.
Nitrite (NO_2-N) 10/17/1991 300.0 [1]	µg/g		ND*	ND*	ND*	ND*				0.4
Nitrate (NO_3-N) 10/17/1991 300.0 [1]	µg/g		0.4	ND*	13.	ND*				0.3
Phosphate (PO_4-P) 10/17/1991 300.0 [1]	µg/g		ND*	ND*	ND*	ND*				2.
Sulfate (SO_4) 10/17/1991 300.0 [1]	µg/g		7.	4.	550	ND*				1.
Ammonia (NH_3 - N) 10/21/1991 350.1 [1]	µg/g		ND*	ND*	0.3	ND*				0.2

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
[1] Analyses completed on or before this date.

** Parameter not analyzed (See comment page).
( ) Parameter between LOD and LOQ.
[ ] Method Reference (See comments page.)

Wade Sloan
Analyst: Wade Sloan

Rosemary H. Hanks
Reviewer: Rosemary H. Hanks

Norman K. Christensen
Laboratory Supervisor: Norman K. Christensen

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ENVIRONMENTAL SOIL REPORT

Date _____

Agency Identification Number SF-0925-DD

Method Index **-- Method Reference --**

[1] EPA-600/4-79-020 "Methods for Chemical Analysis of Water and Wastes", March 1983 (Modified for use with soils.)

9613448.2579

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
Westinghouse Hanford Co.		~~W91-0-0579~~ 0578

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env. Engineering	Technical Baseline	

The following items are to be shipped from [X] Contractor [ ] Vendor

Routing Emery [X] Contractor [ ] Vendor

Shipped to:
Data-Chem
960 W. Levoy Drive
Salt Lake City, UT 84123

Off-site Custodian: Jim Johnston

Full Title:

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Poly Ice Chest #RM 41 containing glass sample bottles of soil packed in blue ice and vermiculite.	

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

Necessity for the Off-Site Use of this Property

Program not available on site.

Bill of Lading # 247425324 3

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

RM Clearance for Public Release	RM Survey No.	Date

Location of Property (Area & Bldg.)	Contact	Phone
Background Site	C.D. Kramer	376-4186

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
	EK16A/81223	

Originated By	Date	Authorized By	Date
C. D. Kramer			

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
			10/10/91

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
				218
Date 10-10-91				

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)

219

EMERY WORLDWIDE A CF Company

SIGNATURE AND TALLY RECORD

60029-46 (8/89) Litho USA

23

DATE: 10-11-91 SHIPMENT NO.: 247425324 3

SHIPPER: WESTINGHOUSE SHIPPING DEPT (509) 376-6665

REFERENCE NO.: W92-0-0018 #2

SHIPPER NAME AND ADDRESS	CONSIGNEE NAME AND ADDRESS
WESTINGHOUSE SHIPPING DEPT (509) 376-6665 G2-06 US DEPARTMENT OF ENERGY C/O WESTINGHOUSE HANFORD COMPANY 2355 STEVENS DRIVE 1163 BUILDING PO BOX 1970 RICHLAND WA 99352	ATTN: JIM JOHNSTON DATA CHEM LAB 960 W. LEVOY DRIVE SALT LAKE CITY UT 84123

Pieces	Weight	Description/Marks	Emery Authorization No.
1	29 LBS	W92-0-0018#2 B01460, B01480, B01465 ICE CHEST #RM6 SOIL SAMPLES	

EACH PERSON HANDLING OR TAKING CUSTODY OF THIS SHIPMENT MUST SIGN AND COMPLETE THE INFORMATION BELOW

	Name of Person/Company	Transship Point/Destination	Signature of Person Accepting Custody	Time/Date
1.	[illegible]	Richland Wa	[illegible]	[illegible] 10/11/91
2.	[illegible]	[illegible]	[illegible]	[illegible]
3.	Ted Vause EWW	PSC	Ted Vause	1530 10-11-91
4.	K Rowden Horizon	Pasco	K Rowden	1550 10/11/91
5.	SWR	HDY	[illegible]	0402 10/12
6.	K. Blue EWW	SLC	[illegible]	11:00 10/12
7.	Ernie Cooper		[illegible]	
8.				219

SPECIAL HANDLING INSTRUCTIONS

CONSIGNEE COPY

9613445.2580

Westinghouse Hanford Company 9615446.2581

Priority Samples

CHAIN OF CUSTODY

Project 91-075

Custody Form Initiator C. D. Kramer

Company Contact Chris Kramer

Telephone 376-4186

Project Designation/Sampling Locations Site-wide Bkg. Sites 6, 4, 10

Collection Date 10/3-8/91

Ice Chest No. RM 6

Field Logbook No. WHC-N-438

Bill of Lading/Airbill No. 247425324 3

Offsite Property No. W92-0-0018 #2

Method of Shipment Emery

Shipped to Data-Chem, Salt Lake City

Possible Sample Hazards/Remarks None

Sample Identification

B01460 (3) 120ml jars
B01480 ↓
B01465 (4) 120ml jars

Additional Prep blank requested B01446 - Sample no. No jars.

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
C. D. Kramer C. D. Kramer	T. Jackson	10-12-91 1100
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: 220

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90)

9613445.2582

SAMPLE LOG-IN SHEET

SF- 0925

Lab Name: DataChem Laboratories **Page** ____ **of** ____

Received By (Print Name): Tom Jackson **Log-In Date:** 10-14-91

Received By (Signature): [signature]

Case Number: WHC 26

Sample Delivery Group No.: ____

SAS Number: ____

CIRCLE THE APPROPRIATE RESPONSE:

1. Custody Seal(s) Present/Absent* Intact/Broken*
2. Custody Seal Nos.: None
3. Chain-of-Custody Records Present/Absent*
4. Traffic Reports or Packing List Present/Absent*
5. Airbill Airbill/Sticker Present/Absent*
6. Airbill No.: 2474253243
7. Sample Tags Present/Absent*
   Sample Tag Numbers Listed/Not Listed on Chain-of-Custody
8. Sample Condition: Intact/Broken*/Leaking*
9. Does information on custody records, traffic reports, and sample tags agree? Yes/No*
10. Date Received at Lab: 10-12-91
11. Time Received: 1100

SAMPLE TRANSFER

Fraction: All

Area #: Walkin

By: TB

On: 10-14-91

EPA SAMPLE #	CORRESPONDING SAMPLE TAG #	CORRESPONDING ASSIGNED LAB #	MATRIX	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC.
B01 460	N/A	CLP 8779	S	Acceptable (4°)
480		8780		
465		8781		
4H6		8782		

10-14-91

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* If Circled, contact SMO and attach record of resolution.

11/89 Rev.

Reviewed By: [signature] **Logbook No.:** ____

Date: October 18, 1991 **Logbook Page No.:** ____

FORM DC-1

9613446.2583

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Priority Samples Project 91-075

PART I: FIELD SECTION

Collector C. Kramer Date Sampled 10/3-8/91 Time _____ hours

Company Contact Chris Kramer Telephone (509) 376-4186

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B01460	(3) 120-ml	Soil	See attached Tables A-1, A-2
B01480	↓	↓	Each sample is to be analyzed
B01465	(4) 120-ml		for all analytes by the method
			shown except for fluoride.
			Fluoride may be done by
			ion chromatography.
B014H6	(0) jars	None	Additional prep blank for all
			analyses. This sample no. is
			provided to report and track
			this request. Contact
			Mark Beck - WHC OSM
			(509) 373-4369 if there are
			questions.

Field Information** Site-wide Rkg. - Sites 4, 6, 10

Special Handling and/or Storage Sieve samples. Use the less-than 2 mm size fraction in analytical aliquots. Exclude stones, etc. larger than 2 mm.

Possible Sample Hazards None

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PART II: LABORATORY SECTION

Received by _____ Title _____ Date 10-12-91

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)

9613445.2584

Table A-2. Secondary Inorganic Analytes.

Element	Typical expected (mg/kg)	Requested soil detection (mg/kg)	Requested method
Aluminum	3600 - 13300	40	200.7 CLP-M
Calcium	2000 - 14000	1000	200.7 CLP-M
Iron	19000 - 29000	20	200.7 CLP-M
Magnesium	2780 - 6910	1000	200.7 CLP-M
Manganese	164 - 2870	3	200.7 CLP-M
Molybdenum	< 4	0.5	7481
Potassium	455 - 2600	1000	200.7 CLP-M
Sodium	125 - 1710	1000	200.7 CLP-M
Silicon	200 - 2900	20	200.7 CLP-M
Titanium	500 - 3500	50	Any method capable of meeting the requested DL
Zirconium	15 - 65	5	Any method capable of meeting the requested DL
Chloride	0 - 20	1	300.0
Nitrate and nitrite	0 - 15	1	300.0
Phosphate	0 - 3	2	300.0
Sulfate	0 - 35	2	300.0
Fluoride	0 - 8	1	~~Extraction by~~ 300.0, ~~Analysis by ASTM D 3868-79~~
Ammonium	0 - 4	1	Any method capable of meeting the requested DL
~~Carbonate~~	~~Highly Variable~~	~~1.0%~~	~~ASTM D 4373-84~~

9613446.2585

Table A-1. Primary Inorganic Analytes.

Element	Typical expected (mg/kg)	Requested soil detection (mg/kg)	Requested method
Antimony	0 - 3	12	204.2 CLP-M
Arsenic	0 - 8	2	206.2 CLP-M
Barium	44 - 229	40	200.7 CLP-M
Beryllium	0 - 0.8	1	200.7 CLP-M
Cadmium	0 - 8	1	213.2 CLP-M
Chromium	2 - 48	2	200.7 CLP-M
Cobalt	0 - 15	10	200.7 CLP-M
Copper	0 - 20	5	200.7 CLP-M
Lead	1 - 13	0.6	239.2 CLP-M
Mercury	< 0.2	0.1	245.5 CLP-M
Nickel	6 - 25	8	200.7 CLP-M
Selenium	0 - 0.1	1	270.2 CLP-M
Silver	0 - 1.5	2	272.2 CLP-M
Thallium	0 - 0.2	2	279.2 CLP-M
Vanadium	24 - 96	10	200.7 CLP-M
Zinc	27 - 112	4	200.7 CLP-M

9613445.2586

OSM RCRA DATA ASSESSMENT

all soil

DATE 2/13/92 mdj. SAMPLES/MATRIX B01460 B01480 B01465

REVIEWED BY Mark A. Beck B01446

LABORATORY Data Chem

CASE # Site Wide Soil

SDG # SF#-0925-DD

DATA ASSESSMENT SUMMARY

QUALITY CONTROL CHECK	ANALYSIS	anions by 300.0	ammonia by 350.1	
1. Holding Times		M	O	
2. Matrix Spikes		X	O	
3. Duplicates		O	O	
4. Blanks		O	O	
5. Calibrations/LCS		O	O	
6. Other		O	O	
7.				
8.				
9.				
10.				

O = data had no problems
X = minor problems, data may be qualified
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: The data are acceptable with the attached qualifier.

NOTES: "Anions" includes chloride, fluoride, nitrite, nitrate, phosphate, sulfate.

o Refer to the corresponding attachments for explanation of any problems.

This SDG is associated with CLP SDG#WHCM~~27~~ WHCM26

9613445.2587

RCRA QC

Name Mark A. Beckman Date 2/13/92 mab

QC Check: Holding times

COMMENTS: Holding time requirements were met for chloride, fluoride, sulfate and ammonia, and were missed for nitrite, nitrate, and phosphate.

ACTION: Qualify all nitrite, nitrate and phosphate results as estimated (UJ or J).

sample #	constituent	value/qual	sample #	constituent	value/qual
all	nitrite (NO_2^-)	UJ or J			
	nitrate (NO_3^-)	UJ or J			
	phosphate	UJ or J			

___ of ___

9613445.2588

RCRA QC

Name Mark A. Beck Date 2/13/92 MAB.

QC Check: Matrix Spikes

COMMENTS: Appropriate matrix spikes ~~that met acc~~ were run that met all acceptance criteria except for phosphate. Phosphate recovery was low. The appropriate spikes include ammonia.

ACTION: Qualify all phosphate results as estimated (UJ or J).

sample #	constituent	value/qual	sample #	constituent	value/qual
all	phosphate	UJ or J			

___ of ___

9613445.2589

RCRA QC

Name Mark A. Beck Date 2/13/92 MAB

QC Check: Duplicates

COMMENTS: Appropriate duplicates were run for both anions and ammonia. All duplicates either met the ±20% criterion, or were below the FDL, and control limit applies.

ACTION: none - none needed

sample #	constituent	value/qual	sample #	constituent	value/qual

___ of ___

9613446.2590

RCRA QC

Name Mark A. Beck Date 2/13/92 MAB

QC Check: Blanks

COMMENTS: Blanks for ammonia were free of contamination. Blanks, lab #s 8782 (B014H6) and 8584, were free of any ~~ion~~ anion contamination.

ACTION: none - none needed.

sample #	constituent	value/qual	sample #	constituent	value/qual

___ of ___

9613445.2591

RCRA QC

Name Mark A. Beck Date 2/13/92 MAB

QC Check: Calibrations/LCS

COMMENTS: Calibrations were appropriately performed for ammonia. All "ICV", "CCV" and LCS had acceptable % recovery for ammonia. All anions LCS as well as the laboratories equivalent of ICV and CCV were within control limits.

ACTION: none - none needed.

sample #	constituent	value/qual	sample #	constituent	value/qual

___ of ___

9613445.2592

RCRA QC

Name Mark A. Beck Date 2/13/92 mab

QC Check: Other

COMMENTS: There was no run log to confirm where in the analytical run the blanks or CCV's were analyzed. This is inconvenient for the reviewer, but does not affect the data quality.

ACTION: none - except note above.

sample #	constituent	value/qual	sample #	constituent	value/qual

___ of ___

9613445.2593

DATA CHEM LABORATORIES

ENVIRONMENTAL SOIL REPORT

Form EPRS-A
Page 1 of 2
Part 1 of 1

Date _____
Agency Identification Number SF-0925-DD
Account No. 3534C

Westinghouse Hanford Company
2355 Stevens Drive
MSIN T6-08
Richland,, WA 99352
Attention: Jeanette Duncan

NOV 1991 RECEIVED OSM DMO

Telephone (509) 373-3225

Sampling Collection and Shipment

Sampling Site _____ Date of Collection October 03, 1991

Date Samples Received at DataChem October 12, 1991

Analytical Results

Parameter Name / Analysis Date / Method / Prep Method	Units	Field Number / Lab Number	B01 460 / CLP 8779	B01 480 / CLP 8780	B01 465 / CLP 8781	B01 4H6 / CLP 8782				* Limit of Detection
Fluoride (F) 10/17/1991 300.0 [1]	µg/g		2.	ND*	1.	ND*				1.
Chloride (Cl) 10/17/1991 300.0 [1]	µg/g		2.	1.	30.	ND*				1.
Nitrite (NO_2-N) 10/17/1991 300.0 [1]	µg/g		ND* UJ	ND* UJ	ND* UJ	ND* UJ				0.4
Nitrate (NO_3-N) 10/17/1991 300.0 [1]	µg/g		0.4 J	ND* UJ	13. J	ND* UJ				0.3
Phosphate (PO_4-P) 10/17/1991 300.0 [1]	µg/g		ND* UJ	ND* UJ	ND* UJ	ND* UJ				2.
Sulfate (SO_4) 10/17/1991 300.0 [1]	µg/g		7.	4.	550	ND*				1.
Ammonia (NH_3 - N) 10/21/1991 350.1 [1]	µg/g		ND*	ND*	0.3	ND*				0.2

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
[1] Analyses completed on or before this date.

** Parameter not analyzed (See comment page).
( ) Parameter between LOD and LOQ.
[ ] Method Reference (See comments page.)

Wade Sloan
Analyst: Wade Sloan

Rosemary H. Hanks
Reviewer: Rosemary H. Hanks

Norman K. Christensen
Laboratory Supervisor: Norman K. Christensen

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

11/03/92

9613445.2594

OSM INORGANIC DATA ASSESSMENT

DATE February 12, 1992

REVIEWED BY L. L. Ames

LABORATORY Data Chem

CASE # WHC26

SDG # WHCM26

SAMPLES/MATRIX B01460, B01480, B01465, B01446

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CN
1. Calibrations (Form II)	O	O	O	
2. Blanks (III)	X	X	X	
3. ICS (IV)	O			
4. Matrix Spike (V)	X	X	O	
5. Duplicate Analysis (VI)	X	O	O	
6. LCS (VII)	O	X		
7. Serial Dilution (IX)	X			
8. GFAA		O		
9. Holding Times (XIV)	O	O	O	
10. Other QC	X	X	X	

O = data had no problems
X = data qualified due to minor problems
M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSSMENT: There were no major problems; all results were acceptable with the attached qualifications.

NOTES: WHC sample numbers can be found in the case narrative and on the Form Is.

o Refer to the corresponding attachments for explanation of any problems.

9613445.2595

INORGANIC QC - Calibrations

Name L.L. Ames LLA Date 2/12/92

COMMENTS: All initial and continuing calibration verification %Rs are within control limits. The instruments used were calibrated with the required blanks and CRDL standard. Cyanide was not requested.

ACTION: No action was required because all of the blank and standard criteria were met.

sample #	constituent	value/qual	sample #	constituent	value/qual

INORGANIC QC - Blanks

Name L.L. Ames LLA Date 2/12/92

COMMENTS: Contamination detected in the preparation blank included aluminum, iron, mercury, sodium and zinc. Other contamination occurred in various CCBs as iron, magnesium and molybdenum. Negative results occurred in several CCBs for arsenic, potassium and vanadium.

ACTION: Results with <5x blank values were qualified as U. These occurred only in sample B014H6, the preparation blank, with false positive results for sodium as well. The negative analyte values affected only the results for B014H6. The other sample results showed values much higher in concentration than in B014H6.

sample #	constituent	value/qual
B014H6	aluminum	U
	iron	U
	magnesium	U
	potassium	U
	sodium	U
	zinc	U
	arsenic	U
	vanadium	U

sample #	constituent	value/qual

9613445.2597

INORGANIC QC - ICS

Name L.L. Ames LLA Date 7/12/92

COMMENTS: An initial and final interference check sample were run as required. The %R were all within the ±20% of true solution values.

ACTION: No action was required.

sample #	constituent	value/qual	sample #	constituent	value/qual

INORGANIC QC - Matrix Spike

Name L.L. Ames LLA Date 2/12/92

COMMENTS: Spiked sample recovery results were not within control limits for lead, antimony and zirconium. The %Rs were low for all results.

ACTION: Qualify lead, antimony and zirconium results as J (estimated) or UJ.

sample #	constituent	value/qual
All but	antimony	J
	lead	J
	zirconium	J
B014H6	antimony	UJ
	lead	UJ
	zirconium	UJ

sample #	constituent	value/qual

INORGANIC QC - Duplicate Analysis

Name L.L. Ames LLA Date 2/12/92

COMMENTS: Duplicate analyses for barium exceeded RPD guidelines for Soil Samples control limits.

ACTION: Qualify all barium results as estimated (J) or UJ.

sample #	constituent	value/qual
All	Barium	J
B014H6	Barium	UJ

sample #	constituent	value/qual

9613445.2600

INORGANIC QC - LCS

Name L.L. Ames KLA Date 2/12/92

COMMENTS: All solid LCS %Rs were within specified control limits except mercury. The %R for mercury was high. A liquid LCS was not run.

ACTION: Qualify mercury results in all sample data as J (estimated) based on IDL given in Form X.

sample #	constituent	value/qual	sample #	constituent	value/qual
All	mercury	J			

9615445.2601

INORGANIC QC - Serial Dilution

Name L.L. Ames LLA Date 2/12/92

COMMENTS: Serial dilution %D out of the difference control limits included chromium, copper, nickel, potassium, sodium and zinc. All results were plus 10 %D suggesting negative interference.

ACTION: No action was taken for sample B01446 (the preparation blank) because the above elements results were <10X the IDL where no control limits apply. Sample results >10X the IDL were qualified as J where necessary.

sample #	constituent	value/qual
B01460	Chromium	J
	copper	J
	nickel	J
	potassium	J
	sodium	J
	zinc	J
B01480	copper	J
	sodium	J
	zinc	J

sample #	constituent	value/qual
B01465	Chromium	J
	copper	J
	potassium	J
	sodium	J
	zinc	J

9613445.2602

INORGANIC QC - GFAA

Name L.L. Ames LLA Date 2/12/92

COMMENTS: Lead, selenium and molybdenum post digestion spike sample recovery was out of limits. A lead MSA for the sample results out of limits was run. Selenium and molybdenum MSAs were not run. Duplicate results were otherwise within limits.

Thallium is out of control for the duplicate analyses but the concentration is too low for it to be controlled (±2CRQL).

ACTION: Qualify selenium and molybdenum results as UJ or J for B01460 (selenium only), B01480 and B01465 (both selenium and molybdenum). No action is required on the thallium because it is not controlled.

sample #	constituent	value/qual
B01460	selenium	UJ
B01480	selenium	UJ
	molybdenum	UJ
B01465	selenium	UJ
	molybdenum	J

sample #	constituent	value/qual

9613445.2603

INORGANIC QC - Holding Times

Name L.L. Ames LLA Date 2/12/92

COMMENTS: Examination of the records showed that holding times were met.

ACTION: No action was required.

sample #	constituent	value/qual	sample #	constituent	value/qual

INORGANIC QC - other

Name L.L. Ames LLA Date 2/12/92

COMMENTS: The preparation blank is reported as sample number B014H6 although an additional preparation blank was requested on the Sample Analysis Request form.

ACTION: Data Chem was notified and requested to run an additional preparation blank in addition to B014H6.

sample #	constituent	value/qual	sample #	constituent	value/qual

9613445.2605

DATACHEM LABORATORIES
960 WEST LEVOY DRIVE
SALT LAKE CITY, UTAH 84123

WESTINGHOUSE HANFORD
****
CASE No. WHC26 SDG No. WHCM26 SF-0925-AD,BD,CD

CLIENT SAMPLE #	EPA SAMPLE #	LAB SAMPLE #
BO1460	MC8779	CLP8779
BO1480	MC8780	CLP8780
BO1465	MC8781	CLP8781
BO14H6	MC8782	CLP8782
MATRIX DUPLICATE (GFAA,HG)	MC8779D	CLP8779
MATRIX DUPLICATE (ICP)	MC8780D	CLP8780
MATRIX SPIKE (GFAA,HG)	MC8779S	CLP8779
MATRIX SPIKE (ICP)	MC8780S	CLP8780

PLEASE READ THIS CASE NARRATIVE BEFORE SCREENING THIS CASE.

SDG.:WHCM26 Case: WHC26

Sample MC8782 was actually a Preparation Blank for soil, but it was requested, by the client that it be documented and reported as a regular sample. Therefore the values reported on Form III for PBS are the values for Sample MC8782.

The additional analytes Molybdenum, Titanium, and Zirconium are not EPA/CLP analytes, therefore they were analyzed using alternative methods. QC was performed according to EPA SW846 protocol.

9613446.2606

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
B01460

MC8779

Lab Name: DATACHEM LABORATORIES Contract:

Lab Code: DATAC Case No.: WHC26 SAS No.: SDG No.: WHCM26

Matrix (soil/water): SOIL Lab Sample ID: CLP8779

Level (low/med): LOW Date Received: 10/09/91

% Solids: 90.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15900			P
7440-36-0	Antimony	5.5	~~U~~	~~N~~ J	P
7440-38-2	Arsenic	4.1			F
7440-39-3	Barium	146	J	*	P
7440-41-7	Beryllium	0.22	U		P
7440-43-9	Cadmium	0.66	U		P
7440-70-2	Calcium	6480			P
7440-47-3	Chromium	33.2	J		P
7440-48-4	Cobalt	12.5			P
7440-50-8	Copper	22.6	J		P
	Cyanide				NR
7439-89-6	Iron	26300			P
7439-92-1	Lead	10.8	J	~~NS~~	F
7439-95-4	Magnesium	7610			P
7439-96-5	Manganese	426			P
7439-97-6	Mercury	0.11	~~U~~	J	CV
	Molybdenu	0.44	U		F
7440-02-0	Nickel	28.4	J		P
7440-09-7	Potassium	1410	J		P
7782-49-2	Selenium	0.22	~~U~~	~~W~~ UJ	F
7440-22-4	Silver	0.66	U		P
7440-23-5	Sodium	297	~~B~~	~~E~~ J	P
7440-28-0	Thallium	0.27	B		F
	Titanium	1330			P
7440-62-2	Vanadium	54.3			P
7440-66-6	Zinc	69.1	J		P
	Zirconium	15.3	J	~~N~~	P

LHL
2/12/92

Color Before: BROWN Clarity Before: Texture: FINE

Color After: Clarity After: Artifacts:

3

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

FORM I - IN

9613445.2607

ENVIROFORMS/INORGANIC CLP

SAMPLE NO.
B01480

MC8780

1

INORGANIC ANALYSIS DATA SHEET

Lab Name: DATACHEM LABORATORIES Contract:

Lab Code: DATAC Case No.: WHC26 SAS No.: SDG No.: WHCM26

Matrix (soil/water): SOIL Lab Sample ID: CLP8780

Level (low/med): LOW Date Received: 10/09/91

% Solids: 96.7

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6580			P
7440-36-0	Antimony	5.2	~~U~~	~~N~~ J	P
7440-38-2	Arsenic	1.7	B		F
7440-39-3	Barium	156	J	~~*~~	P
7440-41-7	Beryllium	0.21	U		P
7440-43-9	Cadmium	0.62	U		P
7440-70-2	Calcium	11100			P
7440-47-3	Chromium	5.0			P
7440-48-4	Cobalt	17.4			P
7440-50-8	Copper	13.6	J		P
	Cyanide				NR
7439-89-6	Iron	34200			P
7439-92-1	Lead	2.5	J	~~N~~	F
7439-95-4	Magnesium	4110			P
7439-96-5	Manganese	491			P
7439-97-6	Mercury	0.10	~~U~~	J	CV
	Molybdenu	0.41	~~U~~	~~N~~ UJ	F
7440-02-0	Nickel	7.2	B		P
7440-09-7	Potassium	851	B		P
7782-49-2	Selenium	0.21	~~U~~	UJ	F
7440-22-4	Silver	0.62	~~U~~	J	P
7440-23-5	Sodium	237	B	E	P
7440-28-0	Thallium	0.21	U		F
	Titanium	3180			P
7440-62-2	Vanadium	105			P
7440-66-6	Zinc	51.4	J		P
	Zirconium	39.3	J	~~N~~	P

GLA
2/12/92

Color Before: BLACK Clarity Before: Texture: COARSE

Color After: Clarity After: Artifacts:

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

4

FORM I - IN

9615445.2608

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
B01465

MC8781

Lab Name: DATACHEM LABORATORIES Contract:

Lab Code: DATAC Case No.: WHC26 SAS No.: SDG No.: WHCM26

Matrix (soil/water): SOIL Lab Sample ID: CLP8781

Level (low/med): LOW Date Received: 10/09/91

% Solids: 96.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14800			P
7440-36-0	Antimony	5.2	~~B~~	~~N~~ J	P
7440-38-2	Arsenic	3.3			F
7440-39-3	Barium	105	J	~~*~~	P
7440-41-7	Beryllium	0.21	U		P
7440-43-9	Cadmium	0.62	U		P
7440-70-2	Calcium	13100			P
7440-47-3	Chromium	20.8	J		P
7440-48-4	Cobalt	17.3			P
7440-50-8	Copper	26.5	J		P
	Cyanide				NR
7439-89-6	Iron	34500			P
7439-92-1	Lead	8.1	J	~~NS~~	F
7439-95-4	Magnesium	8370			P
7439-96-5	Manganese	518			P
7439-97-6	Mercury	0.10	~~B~~	J	CV
	Molybdenu	0.54	~~B~~	~~W~~ J	F
7440-02-0	Nickel	24.4			P
7440-09-7	Potassium	2370	J		P
7782-49-2	Selenium	0.21	~~U~~	~~W~~ UJ	F
7440-22-4	Silver	0.62	U		P
7440-23-5	Sodium	664	~~B~~	~~E~~ J	P
7440-28-0	Thallium	0.21	U		F
	Titanium	1850			P
7440-62-2	Vanadium	77.0			P
7440-66-6	Zinc	62.4	J		P
	Zirconium	53.7	J	~~N~~	P

YKA
2/12/92

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: Clarity After: Artifacts:

5

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.

9613446.2609

ENVIROFORMS/INORGANIC CLP

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.
B014H6

MC8782

Lab Name: DATACHEM LABORATORIES Contract:

Lab Code: DATAC Case No.: WHC26 SAS No.: SDG No.: WHCM26

Matrix (soil/water): SOIL Lab Sample ID: CLP8782

Level (low/med): LOW Date Received: 10/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4.3	~~B~~	U	P
7440-36-0	Antimony	5.0	~~U~~	N UJ	P
7440-38-2	Arsenic	0.20	U		F
7440-39-3	Barium	0.20	~~U~~	* UJ	P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	0.60	U		P
7440-70-2	Calcium	4.0	U		P
7440-47-3	Chromium	1.6	U		P
7440-48-4	Cobalt	1.2	U		P
7440-50-8	Copper	0.80	U		P
	Cyanide				NR
7439-89-6	Iron	1.3	~~B~~	U	P
7439-92-1	Lead	0.20	~~U~~	N UJ	F
7439-95-4	Magnesium	5.2	U		P
7439-96-5	Manganese	0.40	U		P
7439-97-6	Mercury	0.10	~~U~~	J	CV
	Molybdenu	0.40	U	W	F
7440-02-0	Nickel	3.2	U		P
7440-09-7	Potassium	88.4	U		P
7782-49-2	Selenium	0.20	U		F
7440-22-4	Silver	0.60	U		P
7440-23-5	Sodium	4.7	~~B~~	E U	P
7440-28-0	Thallium	0.20	U		F
	Titanium	2.0	U		P
7440-62-2	Vanadium	0.60	U		P
7440-66-6	Zinc	1.3	~~B~~	U	P
	Zirconium	2.0	~~U~~	N UJ	P

LLA
2/12/92

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

6

Comments:
E - ICP SERIAL DILUTION OUTSIDE OF CONTROL LIMITS.
THIS SAMPLE IS A PREP BLANK AND IS REPORTED ON FORM III AS SUCH.